BMT

# Douglas Shoal Remediation Project



# Event 6 Environmental Monitoring Report

Final Report

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Australian Government
Great Barrier Reef Marine Park Authority

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# Executive Summary

## Purpose and Approach

The Great Barrier Reef Marine Park Authority contracted BMT to conduct environmental monitoring under the 'Douglas Shoal Environmental Remediation Project'. The project aimed to remediate areas damaged by the grounding of the bulk carrier Shen Neng 1 in 2010 and contaminated with antifoulant paints (AFPs) to support the natural recovery of the shoal.

Remediation of the shoal involved the removal of unconsolidated material in September 2023 by a 143 m long trailing suction hopper dredger, whereby remediated areas were vacuumed without the use of a cutting head. At the location of highest contaminant concentration (site mA) vacuuming was conducted without overflow to prevent contaminants re-entering the marine environment, whereas overflow was used to remediate sites mC and mE (Figure 1).

BMT conducted a long-term environmental monitoring program across five years, from spring 2019 to autumn 2024, to assess the effectiveness of the remediation and detect whether remediation caused unintended negative impacts to the shoal. The program was based around comparing changes in a range of biological, chemical, and physical response variables from locations (Figure 1) before and after remediation. The design investigated changes at remediation and nearfield (not remediated) locations, against reference locations at nearby Haberfield Shoal (Figure 1), in a before-after control-impact (BACI) framework. The environmental monitoring consisted of:

- Surveys of the seabed using towed underwater video transects, to quantify the cover of attached flora and fauna groups and bare substrate. A selection of 200 images were quantified from each location during events 1, 2, 5 and 6 (6,400 images). Additional images were taken during event 3 to supplement geospatial analyses.
- Surveys of fish communities using baited remote underwater videos (BRUVs), to quantify patterns in their abundance, biomass and biodiversity. Three replicate deployments were made in each location during each event (120 deployments over five events).
- Sampling of physio-chemical properties of the water column and sediments, targeting contaminants associated with antifoulant paints (AFPs) in all locations. Ten replicate sediment samples and five replicate water samples were collected from each location (plus QA/QC) during events 1 and 6. Ten additional sediment samples were collected prior to remediation in event 3.
- Collection of fish, sea squirts (ascidians) and seaweed (macroalgae) samples to measure concentrations of contaminants in tissues. Five replicates from each group (fish, ascidians, and seaweed) were collected from all locations in events 1, 2, 5 and 6.
- High resolution multibeam acoustic surveys to assess changes in seabed elevation and rugosity, and to estimate the volume of potentially contaminated material remediated. Baseline and post-remediation data were collected by Advisian at all Douglas Shoal locations.
- Seabed mapping using underwater photogrammetry to develop three-dimensional images of the seabed. This was done at two sites in each remediation location during events 1 and 6.

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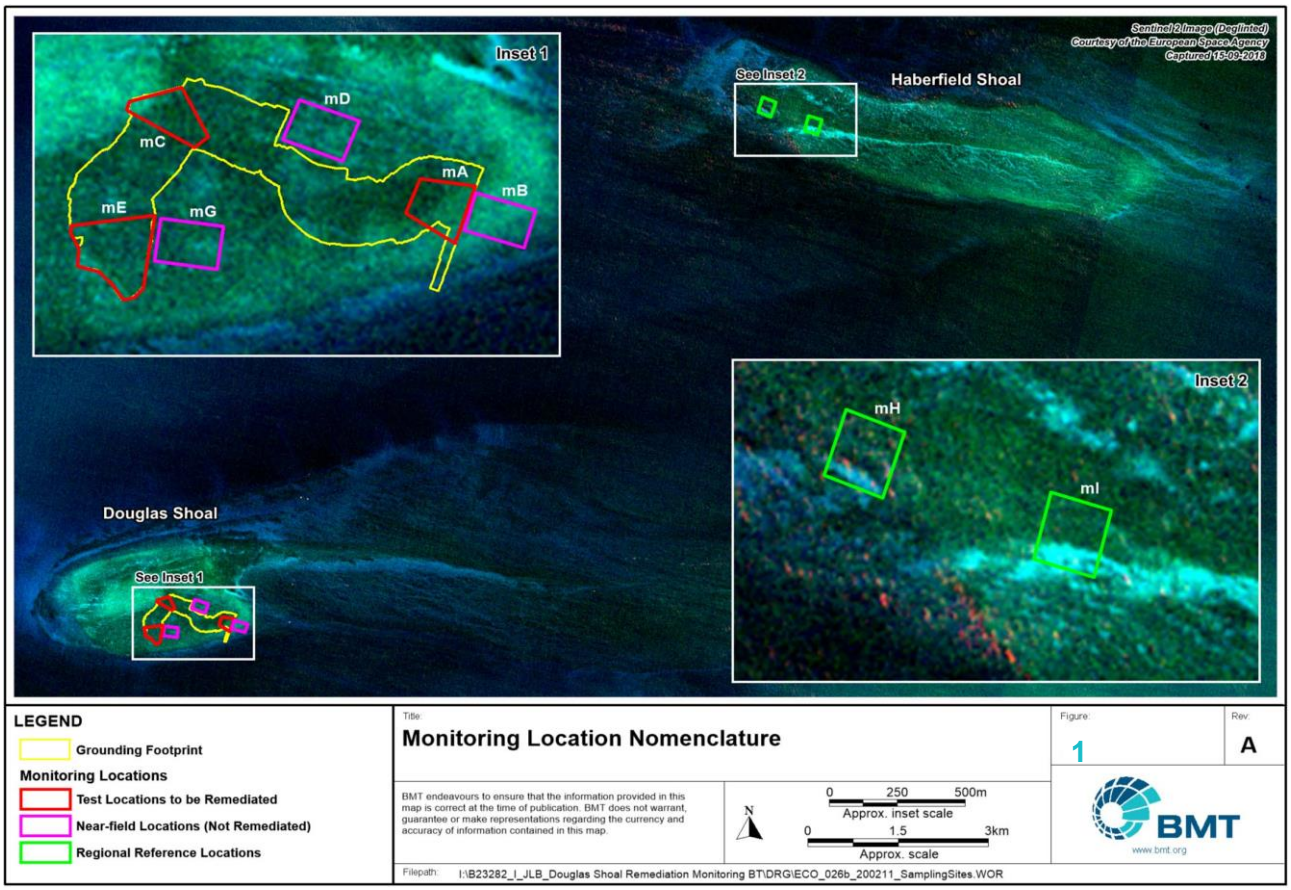



Figure 1 Monitoring Location Nomenclature

## Results and Analysis

Remediation impacts or improvements were interpreted as changes in a parameter observed in a remediation and/or nearfield treatment that were not observed in the reference treatment, or vice versa. These were represented statistically as interactions between treatment and before vs after, as per the BACI framework.

### Changes in Benthic Communities

There were large differences in the structure of communities over time, all locations, excluding mB, showed remarkable consistency in the direction of change between events, showing that communities were similarly changing through time at most locations. At all locations on Douglas and Haberfield Shoals epibenthos was dominated by macroalgae and turf algae; however, the degree of dominance varied substantially among different locations and through time.

Macroalgae variability showed a mixture of seasonal, stochastic, and remediation-related changes. A seasonal pattern was observed across all macroalgae, with proliferation in spring (events 1 and 5) and a reduction in cover in autumn (events 2 and 6). Total macroalgae was significantly lower in the post-remediation period at locations mC and mG, higher at mA, and did not change significantly at the remaining locations. A before and after comparison showed greater reductions in total macroalgae after remediation at Douglas Shoal compared to Habberfield Shoal. Specific changes to individual genus are detailed further in the subsequent report.

Patterns in the cover of hard coral, including *Acropora*, were not consistent with remediation impacts at locational and at treatment scales. Total hard coral cover was variable through time at the nearfield and

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remediation treatments, but it steadily declined at reference locations. *Acropora* cover was significantly higher in the post-remediation period in both the direct remediation and nearfield treatments, noting this increase in cover was not observed at reference locations. This suggests that the remediation had very little demonstrable impact to coral cover at the scale of locations and was highly successful.

The trend in abiotic material (pavement, sand, and gravel), was not linear and likely represented apparent increases related to the seasonal pulses of macroalgae (obstructing view) and the wave-driven movement of sand. Specifically, changes in gravel show a major reduction in cover in the post-remediation period at remediation locations mE, mC, and mA associated with remediation. While other locations also experienced significant before and after variation in gravel cover, these were minor compared to the scale of reduction observed in the remediation treatment.

Multivariate changes in epibenthic community structure showed similarities and differences in terms of graphed proximity, and temporal changes within locations are indicated by arrows (Figure 1.2). For most locations, the first movement between events 1 and 2 was consistent with a loss of *Sargassum* and *Dictyopteris* and an increase in bleached *Acropora* spp. and turfing algae. Between events 2 and 5, losses in macroalgal assemblage and gravel were driving the movement towards the bottom of the plot, and between events 5 and 6 the movement rightward at Habberfield Shoal was driven by a loss of *Sargassum* and increases in turfing algae. For most locations at Douglas Shoal, the movement observed between events 5 and 6 was driven by a loss of macroalgal assemblage and increase in *Asparagopsis* and sand. For mB, the changes were mainly driven by macroalgal assemblage and sand.

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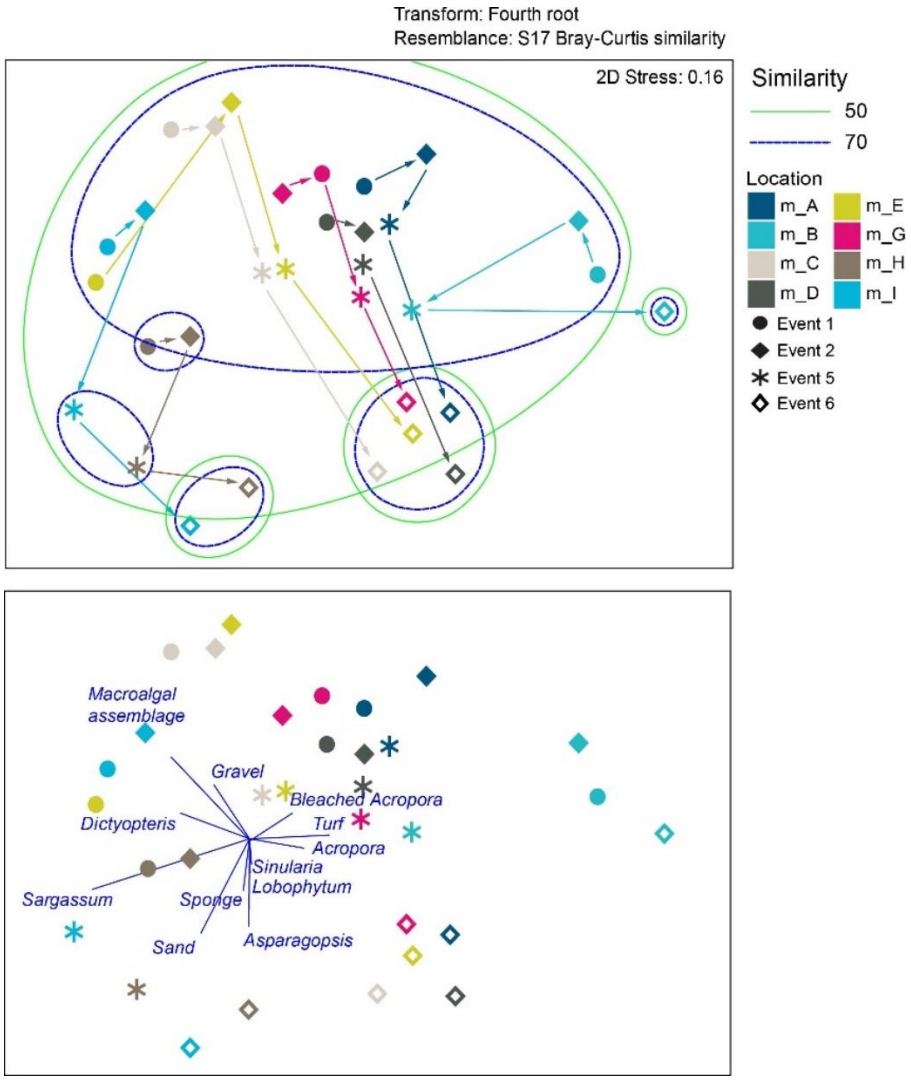



Figure 2 Two-dimensional nMDS ordination (stress = 0.10) of the location and event-averaged epibenthic data

Spatially explicit mapping in each location before and after remediation showed where the cover of coral, gravel and macroalgae declined, and that there were commensurate increases in turfing algae. There is evidence of some unintended reduction of hard corals in the direct remediation areas, a reduction in macroalgal substrates, and an increase in turfing algae over the underlying pavement created by the remediation. For most benthic cover categories, the areas of greatest change coincided with the dredge head track, suggesting modification occurred direct removal of substrate. However, some losses in coral cover in the direct remediation areas were offset by gains elsewhere. Excluding changes in the macroalgae *Sargassum*, no “plume effects” were apparent in the spatially interpolated cover data.

It is important to note these changes did not necessarily reflect a statistically significant change in cover across an entire location but showed the distribution of the remediation impact or benefit within a location.

### Coral Bleaching

In the monitoring program infancy, there was concern that differential bleaching in the remediation treatment prior to the remediation works could obscure or confound potential impacts of remediation. During the monitoring program two widespread coral bleaching events were recorded across the Great Barrier Reef in 2020 and 2024.

The 2020 coral bleaching (event 2) was much more extensive than in 2024 (event 6), with up to 35% of hard coral colonies and up to 0.5% of soft coral colonies bleached at various locations in 2020. In 2024, bleaching affected up to 10% of hard coral colonies and up to 0.2% of soft coral colonies. In event 2 there was higher bleached hard coral cover, and a greater proportion of bleached corals, at both Douglas Shoal treatments compared to the reference treatment. In the post-remediation period, there were no significant differences in hard coral or soft coral bleaching among the treatments. This suggests that the remediation activities did not contribute to bleaching at Douglas Shoal, and that differential rates of bleaching based on treatment were not observed.

After remediation, hard coral cover increased at remediation locations relative to reference locations, suggesting that elevated bleaching in 2020 did not result in subsequent mortality, or present a source of confounding for understanding potential remediation impact. Reduced hard coral cover after remediation at Habberfield Shoal may have been the result of subsequent mortality after both bleaching events, although the cause of the reduction is not known.

### 3D Models

Six orthomosaics were generated at Douglas Shoal during each of events 1 and 6, models depicted the seabed at remediation sites as areas of high concern. Sites AMOS1, AMOS2 and CMOS1 showed the least evidence of damage, while sites CMOS2, EMOS1 and EMOS2 experienced removal of unconsolidated substrate and a reduction in epibenthic communities on consolidated substrates.

Generally, there was a widespread reduction in large macroalgae (particularly *Dictyopteris* sp.) across all sites. Coral colonies have increased in size from initial to final monitoring. Site mA had no evidence of dredger damage or sediment removal however corals were partially or completely bleached. While the bleaching in 2020 was more severe at Douglas Shoal than the 2024 event, many of the acroporid corals affected by the previous event had survived and grown. Remediation was evident at site mC, the high relief terrace was unaffected with observed changes localised to only the lower relief terrace. Site mE showed extensive changes between 2019 and 2014, including the near-complete removal of unconsolidated substrate, the introduction of previously buried potholes and visible dredge scars.

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## Fish Communities

Fish communities were unaffected by remediation across the entire BRUV monitoring campaign, 278 fish and elasmobranch taxa observed. Changes in the biomass of fish >20cm (B20 biomass) at Douglas and Habberfield Shoal were highly variable through time and not consistent with any sign of impact or benefit associated with remediation activities. Similarly, there was no evidence that remediation activities affected abundance, richness or diversity metrics, either positively or negatively. The number of species observed (richness) increased after the remediation but this was consistent among treatments. Given the reductions in macroalgae throughout the monitoring program, changes in the abundance and richness of herbivores were also investigated. There was no evidence that remediation had any differential effect on herbivore abundance or richness.

Multivariate analyses, however, showed the arrangement in community space for fish communities (Figure 3) was extremely similar to that of epibenthic cover (Figure 2). In both cases, Habberfield Shoal sites clustered at the far left, mB clustered at the far right, and the remaining Douglas Shoal locations formed a cluster in the middle of the plot. This is almost certainly due to the habitat requirements of the dominant fish taxa observed in each location. For example, the low levels of macroalgae, high plating *Acropora* cover and turf algae coincided with more abundant parrotfish (*Scarinae*), groupers (*Serranidae*) and butterfly fish (*Chaetodontidae*) at mB using these features as sheltering and foraging habitat. On the left-hand side of the plot, goatfish (*Mullidae*), rabbitfish (*Siganidae*), emperors (*Lethrinidae*) and nemipterids were highly abundant at Habberfield Shoal, and likely associating with the more extensive sandy macroalgal environments.

A Permutational ANOVA showed that fish communities differed significantly before and after remediation overall, and among treatments; however, there was no significant interaction between treatments and before / after. This suggests that communities at Douglas Shoal remediation and nearfield treatments changed in a similar way to communities at Habberfield Shoal, such that there was no impact or benefit of remediation observed.

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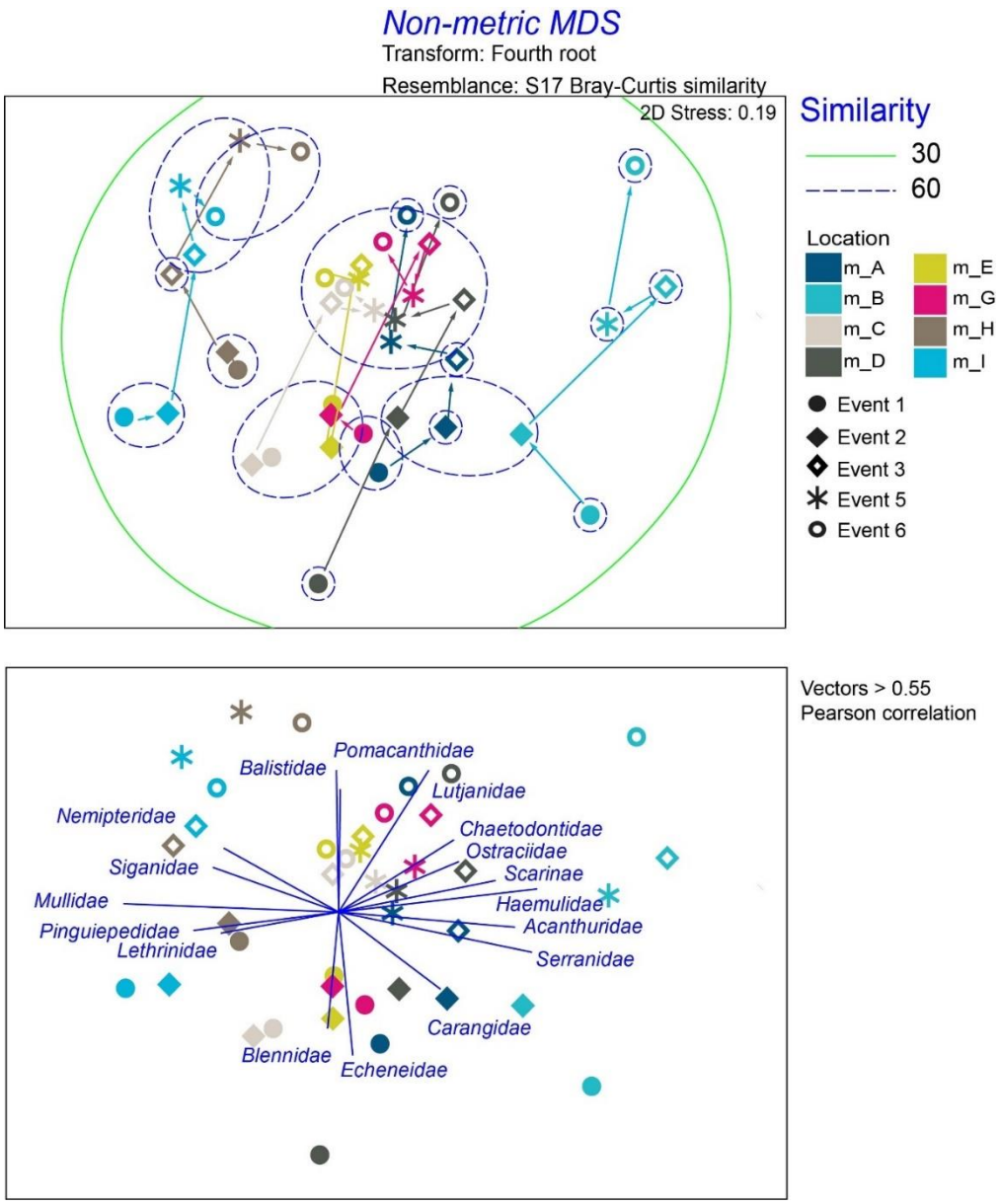



Figure 3 Two-dimensional n-MDS ordination of the location averaged fish data for two survey events

## Contaminants in Tissue Samples

The antifoulants tributyltin (TBT), copper, and zinc were found in all three forms of biota sampled for metal burden (fish, macroalgae and ascidians).The temporal changes in the concentrations of these parameters were highly variable across locations and likely associated with spatial variability, laboratory variability, natural breakdown and changes due to remediation. All concentrations were below the most conservative human health guideline for consumption of 240 ng/g (WHO 1999).

TBT was detected in various biota samples at low rates and concentrations before remediation, then was completely undetected in the post-remediation period. TBT was previously present in sites mA (macroalgae, ascidian and fish), mB (fish), mC (fish) and mD (macroalgae). The concentration of TBT was typically 1.2 ng/g, the greatest reading was 37 ng/g.

While TBT was not detected after remediation, the reverse was true for monobutyltin (MBT), which was present before (event 2) and after remediation (event 5 and 6). In the post-remediation period, all MBT samples were found at locations mA, mB and mD, with one sample also found at mH at Habberfield Shoal. The higher proportion of MBT in ascidian samples after remediation (compared to before) is likely the result of TBT decomposition in the sediment, then subsequent re-mobilisation into the water column during remediation where it was ingested by filter-feeding ascidians.

Observed differences in the concentration of copper and zinc were seen across fish tissue. The remediation may have slightly reduced metal concentrations in directly remediated locations, and increased tissue concentration of copper and zinc at location mG. In ascidians, there were large increases in copper and zinc in event 5, after remediation, across all locations. This is likely a laboratory anomaly. For algal tissue, concentrations of copper were without an obvious trend, and changes in zinc concentration were consistent with laboratory anomaly.

## Water and Sediment Quality

There was no evidence to suggest that remediation activities have altered the water quality 1 m above the benthos during monitoring events and into the longer term (not including the direct remediation period). Water quality monitoring showed that overflow plumes were of low concentration (<12 NTU) and only detectable within 200 m of operation (BMT 2024).

Temporal changes were observed in sediment quality. The dredge vacuum remediation was associated with reduced concentrations of sediment TBT, copper and arsenic at some locations, and minor increases in chromium at location mA. Some changes were also observed at reference sites and are likely the result of laboratory anomaly or cross contamination.

TBT was the sediment constituent of greatest concern due to its persistence and toxicity relative to other contaminants. Temporal analyses show that there was no significant reduction in TBT concentration at mA (the location the highest TBT concentrations) between events 1 and 6, but significant reductions were observed at remediation locations mC and mE. There was no evidence of increases in TBT in nearfield sites, suggesting that remediation did not remobilise TBT into neighbouring sediment. Observed reductions occurred in the remediation areas where the dredge worked extensively and removed the greatest amounts of material.

There was variable metal contamination in sediments, this is likely associated with a mixture of potential positive remediation outcomes, some potential unintended remobilisation, and laboratory measurement variability.

## Acoustic Assessment of Physical Habitat

Acoustic and remotely sensed data show that monitoring locations typically had similar baseline levels of rugosity (the physical complexity of the seabed, similar to micro-topography) and depth. Remediation

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resulted in an overall deepening of each location by an average of approximately 10 cm and slight increases in rugosity (1.5 - 2.7%) as potholes and channels were revealed beneath sediment surface. It should be noted that some apparent depth differences were the result of differences in survey methodology between the two events, not elevation changes.

Acoustic backscatter intensity (the power and scatter of the sonar return) difference plots showed increased backscatter intensity in areas that had been extensively vacuumed. These areas of brighter seafloor were produced by removing macroalgae, other biota, and unconsolidated material from locations mC and mE, and by removing unconsolidated material from sand channels in mA.

The acoustic data describes the key areas that were deepened between the two survey events, with the greatest elevation changes occurring, in areas where the most material was removed. Changes in backscatter show brighter, more reflective surfaces are more common in the direct restoration areas than neighbouring areas.

## Conclusion and Recommendations

The spatially explicit elements of the monitoring program, including remotely sensed satellite imagery, acoustic backscatter changes, and interpolated benthic cover maps from towed camera show a high degree of similarity, which gives confidence to estimates of direct impact. The observed direct impacts were consistent with what might be expected; direct loss of epibiota where the dredge head worked most extensively, and much gravel was removed from these areas. There was very little evidence of impact outside of the dredge head tracks, which suggests that the movements of the dredge head were able to be precisely controlled.

The benthic cover differences within locations were well-described by mapping before and after the remediation, the observed changes did not necessarily result in statistically significant changes at the scale of each monitoring location.

Reductions in AFP concentrations were most prominent where the dredger removed the most material (in areas mC and mE). The removal of TBT from mA was the least successful element of the remediation works, because concentrations were similar before and after remediation. Much care was taken to reduce damage to the surrounding benthos in mA by limiting the footprint, using a smaller dredge head, and operating without overflow. However, this meant that less material volume could be removed compared to mC and mE, and more contaminated material remained on site. The benefit of not overflowing was that no TBT was detected in the nearfield sediment locations.

Indirect impacts were less obvious and, in some cases, only apparent when considered across multiple lines of evidence. Evidence of indirect impact consisted of:

- the non-recovery of *Sargassum* at Douglas Shoal compared to Habberfield Shoal,
- presence of MBT in ascidian tissue after remediation (not observed in sediment)
- higher concentration of copper in sediment in nearfield locations after remediation,
- copper detected in dredge overflow release water, and
- higher concentration of copper in fish tissue in nearfield locations.

Considered collectively, it is likely that some copper was liberated during overflow and spread into the nearfield sediment, which may have contributed to elevated fish tissue concentrations. The presence of MBT in ascidian tissue is likely the result of TBT decomposition in the sediment, and brief re-mobilisation into the water column during remediation where it was ingested by filter-feeding ascidians. The disparity in MBT between ascidian and algal thallus samples after remediation could be the result of acute temporal releases that were filtered out by ascidians, but were not present in the water column long enough to be absorbed by algal tissue. Plume monitoring showed that the overflow plumes were short in duration, small in extent, and had low concentrations of contaminants and turbidity.

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The lack of any kind of positive or negative remediation response in fish communities was likely a product of the inherent variability of the system and the small magnitude of impact. Increased BRUV replication would not necessarily improve the accuracy of the estimate because the sites were close together within each location and additional sites would increase the potential for non-independence. Greater independent replication could have been achieved using non-baited stations on shorter deployments.

Any future monitoring should be conducted at an interval which would allow for potential recruitment of corals and epibenthos over the remediated surfaces. The last two events were insufficient to determine long-term recovery in these areas beyond the recruitment of turfing algae and small macroalgae.

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# Glossary

| Abbreviation | Meaning |
|---|---|
| **3D** | Three dimensional |
| **AFP** | Antifouling paint |
| **Ag** | Silver |
| **AIC** | Akaike Information Criterion |
| **ANZFA** | Australia New Zealand Food Authority |
| **ANOSIM** | A two-way crossed analysis of similarity |
| **ANZECC** | Australian and New Zealand Environment Conservation Council |
| **ANZG** | Australian and New Zealand Guidelines |
| **ARMCANZ** | Agriculture and Resource Management Council of Australia and New Zealand |
| **As** | Arsenic |
| **B20** | Biomass of species exceeding 20 cm in length |
| **Ba** | Barium |
| **BACI** | Before-After / Control-Impact |
| **BRUV** | Baited Remote Underwater Video |
| **CCA** | Crustose coralline algae |
| **Cd** | Cadmium |
| **cm** | Centimetre |
| **Co** | Cobalt |
| **COPC** | contaminants of potential concern |
| **Cr** | Chromium |
| **CRM** | Certified Reference Material |
| **Cu** | Copper |
| **dGPS** | Differential Geographic Positioning System |
| **DGV** | Default Guideline Value |
| **g** | Grams |
| **GBR** | Great Barrier Reef |
| **GBRMPA** | Great Barrier Reef Marine Park Authority |
| **GLM/ GLMM** | Generalised Linear Model / Generalised Linear Mixed Model |
| **GPS** | Geographic Positioning System |
| **GV** | Guideline Value |

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| Abbreviation | Meaning |
|---|---|
| **ha** | Hectares |
| **HD** | High Definition |
| **kg** | Kilograms |
| **kHz** | Kilohertz |
| **L** | Litres |
| **LAT** | Lowest Astronomical Tide |
| **LOR** | Limit of Reporting |
| **m** | Metre |
| **MaxN** | Maximum Number of fish sighted for a given species during a baited video deployment |
| **MBES** | Multibeam Echo Sounder |
| **mg** | Milligrams |
| **mm** | Millimetres |
| **Mn** | Manganese |
| **mp** | Megapixels |
| **MSL** | Mean Sea Level |
| **ng** | Nanogram |
| **ng Sn** | Nanograms of Tin |
| **Ni** | Nickel |
| **nMDS** | Non-metric Multidimensional Scaling |
| **NMI** | National Measurement Institute |
| **OP** | Organophosphorus Pesticide |
| **Pb** | Lead |
| **PERMANOVA** | Permutational multivariate analysis of variance |
| **PSD** | Particle Size Distribution |
| **PVC** | Polyvinyl chloride |
| **QA/QC** | Quality Assurance / Quality Control |
| **RMS** | Root mean square |
| **RPD** | Relative Percent Differences |
| **RSD** | Relative Standard Deviation |
| **RTK GPS** | Real-Time Kinetic Global Positioning System |
| **SAP** | Sampling Analysis Plan |
| **Sb** | Antimony |

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| Abbreviation | Meaning |
|---|---|
| **SBP** | Sub-Bottom Profiling |
| **Se** | Selenium |
| **SE** | Standard Error |
| **SIMPER** | Similarity Percentage routine in the statistics package Primer-e |
| **SQDGV** | Sediment Quality Default Guideline Value |
| **TBT** | Tributyltin |
| **TC** | Tropical Cyclones |
| **TDS** | Total Dissolved Solids |
| **TSS** | Total Suspended Solids |
| **UTM** | Universal Transverse Mercator |
| **V** | Vanadium |
| **WGS84** | World Geographic System 1984 |
| **WHO** | World Health Organisation |
| **Zn** | Zinc |
| **µm** | Micrometre |

| Technical terms | Meaning |
|---|---|
| **Abiotic** | Non-living |
| **Abundance** | The number of individuals observed within a replicate |
| **Ascidians** | A marine filter-feeding invertebrate, a sea-squirt |
| **Assemblages** | Groups of animals, plants or other biota |
| **Bathymetric** | Describing the depth of water |
| **Benthic** | Pertaining to the sea floor |
| **Contaminants** | Polluting substance |
| **Crustose coralline algae** | Algae partly composed of hard calcium carbonate deposits |
| **Epibenthic** | Living on the surface of the sea floor |
| **Epifauna** | Animals living on the surface of other living organisms |
| **Event** | Used throughout this report to indicate survey event |
| **Gravel** | In this report, a sediment size class consisting of coarse gravel to cobble |
| **Georeferenced** | Points or features referenced to geographic co-ordinates |
| **Heterogeneity** | A measure of difference |
| **Heteroscedasticity** | Unequal variation of a variable across comparison groups |

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| Technical terms | Meaning |
|---|---|
| **Macroalgal assemblage** | Clumps of various species of macroalgae |
| **MaxN** | Maximum number of individuals of the same species observed in a single photo/video frame |
| **Multivariate** | Statistics using multiple variables at once |
| **Nomenclature** | A naming convention |
| **Non-normality** | Data that does not have a normal distribution, e.g. a large amount of zero counts within a dataset, or skewed or truncated data |
| **Organotins** | A class of chemical generally used as pesticides and biocides |
| **Orthomosaic** | A large image created by combining smaller images |
| **Rubble** | In the context of this report, sediment believed to be generated by the grounding incident. Sediments that are coarse, angular, and devoid of biological coverings |
| **Rugosity** | The physical complexity of the seabed, similar to micro-topography |
| **Pavement** | Consolidated reef substratum without biological coverings |
| **Prevalence** | The number of times a taxon is recorded by a replicate; a measure of presence or absence that does not consider abundance |
| **QA/QC** | Qualtiy assurance and quality control |
| **Taxa** | Plural of taxon: a group of related organisms |
| **Turbidity** | A measure of the clarity of water |
| **Univariate** | Statistics using a single variable |
| **ZOI** | Zone of influence |

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# Contents

Purpose and Approach ..... 3
Results and Analysis ..... 5
Changes in Benthic Communities ..... 5
Coral Bleaching ..... 7
3D Models ..... 7
Fish Communities ..... 8
Contaminants in Tissue Samples ..... 10
Water and Sediment Quality ..... 10
Acoustic Assessment of Physical Habitat ..... 10
Conclusion and Recommendations ..... 11

1 Introduction ..... 23
1.1 Project Background ..... 23
1.2 Known Grounding Impacts and Remediation Areas ..... 23

2 Monitoring Program Design and Approach ..... 28
2.1 Assumptions and Limitations ..... 28
2.2 Monitoring Objectives and Null Hypotheses ..... 28
2.3 Environmental Conditions Considered in the Program Design ..... 29
2.4 Indicator Summary ..... 30
2.5 Monitoring Program Design ..... 32
2.5.1 Spatial Design ..... 32
2.5.2 Survey Frequency ..... 33
2.5.3 Replication and Analyses ..... 35

3 Summary of Remediation Activities ..... 37
3.1 Remediation Extent and Observed Changes ..... 37

4 Detailed Monitoring Methods ..... 42
4.1 Field Sampling ..... 42
4.1.1 Epibenthic Cover ..... 42
4.1.2 Fish Communities ..... 44
4.1.3 Tissue Sampling for Contaminants - Fish ..... 46
4.1.4 Tissue Sampling for Contaminants – Invertebrates and Algae ..... 46
4.1.5 Water Sampling ..... 50
4.1.6 Sediment Quality ..... 51
4.1.7 3D Modelling ..... 54
4.1.8 Acoustic Data Collection ..... 57
4.2 Data Analyses ..... 59
4.2.1 Epibenthic Cover ..... 59

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4.2.2 Fish Communities ..... 68
4.2.3 Contaminant Concentrations ..... 70
4.2.4 Rugosity and Depth ..... 71

5 Key Findings ..... 72

5.1 Epibenthic Cover ..... 72
5.1.1 General Patterns ..... 72
5.1.2 Univariate Patterns and Temporal Change ..... 72
5.1.3 Multivariate Analyses ..... 78
5.1.4 Spatial Patterns in Epibenthos ..... 83
5.1.5 Coral Bleaching ..... 93
5.2 3D Modelling ..... 97
5.3 Fish Communities ..... 107
5.3.1 General Patterns ..... 107
5.3.2 Univariate Patterns ..... 110
5.3.3 Multivariate Analyses ..... 116
5.4 Biotic Contaminant Concentrations ..... 123
5.4.1 Organotins ..... 123
5.4.2 Copper and Zinc ..... 130
5.5 Water Quality ..... 135
5.5.2 Water Data Quality (QA/QC) Summary ..... 138
5.6 Sediment Quality ..... 139
5.6.1 Temporal Changes ..... 139
5.6.2 Guideline Exceedances and Particle Sizing ..... 143
5.6.3 Spatial Patterns in Sediment Contamination ..... 144
5.6.4 Sediment Data Quality (QA/QC) Summary ..... 151
5.7 Acoustic Assessment of Physical Habitat ..... 153
5.8 Opportunistic Observations ..... 158
Before Remediation ..... 158
During Remediation ..... 158
After Remediation ..... 158

6 Conclusions ..... 162

6.1 Epibenthic Cover ..... 162
6.2 3D modelling ..... 163
6.3 Fish Communities ..... 163
6.4 Biotic Contaminant Concentrations ..... 164
6.5 Water and Sediment Quality ..... 165
6.6 Physical Habitat Assessment ..... 165

7 References ..... 166

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## Tables

Table 2.1 Summary of Indicators and Relevant Impact Hypotheses ..... 31
Table 2.2 Indicators sampled each survey and location ..... 33
Table 4.1 Sediment Quality Parameters ..... 52
Table 4.2 BRUV unit start and final measurement error estimates ..... 70
Table 5.1 Summary analysis of deviance table for generalized linear models at Locations. Significance codes: 0 = ***, 0.001 =**, 0.01 = *, 0.05 = blank ..... 74
Table 5.2 Summary analysis of deviance table for generalized linear models at Treatments. Significance codes: 0 = ***, 0.001 =**, 0.01 = *, 0.05 = blank ..... 75
Table 5.3 Bray Curtis similarity index between survey events within each location, and main contributing to differences between survey events in sequence from SIMPER ..... 81
Table 5.4 PERMANOVA results for changes in benthic communities ..... 83
Table 5.5 Differences in the proportion of bleached hard coral after Remediation based on Kruskal-Wallace rankings. Significant differences (p<0.05) are Highlighted ..... 95
Table 5.6 Differences in the proportion of bleached soft coral after Remediation based on Kruskal-Wallace rankings. Significant differences (p<0.05) are Highlighted ..... 95
Table 5.7 Top 10 most abundant and prevalent fish species observed before and after remediation . 107
Table 5.8 Total B20 biomass (>20cm) of fish (kg) in locations between events 3 and 6 ..... 110
Table 5.9 Total B20 biomass of fish (kg) Before and After Remediation per location ..... 110
Table 5.10 Summary analysis of deviance table for generalized linear models of fish biomass diversity metrics. Significance codes: 0 = ***, 0.001 =**, 0.01 = *, 0.05 = blank ..... 113
Table 5.11 Summary analysis of deviance table for generalized linear models of herbivore richness and abundance. Significance codes: 0 = ***, 0.001 =**, 0.01 = *, 0.05 = blank ..... 116
Table 5.12 Bray Curtis similarity index between survey events within each location, and main contributing to differences between survey events in sequence from SIMPER ..... 120
Table 5.13 PERMANOVA results for fish communities ..... 122
Table 5.14 Length and Weight of Fish Samples, Survey 5 (Photographs provided in Appendix A). No TBT was present in any fish samples after remediation ..... 124
Table 5.15 Length and Weight of Fish Samples, Survey 6 (Photographs provided in Appendix A). No TBT was present in any fish samples after remediation ..... 125
Table 5.16 Summary analysis of deviance table for location-level generalized linear models of biotic contamination. Significance codes: 0 = ***, 0.001 =**, 0.01 = *, 0.05 = blank ..... 133
Table 5.17 Summary analysis of deviance table for treatment-level generalized linear models of biotic contamination. Significance codes: 0 = ***, 0.001 =**, 0.01 = *, 0.05 = blank ..... 134
Table 5.18 Concentrations of Dissolved Contaminants during Event 6 ..... 136
Table 5.19 Summary analysis of deviance table for generalized linear models of sediment contaminant concentrations at Locations. Significance codes: 0 = ***, 0.001 =**, 0.01 = *, 0.05 = blank ..... 142
Table 5.20 Independent contrast summary of contaminants of concern for interactions between events within locations (significant changes are shown in light pink) ..... 143
Table 5.21 Rugosity and Depth of Locations ..... 153
Table 5.22 Summary of opportunistic observation during field surveys ..... 160

## Figures

Figure 1 Monitoring Location Nomenclature ..... 4

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Figure 2 Two-dimensional nMDS ordination (stress = 0.10) of the location and event-averaged epibenthic data ..... 6
Figure 3 Two-dimensional nMDS ordination of the location averaged fish data for the survey events.....9
Figure 1.1 Locality Plan ..... 24
Figure 1.2 Priority Remediation Areas based on Costen *et al*. (2017) ..... 25
Figure 1.3 Revised Priority Areas for Remediation (Neale and Boylson 2019) ..... 27
Figure 2.1 Monitoring Location Nomenclature ..... 34
Figure 2.2 Conceptual schematic of spatial replication within a survey (indicators without spatial replication are not shown, such as broad coverage multibeam sonar) ..... 36
Figure 3.1 Dredger Vacuum Head Tracks shown with Sentinel-2 Imagery Before and After Remediation ..... 39
Figure 3.2 Estimated Overflow Zone of Influence ..... 40
Figure 3.3 Turbidity time-series for the six instruments shown in Figure 3.2. Grey shading indicates the dredging overflow period ..... 41
Figure 4.2 Towed Camera Transect Imagery ..... 43
Figure 4.3 Synchronisation of cameras and final checks prior to the deployment of a stereo BRUV..... 44
Figure 4.4 BRUV Sites within Locations ..... 45
Figure 4.5 Line fishing (left) to collect reef fish, and tissue sub-sampling (right) ..... 46
Figure 4.6 Commercial diver and attendant preparing to collect Algae and Ascidians ..... 47
Figure 4.7 Biota Tissue Sample Locations ..... 49
Figure 4.8 Collecting a water sample at Douglas Shoal using a van Dorn sampler ..... 50
Figure 4.9 Measuring *in-situ* water quality at Douglas Shoal during event 1 (left) and event 4- during remediation (right) ..... 51
Figure 4.10 Sediment Quality Sampling Sites and Locations ..... 53
Figure 4.11 Collecting a sediment sample from the sea floor ..... 54
Figure 4.12 Diver collecting mosaic imagery at Douglas Shoal (location mE) ..... 55
Figure 4.13 3D Model Sites ..... 56
Figure 4.14 Acoustic Survey Area ..... 58
Figure 4.15 Examples of benthic classification conventions ..... 61
Figure 4.16 Schematic diagram of the relationships between a selection of key cover categories ..... 62
Figure 4.17 Frequency Histograms showing distributions of cover for key Epibenthic classes. ..... 64
Figure 4.18 Epibenthic QA/QC results for key classification types (mean +/- SE) ..... 67
Figure 4.19 Example total length measurements for fish with convex (above) and forked tails (below) 68
Figure 5.1 Mean (± SE) Epibenthic percentage cover (%) between events by locations ..... 76
Figure 5.2 Mean (± SE) epibenthic percentage cover (%) between events by treatment ..... 77
Figure 5.3 Dendrogram for hierarchical clustering of benthic assemblage data averaged within eight locations sampled at two times (group-average linking of Bray-Curtis similarities, fourth root-transformed abundance data). The locations/time groupings correspond to the division line fixed at 70% similarity level ..... 78
Figure 5.4 A two-dimensional nMDS ordination of location-averaged epibenthic data pictured twice. Temporal vectors show movements through time (above) and key community response vectors (Pearson >0.55) show how the abundance of different taxa affected site position in space (below) ..... 79
Figure 5.5 Bubble plots showing the relative abundance of key taxa using the nMDS ordination in Figure 5.4. Larger circles represent greater relative benthic cover ..... 80

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Figure 5.6 Shade plot showing 4th root transformed abundance of the benthic categories based on location and time averaged data ..... 82
Figure 5.7 Hard Coral Cover (%) Before and After Remediation Activities ..... 85
Figure 5.8 *Acropora* spp. Cover (%) Before and After Remediation Activities. ..... 86
Figure 5.9 Soft Coral Cover (%) Before and After Remediation. ..... 87
Figure 5.10 Gravel Cover (%) Before and After Remediation ..... 88
Figure 5.11 Macroalgae Cover (%) Before and After Remediation ..... 89
Figure 5.12 *Sargassum* spp. Cover (%) Before and After Remediation ..... 90
Figure 5.13 Turf Algae Cover (%) Before and After Remediation Activities ..... 91
Figure 5.14 Unconsolidated Sediment Cover (%) Before and After Remediation. ..... 92
Figure 5.15 Location means (±SE) of hard coral bleaching (above left) and soft coral bleaching cover (above right) relative to total seafloor cover. Proportions of hard (lower left) and soft (lower right) corals bleached relative to total respective coral categories ..... 93
Figure 5.16 Treatment means (±SE) of hard coral bleaching (above left) and soft coral bleaching cover (above right) relative to total seafloor cover. Proportions of hard (lower left) and soft (lower right) corals bleached relative to total respective coral categories ..... 94
Figure 5.17 Bleached Hard Coral Cover (%) Before and After Remediation ..... 96
Figure 5.18 Close-up comparisons of orthomosaics from site AMOS1 ..... 98
Figure 5.19 Temporal comparison of the orthomosaic at site AMOS1 ..... 99
Figure 5.20 Orthomosaic of site AMOS2 ..... 100
Figure 5.21 Temporal comparison of the orthomosaic at site AMOS2 ..... 101
Figure 5.22 Temporal comparison of the orthomosaic at site CMOS1 ..... 102
Figure 5.23 Temporal comparison of the orthomosaic at site CMOS2 ..... 103
Figure 5.24 Temporal comparison of the orthomosaic at site EMOS1 ..... 104
Figure 5.25 Temporal comparison of the orthomosaic at site EMOS2 ..... 105
Figure 5.26 Mosaics of camera transects across the high-relief terrace ..... 106
Figure 5.27 Sample BRUV video captures of the most abundant taxa ..... 109
Figure 5.28 Mean (± SE) B20 biomass for all fish, *G. audleyi, C. venustus,* acanthurids, lethrinids, and elasmobranchs in survey events by location ..... 111
Figure 5.29 Mean (± SE) B20 biomass for all fish, *G. audleyi, C. venustus,* acanthurids, lethrinids, and elasmobranchs in survey events by treatments ..... 112
Figure 5.30 Mean (± SE) richness, abundance and Simpsons' Diversity for all fish in survey events by treatment ..... 114
Figure 5.31 Mean Herbivore (± SE) abundance and richness between survey events by location (above) and treatment (below) ..... 115
Figure 5.32 Dendrogram of hierarchical clustering of fish assemblage data, averaged within each location for both survey events ..... 116
Figure 5.33 Two-dimensional n-MDS ordination of the location averaged fish data for two survey times. Data are denoted by location with temporal trajectories also shown ..... 118
Figure 5.34 Bubble plots showing relative abundances of surgeon fish (*Acanthuridae*), butterflyfish (*Chaetodontidae*), emperors (*Lethrinidae*), snappers (*Lutjanidae*), damselfish (*Pomacentridae*), parrotfish (*Scarinae*), groupers (*Serranidae)*, and rabbitfish (*Siganidae*) ..... 119
Figure 5.35 Shade plot showing fourth root transformed abundance (data averaged within location for each survey time) of the ten most abundant fish species overall ..... 120

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Figure 5.36 Mean (SE±) tributyltin (TBT), monobutyltin (MBT), dibutyltin (DBT), zinc and copper concentrations in fish tissue samples ..... 127
Figure 5.37 Mean (SE±) tributyltin (TBT), monobutyltin (MBT), dibutyltin (DBT), zinc and copper concentration in ascidian tissue samples..... 128
Figure 5.38 Mean (SE±) tributyltin (TBT), monobutyltin (MBT), dibutyltin (DBT), zinc and copper concentration in algae thallus samples ..... 129
Figure 5.39 Treatment mean (SE±) zinc and copper tissue concentrations in fish (above), ascidians (middle), and algae (below)..... 132
Figure 5.40 Mean (± SE) contaminant concentration between events by locations ..... 140
Figure 5.41 Mean (± SE) contaminant concentration between events by treatment ..... 141
Figure 5.42 Average PSD distributions across monitoring locations..... 144
Figure 5.43 Total Monobutyltin in Spring 2024 Sediment Samples ..... 145
Figure 5.44 Total Dibutyltin in Spring 2024 Sediment Samples ..... 146
Figure 5.45 Total Copper Before and After Remediation Activities in Sediment Samples ..... 147
Figure 5.46 Total Zinc Before and After Remediation Activities in Sediment Samples..... 148
Figure 5.47 Total Tributyltin Before and After Remediation Activities in Sediment Samples..... 149
Figure 5.48 Total Diuron Before and After Remediation Activities in Sediment Samples..... 150
Figure 5.49 Douglas Shoal Bathymetry (50 cm)..... 155
Figure 5.50 DEM Differences 2019 to 2023..... 156
Figure 5.51 Backscatter Intensity Differences 2019 to 2023 ..... 157

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# 1 Introduction

## 1.1 Project Background

In April 2010, the bulk carrier Shen Neng 1 grounded on Douglas Shoal in the Capricorn Bunker region of the Great Barrier Reef Marine Park (Figure 1.1). The carrier remained on the reef for 10 days before it was salvaged, producing the largest grounding scar (42 ha) in the Marine Park to date. The grounding footprint of the Shen Neng 1 over Douglas Shoal is shown in Figure 1.1.

The Great Barrier Reef Marine Park Authority (the Reef Authority) established the Douglas Shoal Environmental Remediation Project (the project) in late 2016 with funds from a court settlement associated with the grounding incident. The primary desired outcome for the project is that remediation activities support natural recovery at Douglas Shoal, with the project being comprised of three work streams:

- **Stream 1:** Planning and Project Management services for the project (Advisian) including targeted fieldwork at Douglas Shoal, desktop investigations, production of a remediation options assessment, and engaging and managing a remediation contractor.
- **Stream 2:** Remediation and compliance monitoring.
- **Stream 3:** Physical, chemical and biological environmental monitoring of remediation works at Douglas Shoal.

BMT was engaged by the Reef Authority to conduct Stream 3 (Environmental Monitoring). The environmental monitoring program was comprised of six surveys (three pre-remediation surveys, a water quality survey during remediation, and two post-remediation surveys). This document details the methodologies, results, and conclusions of this environmental monitoring. Note that for the 'during remediation' water quality survey, a more detailed report of the observations during remediation is available separately (BMT 2024).

## 1.2 Known Grounding Impacts and Remediation Areas

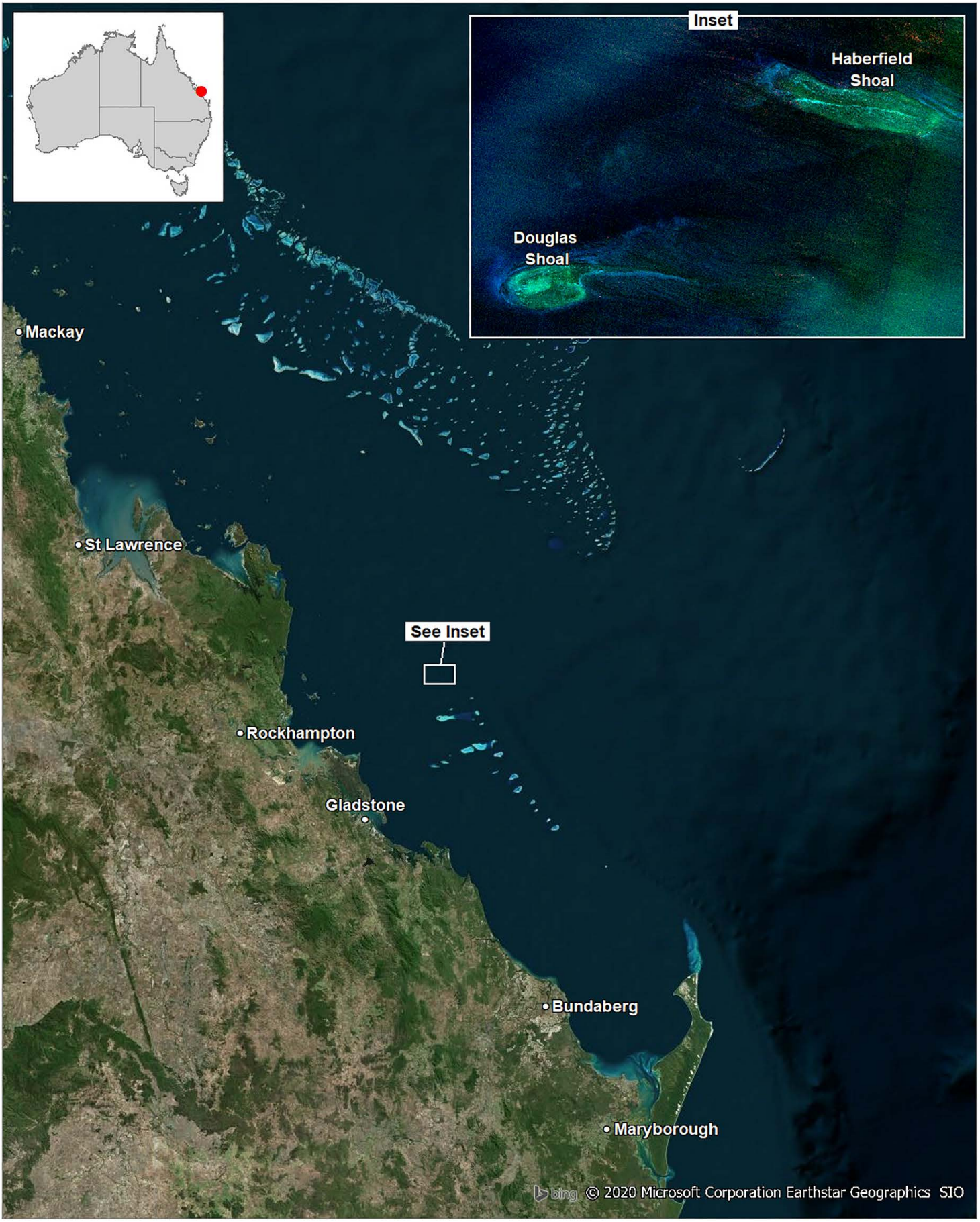
The Reef Authority identified three key concerns for the ongoing natural recovery in the grounding footprint at Douglas Shoal:

1. Antifouling paint (AFP) – it was estimated by the Reef Authority that up to 20 tonnes of AFP may have been dislodged from the vessel during the grounding incident. The AFP contains a range of chemicals, most notably the biocide Tributyltin (TBT).

2. Unconsolidated reef fragments (rubble) – the vessel grounding broke up the reef pavement, creating large quantities of unconsolidated reef fragments of various sizes (gravel, cobble to boulders). Movement of rubble fragments by waves and currents is thought to cause physical impacts to sessile biota and limit recruitment success.

3. Compaction – where the vessel hull contacted the seabed, it physically removed attached biota and compacted the reef substrate. As a result, sections of the grounding footprint were ground flat and have low rugosity.

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Title:

# Locality Plan

Figure: 1.1

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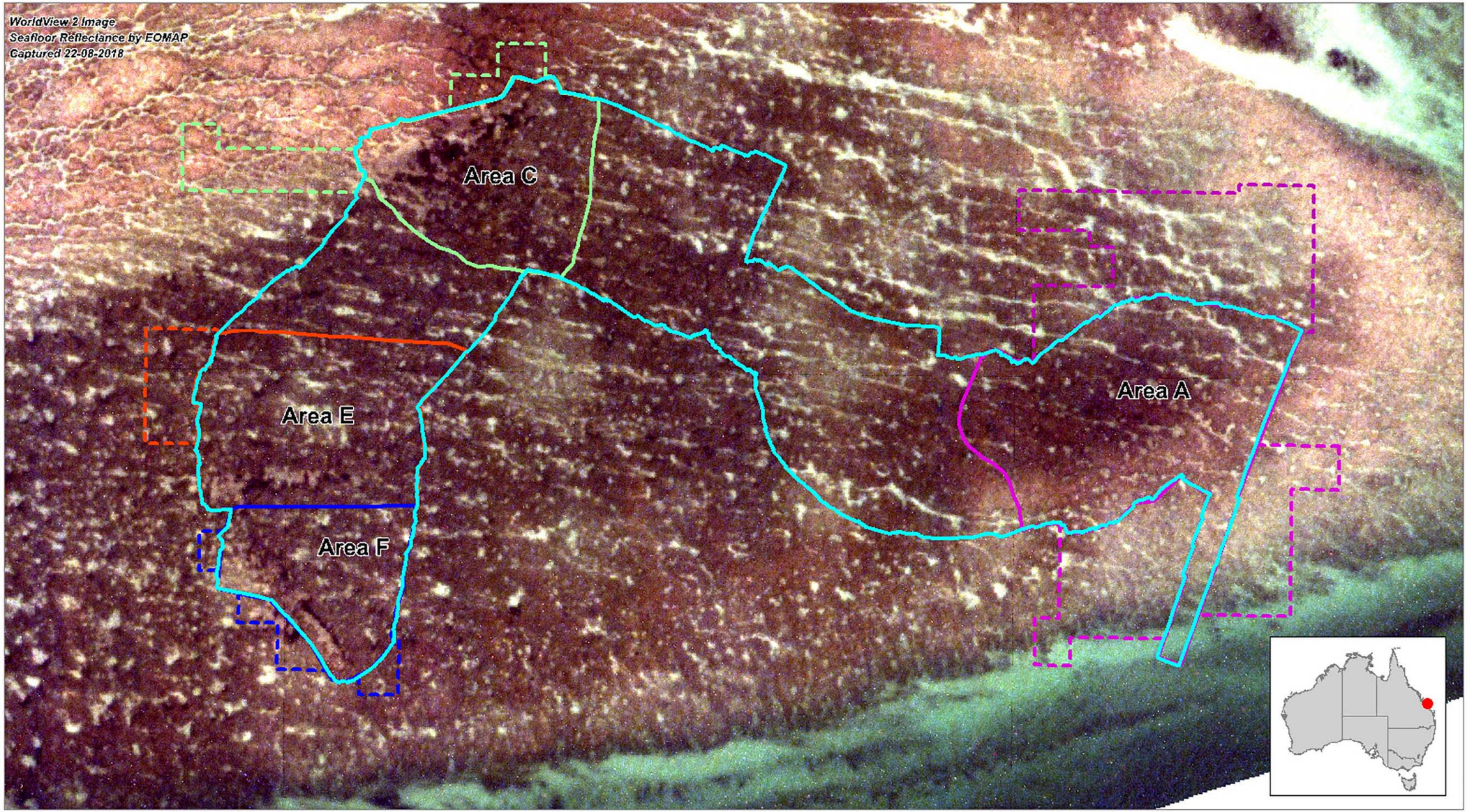
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Approx. Scale

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**LEGEND**

Grounding Footprint and Remediation Areas

Title:

# Priority Remediation Areas based on Costen et al. (2017)

Figure: 1.2

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Costen *et al*. (2017) reviewed existing information to develop a map of the grounding footprint and damaged areas. Four 'priority remediation areas' were defined based on the type and magnitude of physical damage and contamination (Areas A, C, E and F). These areas and potential areas of concern outside of the footprint (dashed lines) are shown in Figure 1.2.

Advisian undertook systematic surveys of sediment contamination and physical damage at the four the priority remediation areas as a part of Stream 1 (Neale and Boylson 2019). Sediment quality analyses focussed on the main contaminants of potential concern (COPC), namely organotins and a suite of metals/metalloids. The organotin tributyltin (TBT) was the main tested COPC to exceed default sediment guideline values (ANZG 2018), with the highest concentrations located at area A and progressively lower concentrations in areas C and E/F. Outside of the ship's path, TBT was detected west of the priority remediation areas (typically below guideline levels), and no TBT was detected east of the priority remediation areas.

Visual and acoustic surveys (Neale and Boylson 2019) focused largely on the presence of rubble as an indicator of physical damage. Unconsolidated rubble appeared to have moved in a westerly direction since the grounding incident and has affected habitat on the shoal beyond the grounding footprint and filled natural depressions within, and west of, the original priority remediation areas. Updated priority areas for remediation from Neale and Boylson (2019) are shown in Figure 1.3.

Modelling of tidal vectors and velocities across the shoal shows that flood and ebb tide vectors run essentially east-west at similar velocities (BMT 2019). Spatial patterns in contaminants and rubble movement suggest a net unidirectional (westerly) movement. This indicates that prevailing south-east to easterly sea states were likely more influential than bi-directional tidal currents in redistributing rubble and contaminants from the grounding footprint.

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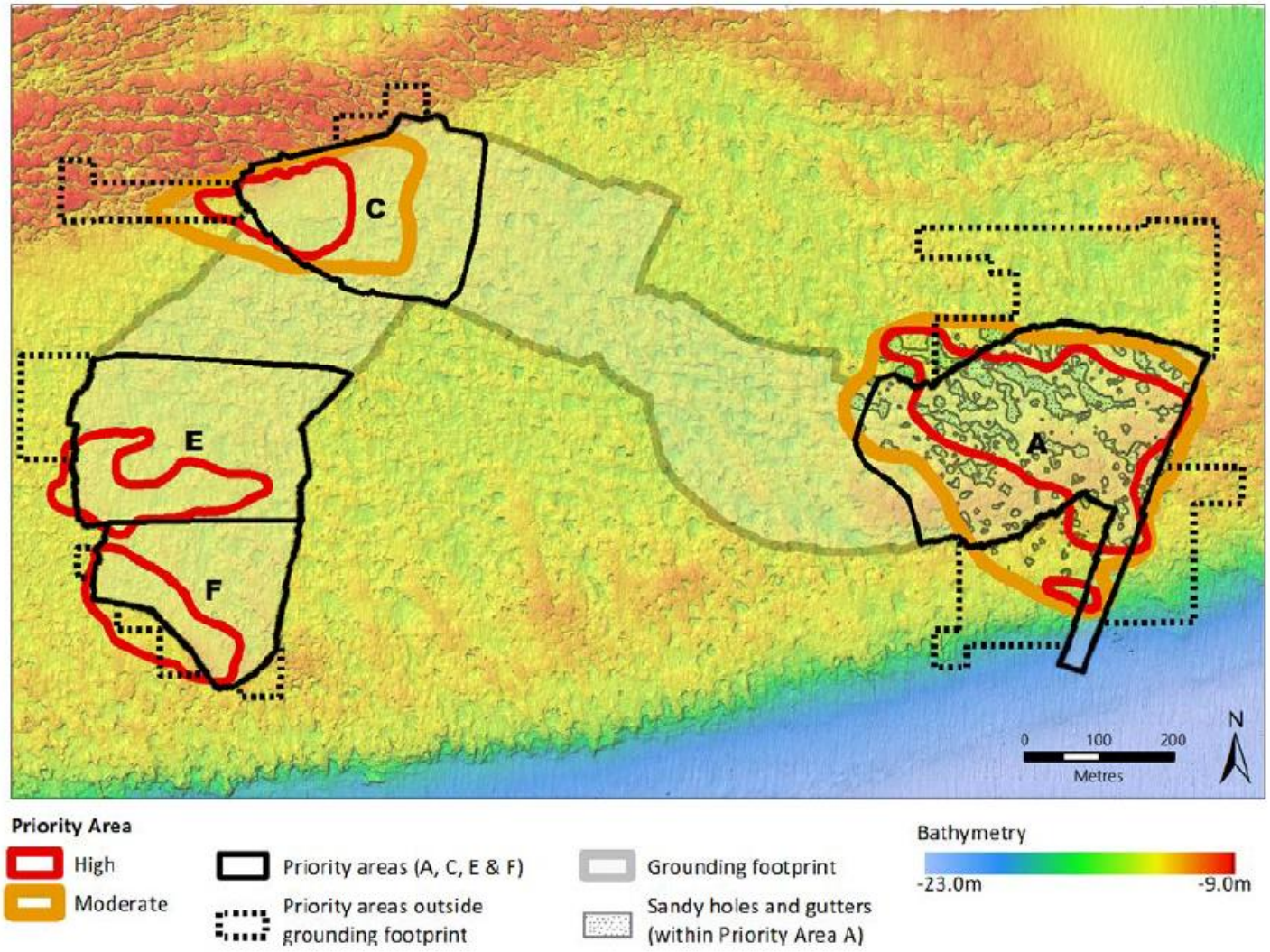



Figure 1.3 Revised Priority Areas for Remediation (Neale and Boylson 2019)

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# 2 Monitoring Program Design and Approach

## 2.1 Assumptions and Limitations

The process of developing the monitoring program (i.e. developing objectives, indicator selection, survey design and analyses) considered what was known about the objectives and characteristics of the remediation program. At the time of monitoring program development, the following was known:

- The harmful processes associated with ship grounding, i.e. contamination by AFPs, compaction and rubble formation (see Section 1.2). Indicator selection was informed by this information.
- The location of impacted areas and the Reef Authority's broad 'priority' remediation areas, which informed the selection of monitoring locations.

There were, however, many aspects of the remediation program that were undefined at the time of monitoring program development (i.e. remediation methodology, specific locations/sites to be remediated, remediation targets etc.). This presented a risk of misallocation of sampling effort during environmental monitoring, particularly during the pre-remediation baseline surveys (e.g. sampling conducted in areas that end up not being remediated, or insufficient sampling effort in areas ultimately targeted during remediation etc.). In lieu of specific information on remediation targets and strategies, the following assumptions were adopted in the development of the monitoring plan:

- Remediation will occur at one or more of the priority remediation areas (A, C, E/F).
- Remediation activities may consist of substrate removal (e.g. dredging or vacuuming), substrate capping (e.g. cementation), stabilisation through re-profiling, or augmentation such as the placement of materials to increase rugosity and promote natural recolonisation.
- Area A had the highest levels of AFP contamination, with the largest proportion of samples exceeding default sediment quality guideline values in ANZG (2018). Area A was therefore most likely to be targeted for contaminant management, such as substrate removal or capping.
- Areas C and E/F had lower levels of contamination and were more likely to undergo remediation activities designed to stabilise rubble and/or increase rugosity (i.e. benthic structural complexity).
- Remediation activities would be confined to the priority areas within the grounding footprint. High-impact areas within the priority areas defined by Costen *et al*. (2017) had the highest likelihood of being remediated.

The grounding footprint is extensive, and the types and magnitude of impact (contamination, physical disturbance) varied across multiple spatial scales. For example, spatial patterns in AFP contamination were variable at scales measured in centimetres to 100s of metres, which would require very high levels of sampling effort to provide precise estimates of concentrations across the entire grounding footprint. The monitoring program was designed to provide broad spatial coverage across the priority remediation areas as practicably as possible given the assumptions, logistical constraints (discussed in Section 2.3) and scope of the project.

## 2.2 Monitoring Objectives and Null Hypotheses

The broad aim of the Stream 3 Environmental Monitoring Program was to:

*"Assess the extent to which the remediation project has been effective at supporting natural recovery, including considering whether the project's activities have negatively impacted natural recovery on Douglas Shoal."*

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The key goals of the remediation works were to protect and enhance environmental values at the grounding site, while not causing unintended negative consequences outside the direct remediation footprint. Based on this, the specific objectives of the Stream 3 Environmental Monitoring Program were to:

- Measure sediment AFP contamination levels before and after remediation to assess the effectiveness of remediation works.
- Measure the cover of epibenthic biota and abiotic benthic substrates (sand, gravel, pavement) before and after remediation to assess their response to the remediation activities.
- Undertake seafloor mapping using acoustic techniques before and after remediation to assess the effectiveness of remediation works at addressing loose rubble, substrate compaction and loss of rugosity.

The impact hypotheses to be tested were:

1. The bed profile/rugosity and spatial extent of unconsolidated sediment in the remediation areas will not change between the baseline and post remediation survey events.
2. There will be no differences in AFP derived sediment contamination between the baseline and post remediation survey events, and this will be consistent between test and reference locations.
3. There will be no differences in epibenthic and reef fish communities between the baseline and post remediation survey events, and this will be consistent between test and reference locations.
4. There will be no differences in concentrations of COPCs in the tissues of fish, invertebrates and macroalgae between the baseline and post remediation survey events, and this will be consistent between test and reference locations.

## 2.3 Environmental Conditions Considered in the Program Design

Douglas Shoal is exposed to prevailing weather conditions, which has implications for both the monitoring design (e.g. site selection) and the ability to conduct safe and informative monitoring. Effective environmental monitoring and interpretation relies on an understanding of natural gradients, confounding processes, as well as the intensity, duration, and geographical extent of the putative anthropogenic impacts to be assessed.

The extent of contamination prior to remediation was mapped by Advisian (Neale and Boylson 2019) and spring tidal current vectors were modelled across the shoal by BMT (2019). The adopted design considers ebb and flood tide movement on the lower terrace, and the potential for tides and sea-state to remobilise sediment onto adjacent high-quality habitats on the upper terrace. Understanding the potential extent of the remediation impacts (e.g. direct impacts and plume impacts) is of similar importance, in contextualising the potential degree of spatial remediation impact, within the larger historic impact.

Douglas Shoal also supports a variety of benthic assemblages, each with differing sensitivities to light limitation, suspended sediments and contaminants. The low-relief terrace typically has less living coral than the slightly raised area to the south-east of the grounding site, and the shallower high-relief terrace north of the grounding site. Further east in deeper waters of the shoal, the reef becomes less contiguous, with unconsolidated sediments increasingly more common. Thus depth, wave and current exposure, contact with unconsolidated sediment, and the existing mosaic of disturbance (both natural and anthropogenic) were key considerations for site selection.

Further, the exposure of the shoal, together with its tidal environment, limits diver-based sampling to neap tide periods only. Therefore, field assessment blocks (within each survey campaign) were

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designed to be achieved within 5–7-day tide windows. Some study components (water quality and biota assessments) were performed without divers and were less tidally constrained.

## 2.4 Indicator Summary

Monitoring indicators were selected to encompass both stressors and ecosystem receptors in accordance with the SMART framework of UNDP (2009) and the national water quality management framework (ANZG 2018). Table 2.1 presents the selected indicators which considered the monitoring objectives, impact hypotheses, and expected types of remediation activities. Detailed sampling and analysis methods are presented in Section 4, with the overall approach summarised below.

To measure spatially explicit physical changes in Douglas Shoal, acoustic (multibeam and sub-bottom) sampling methods were used to rapidly acquire detailed topographical and habitat maps across the entire low-relief terrace to define areas of reef, rubble and sand habitats, as well as habitat rugosity. Three dimensional mosaics of the seafloor in representative parts of the remediation areas were produced, providing easily relatable communication and monitoring tools.

Spatially explicit data were complemented by location-based monitoring of epibenthic communities (underwater video transects), water and sediment quality, fish communities (baited remote underwater videos), and AFP markers in fish, invertebrates and algae tissue. Water quality and tissue contamination bio-markers were measured and compared against relevant guideline values. Changes in benthic communities, fish communities (BRUV data), and sediment quality were assessed in a before-after / control-impact (BACI) framework.

For AFP markers in biota tissue, note that marine organisms can accumulate AFP derived chemicals from water, sediment and food. It is important to understand the occurrence of these chemicals in the tissues of biota, especially species consumed by humans, and representative sessile biota mostly likely to be exposed to contamination, namely ascidians (the most abundant sessile filter-feeders) and macroalgae (the dominant biota group on Douglas Shoal).

Each indicator has different response rates (to remediation or other temporal effects), and therefore it was not necessary to sample every indicator on each survey. Likewise, it was necessary to monitor every indicator at every location. Table 2.2 illustrates which indicators were designated for sampling during each survey event, and at which locations.

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Table 2.1 Summary of Indicators and Relevant Impact Hypotheses

| Indicator Class | Indicator | Methods and Measured Parameters | Relevant impact hypothesis (Section 2.2) |
|---|---|---|---|
| Stressor (physical and chemical) | Seabed volume removed (proxy for volume of contaminated material removed) | • High intensity multibeam imagery, change in seafloor elevation<br>• Output specifications from remediation contactor | No change in physical<br>No change in contaminants |
| Stressor (physical) | Rubble and compaction | • High intensity multibeam imagery<br>• Sub-bottom acoustic (rubble depth) | No change in physical |
| Stressor (physical) | Reef physical structure | • High intensity multibeam imagery<br>• 3D mapping and 3D image orthomosaics | No change in physical |
| Stressor (physio-chemical) | Water quality parameters | • Physio-chemical stressors (in situ) - pH, TDS, turbidity, temperature, dissolved oxygen<br>• Physio-chemical stressors (analytical) – TSS<br>• Toxicants - trace metals/metalloids, TBT and other organotins | No change in contaminants |
| Stressor (physio-chemical) | Sediment quality parameters | • Physical - Particle size distribution<br>• Toxicants - trace metals/metalloids, pyrethroids, phenoxy acid herbicides, multiresidue screen (75 pesticides incl' 21 OPs + atrazine, simazine), TBT and other organotins | No change in contaminants |
| Ecosystem receptor | Epibenthic assemblage structure | • Photo-quadrat analysis for epibenthic biota | No change in biological communities |
| Ecosystem receptor | Fish assemblage structure | • Baited remote underwater video (BRUV) | No change in biological communities |
| Ecosystem receptor | Biomarker | • Tissue analysis – fish, algae, and invertebrates (metals, mercury + optional subset of additional contaminants) | No change in tissue concentrations |
| No class | Other | • Opportunistic observations<br>• Other works related impacts | All |

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## 2.5 Monitoring Program Design

The broad monitoring design adopted a BACI (before-after-control-impact) type design, with the inclusion of multiple surveys both before and after the remediation, together with multiple tiers of reference locations (nearfield reference locations and far-field reference locations).

### 2.5.1 Spatial Design

Apart from acoustic assessments of the seafloor, the monitoring program was largely contained within dedicated monitoring locations. Monitoring locations differ to the priority remediation areas (Costen *et al*. 2017) and these differences relate to the need for Stream 3 monitoring to:

- Capture putative changes occurring inside and outside of the grounding footprint
- Effectively and practically sample within realistic weather/tide windows
- Effectively monitor a range of possible remediation scenarios
- Consider the present distribution of contaminants and likelihood of remobilisation by remediation activities.

The arrangement of monitoring locations at Douglas Shoal and the far-field reference reef, Haberfield Shoal, is shown in Figure 2.1. Stream 3 monitoring locations were prefixed with a lower-case m to prevent confusion with priority remediation areas, as some of the locations are similar but subtly different, while others occupy completely new areas. Locations mA, mC and mE cover similar areas to priority remediation areas A, C and E, while locations mB and mD are completely different to priority remediation areas B and D and the latter areas did not receive any remediation effort. Locations at Haberfield Shoal served as regional references. Priority remediation areas E and F are considered collectively in this monitoring program as location mE, given the similar nature of impact, proximity and adjacency.

There were eight survey locations, which fell into one of three groups, considered as treatments in subsequent statistical analyses:

- **Remediation Locations** – aligning with three (3) priority remediation area locations at Douglas Shoal as shown in Figure 2.1 (i.e. locations mA, mC and mE).
- **Nearfield locations (not remediated)** – Three (3) locations positioned beyond the vessel grounding footprint and not within the Priority Remediation Areas (i.e. mB, mD, and mG). These locations will not be directly included in remediation works, but they encompass likely flood and ebb-tide impacts from remediation Area A, and ebb tide impacts from Areas C, E and F.
    - While the nearfield test location east of Area A is situated on slightly shallower, high-quality habitat, this location was chosen because it was unlikely to contain any existing contamination (based on data available at the time). Higher coral cover and less contaminated sediment was designed to assess the potential for ebb-tide impacts from remediation at Area A.
    - The nearfield test location mD between Area A and Area C served as a location on the low-relief terrace with potential to be affected by flood-tide plumes from Area A, and ebb-tide plumes from remediation works at Area C.
    - The nearfield test location mG, east of Areas E and F, was intended to cover ebb tide impacts from remediation works at area E/F.
- **Far-field reference locations** - Two (2) regionally relevant reference locations were located at Haberfield Shoal due to its similarities with Douglas Shoal including depth, geomorphology, apparent habitat similarity and size, and marine park zoning.

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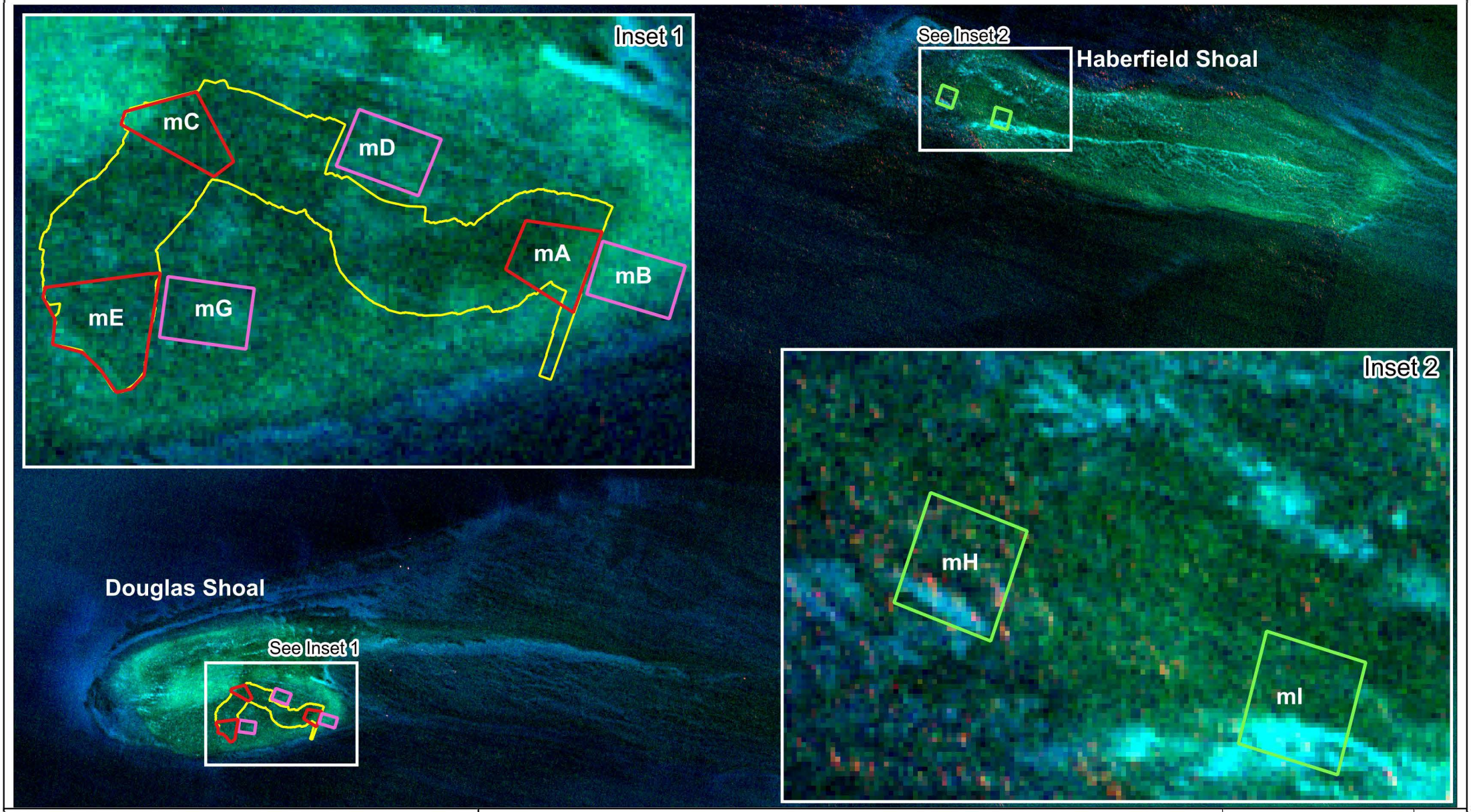
### 2.5.2 Survey Frequency

The survey schedule consisted of three 'before events' (spring 2019, autumn 2020, autumn 2023); during remediation (September 2023); and two post-remediation 'after' events (spring 2023 and autumn 2024). The full complement of indicators was not assessed in every event; some events (such as autumn 2020) were designed to account for seasonal variation in biological indicators, while other metrics such as bathymetry did not have a seasonal component and only changed measurably before and after remediation. The timing and spatial extent of the monitoring execution for each indicator is listed in Table 2.2:

Table 2.2 Indicators sampled each survey and location

| Indicator | Treatment | Event 1 Spring 2019 | Event 2 Autumn 2020 | Event 3 Autumn 2023 | Event 4 During | Event 5 Spring 2023 | Event 6 Autumn 2024 |
|---|---|---|---|---|---|---|---|
| Seabed volume removed: Acoustic and Diver surveys | Impact (remediated) | ✓ | - | | ✓- | | - |
| | Nearfield (non-remediated) | - | - | | - | - | - |
| | Reference | - | - | | - | - | - |
| Water quality | Impact (remediated) | ✓ | - | | ✓ | - | ✓ |
| | Nearfield (non-remediated) | ✓ | - | | ✓ | - | ✓ |
| | Reference | ✓ | - | | ✓ | - | ✓ |
| Sediment Quality | Impact (remediated) | ✓ | - | ✓ | - | - | ✓ |
| | Nearfield (non-remediated) | ✓ | - | | - | - | ✓ |
| | Reference | ✓ | - | | - | - | ✓ |
| Epibenthic Cover: Towed camera | Impact (remediated) | ✓ | ✓ | | - | ✓ | ✓ |
| | Nearfield (non-remediated) | ✓ | ✓ | | - | ✓ | ✓ |
| | Reference | ✓ | ✓ | | - | ✓ | ✓ |
| Metal Burden: Fish and algal tissue collections | Impact (remediated) | ✓ | ✓ | | - | ✓ | ✓ |
| | Nearfield (non-remediated) | ✓ | ✓ | | - | ✓ | ✓ |
| | Reference | ✓ | ✓ | | - | ✓ | ✓ |
| Fish (BRUVS) | Impact (remediated) | ✓ | ✓ | | - | ✓ | ✓ |
| | Nearfield (non-remediated) | ✓ | ✓ | | - | ✓ | ✓ |
| | Reference | ✓ | ✓ | | - | ✓ | ✓ |
| Rubble and compaction | Impact (remediated) | ✓ | - | | - | - | ✓ |
| | Nearfield (non-remediated) | ✓ | - | | - | - | ✓ |
| | Reference | - | - | | - | - | - |
| Reef physical structure: Acoustic and 3D models | Impact (remediated) | ✓ | - | | - | - | ✓ |
| | Nearfield (non-remediated) | ✓ | - | | - | - | ✓ |
| | Reference | - | - | | - | - | - |
| Other (e.g. incidental | Impact (remediated) | ✓ | ✓ | | ✓ | ✓ | ✓ |
| | Nearfield (non-remediated) | ✓ | ✓ | | ✓ | ✓ | ✓ |
| | Reference | ✓ | ✓ | | ✓ | ✓ | ✓ |

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**LEGEND**

- Ship Footprint

Monitoring Locations

- Near-Field
- Regional Reference
- Remediation

Title:

# Monitoring Location Nomenclature

Figure: **2.1**

Rev: **A**

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N

0 200 400 m
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0 1.5 3 km
Approx. Scale

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### 2.5.3 Replication and Analyses

The level of replication for each of the site-based indicators monitored is conceptually illustrated in Figure 2.2. For statistical analyses, comparisons among locations and treatments (i.e. remediation vs reference) were typically examined using generalised linear modelling (GLM) within a BACI framework (as appropriate to the structure of the data). Non-detects were considered as zeros. Datasets heavily skewed, and/or with large numbers of zero counts, were modelled using truncated Poisson, negative binomial, and beta-binomial GLM approaches in R.

Water quality samples and biotic contamination is assessed against the relevant Queensland water quality guidelines, ANZG (2018) and ANZFAC (2016). The level of compliance to guidelines is compared qualitatively among sites. Due to the movement of water across the site, movement of biota, limited sample sizes, and uncertainties regarding biological accumulation and degradation of contaminants in tissues, these indicators are not suitable for the BACI statistical framework.

The deployment of BRUV replicates were not recommended within 200 m of each other to avoid sampling overlap (Langlois *et al*., 2018). Therefore, three BRUV replicates were placed within the boundaries of each location for simultaneous hour-long deployments. Unlike the majority of BRUV studies which attempt to understand the effects of extractive industries (fishing) on fish communities (while controlling for the influence of habitat), this program sought to understand how changes in habitat (remediation) affected fish utilisation. Therefore, key response species for this assessment included site-attached and habitat dependent species, rather than species which are specifically targeted by fishers. Given the relatively small size of the test locations, non-independence (due to fish movement within the locations) was a key concern. Strategies to combat non-independence issues included short simultaneous baited deployments. Multivariate analyses of community composition were performed on BRUV data using PRIMER 7.

The remaining site-based indicators are assessed within the BACI framework. For epibenthic assemblages (coral and algal cover), the unit of replication is the photo-quadrat. Covering approximately $6m^2$ (2 x 3 m), each photo-quadrat has 25-point identifications. With 200 randomly selected photos from each location, this resulted in 5,000-point identifications per location, per event.

Changes in percent cover metrics are analysed through time using generalised linear modelling with Gaussian and negative binomial families as appropriate to the error structure of the data. Given its appropriateness in handling zero counts, threshold exceedance, strong performance in unbalanced designs and low-levels of replication, binomial regression was used to determine differences in sediment contaminant contaminations and particle sizing before after remediation.

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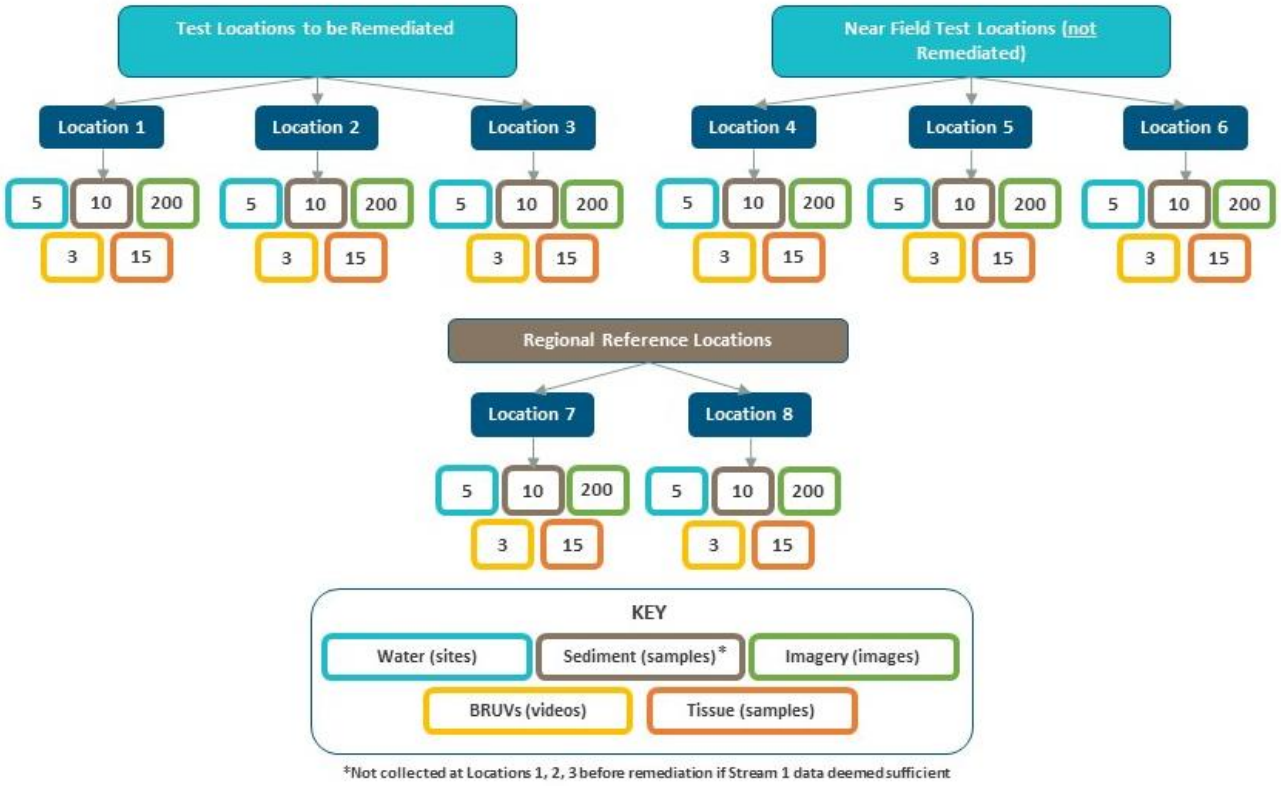



Figure 2.2 Conceptual schematic of spatial replication within a survey (indicators without spatial replication are not shown, such as broad coverage multibeam sonar)

# 3 Summary of Remediation Activities

In September 2023, Boskalis was engaged to remove contaminated material from remediation areas at Douglas Shoal using the 143 m long trailing suction hopper dredger “Gateway”. The remediation work began over the most contaminated site (location mA), without overflow from 5-6 September 2023. This was expected to result in minimal water quality effects, compared to operating with overflow, which was used at Areas mC and mE from 15:00 on 6 September 2023 to 10:00 on 8 September 2023. Material was removed without the use of a cutting head and taken to Gladstone for placement. Boskalis estimated that 544.2 $m^3$ were removed from the area covered by location mA, 1.098.3 $m^3$ were removed from mC, and 1,794.5 $m^3$ were removed from the area covered by location mE.

## 3.1 Remediation Extent and Observed Changes

The coverage of the vacuum head track was most extensive at locations mC and mE and was visible in Sentinel-2 satellite images collected before and after the remediation period (Figure 3.1). Three large white areas of seafloor corresponded to the position of the dredger and dredge head tracks (Figure 3.1). The second “after” image collected on October 21, 2023 showed that the white areas visible on September 19 had darkened and may have been covered in algae or some other biological covering across the seafloor (Figure 3.1).

BMT measured the overflow plumes and conducted water profiling before, during, and after the overflow period (BMT 2024). A series of six water quality instruments were deployed around the remediation area (Figure 3.2); four were operated by Vision Environment providing hourly telemetered data and two were BMT instruments recording at 3 min intervals. One of the telemetered instruments was located at Habberfield Shoal.

An unmanned aerial vehicle (UAV) was flown above the overflow plume and used to map the spatial extent of the observable plume and compare that with turbidity readings made within the plume. Water quality monitoring showed that overflow plumes were of low concentration; up to12 NTU within metres of the overflow and only detectable within 200 m of operation (BMT 2024). Therefore the zone of influence (ZOI) was estimated to be contained within a 200 m radius of the work area (Figure 3.2).

Turbidity time series from the six instruments showed very little evidence of an increase in turbidity associated with the overflow period (shaded grey in Figure 3.3). Most variation was consistent with that of optical measurement. Each of the instruments had slightly different ‘baseline’ readings, with the highest being mA which was reading just below 1 NTU for the duration of the campaign with occasional reading varying from just above 1 NTU to zero. The instrument at Habberfield Shoal showed a similar pattern to the mA instrument with more noise in the post- remediation period. The instrument at mC had a non-overflow baseline of approximately 0.25 NTU and did not show an elevated turbidity within the remediation period compared to before and after periods. The mE instrument showed the most variability in turbidity signal during the overflow period compared to before and after periods.

The instruments recording 3-minute intervals at mD and mG also did not contain any large increases in turbidity during the overflow period, with only a slight signal 0.1 to 0.75 FNU recorded during overflow at the closest instrument (mG).

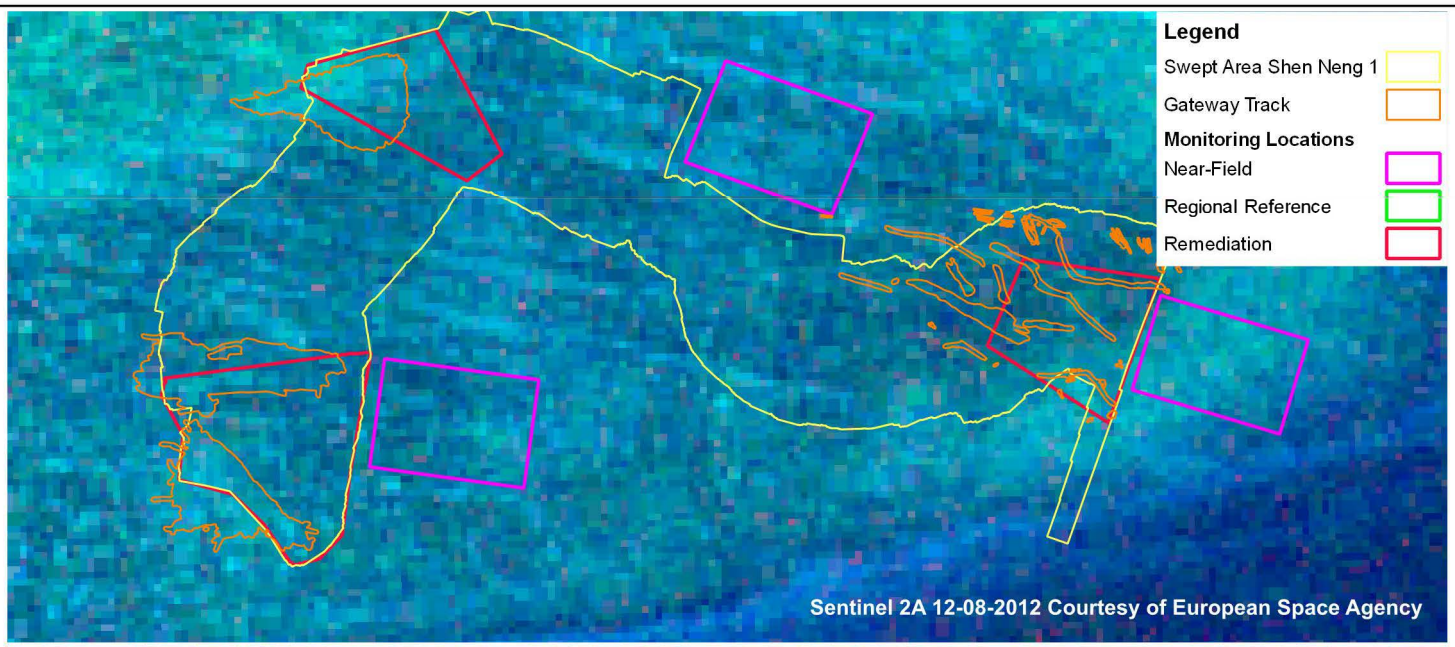
The water quality assessment detected no TBT in the water column during the remediation. Concentrations of other contaminants were typically below the LOR except for arsenic and barium. No metals/metalloids exceeded ANZG (2018) 99% species protection DGVs, except for one sample from mD that returned higher copper values, and two samples (mA and mE) that returned higher chromium values.

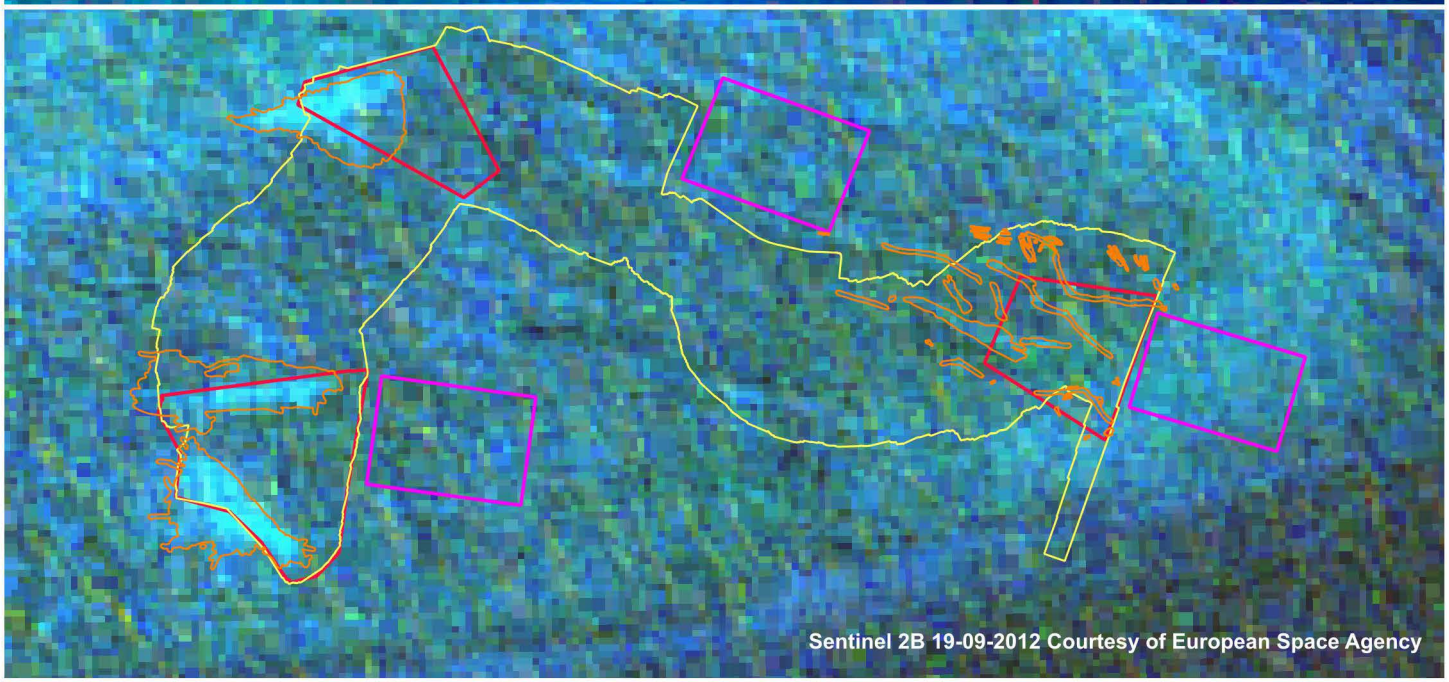
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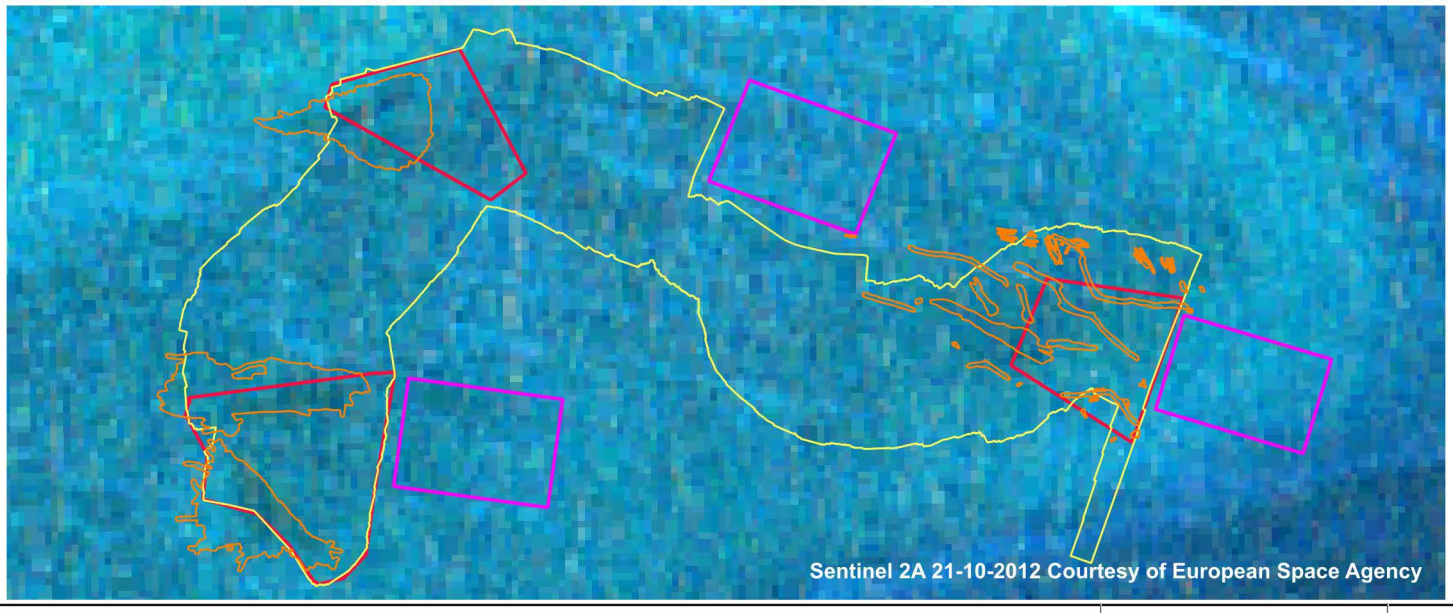
This indicates that site-based water quality values largely complied with the 99% species protection DGVs at monitoring locations during the overflow period, but metal contaminants were detected more frequently at Douglas Shoal than at Habberfield Shoal.

The survey demonstrated that the remediation overflow produced a visible plume that extended up to 200 m outside of the grounding footprint.  The overflow campaign was short-lived (3 days), such that the plume was low in concentration and dispersed rapidly.

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Title:

# Dredger Vacuum Head Tracks shown with Sentinel-2 Imagery Before and After Remediation

Figure: 3.1

Rev: A

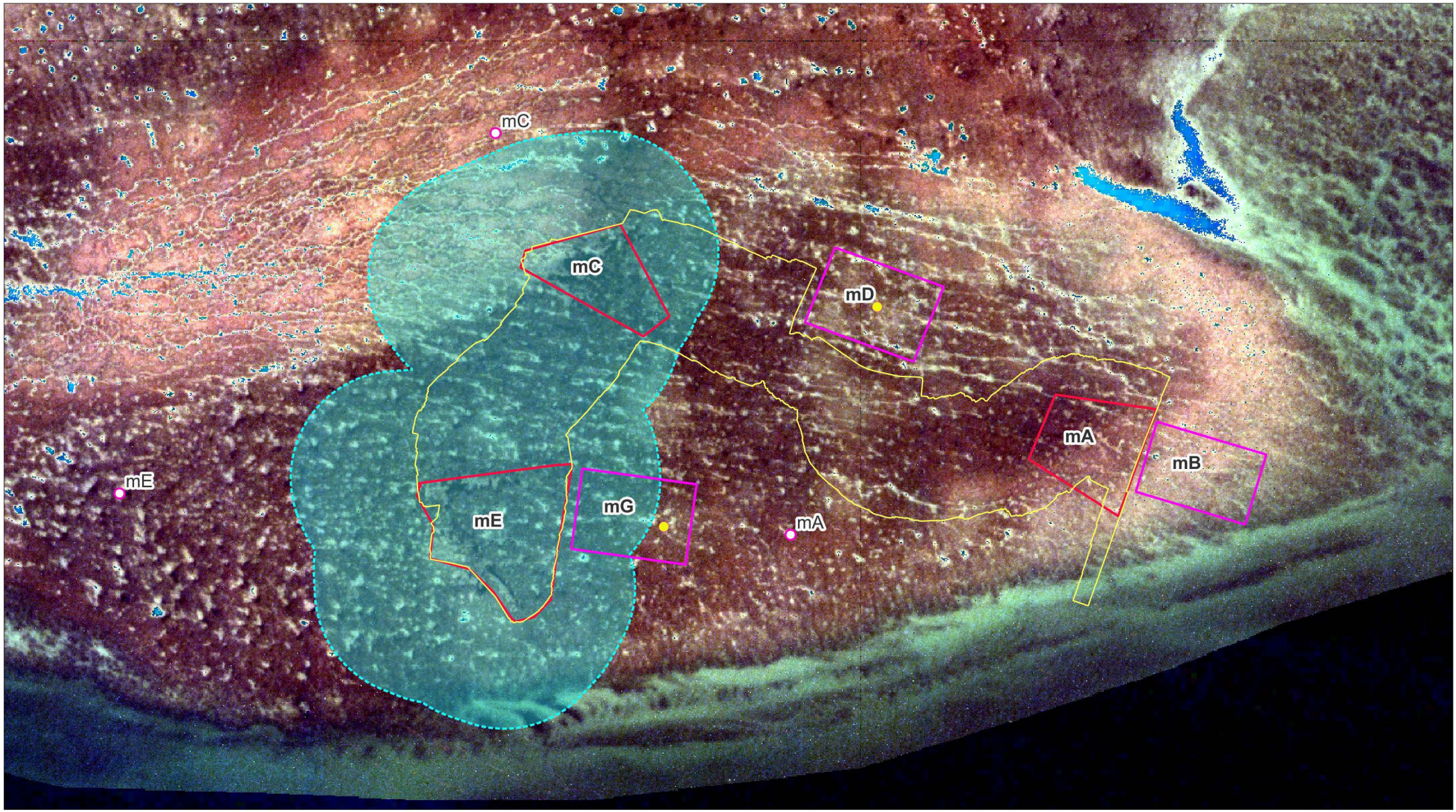
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**LEGEND**

EOMAP SSR Imagery 22-08-2018

Overflow Plume Zone of Influence

Deployed Instruments

BMT Instrument

Vision Environment

Monitoring Locations

Near-Field

Regional Reference

Remediation

Swept Area Shen Neng 1

Title:

# Estimated Overflow Plume Zone of Influence

Figure: 3.2

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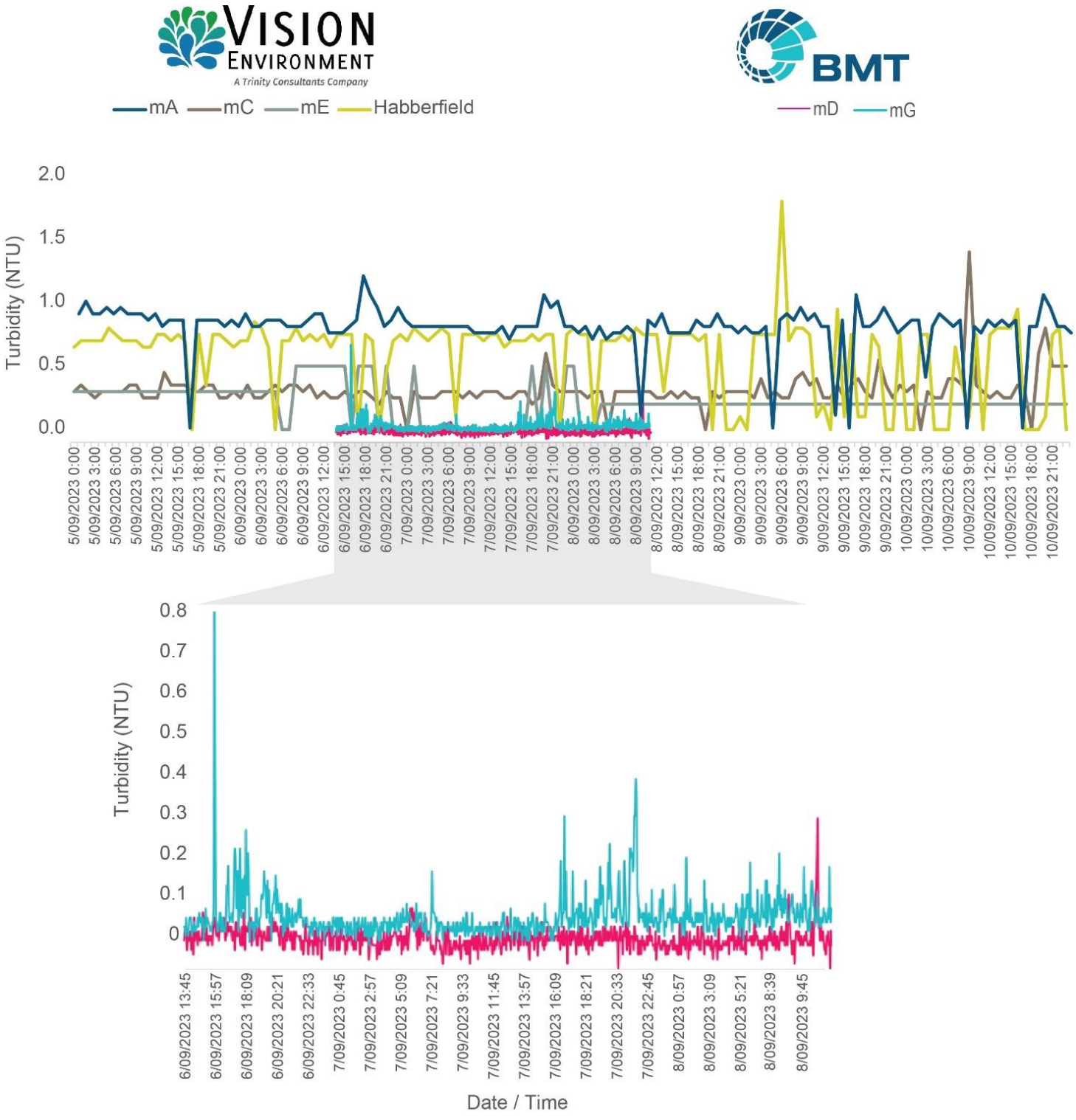



Figure 3.3 Turbidity time-series for the six instruments shown in Figure 3.2. Grey shading indicates the dredging overflow period

# 4 Detailed Monitoring Methods

## 4.1 Field Sampling

The following sections set out the sampling methodology employed throughout the monitoring program. Note that maps displaying the sampling locations primarily focus on the post-remediation sampling locations. Maps showing the pre-remediation sampling locations are available in the pre-remediation monitoring report (BMT 2020).

### 4.1.1 Epibenthic Cover

Downward facing images (photo quadrats) were collected from locations along camera transects running east-west into the prevailing current. Two-hundred images were randomly selected for each location from the series of images collected during the tow. The positions of these camera tows are shown in Figure 4.2 for the post-remediation surveys (events 5 and 6).

Imagery of the seafloor was collected via remote downward-facing cameras collecting 12 mp still imagery at one second intervals, guided by forward facing cameras (Figure 4.1). Each image covered approximately 6 $m^2$ (2 x 3 m). In events 1-3 the camera array was towed above the seafloor by a 25 kg winged downrigger to reduce layback behind the vessel under tow. Imagery was time-synchronised and positioned using an onboard dGPS with sub-metre accuracy. This produced an estimated final accuracy of within 5 m for tows with the current, and within 15 m for tows against the current due to camera layback. In events 5 and 6, the camera array was made lighter and towed at slower speeds with the current. This produced a smaller layback and estimated final accuracies of all photo quadrats in events 5 and 6 are within 5 m of true position.

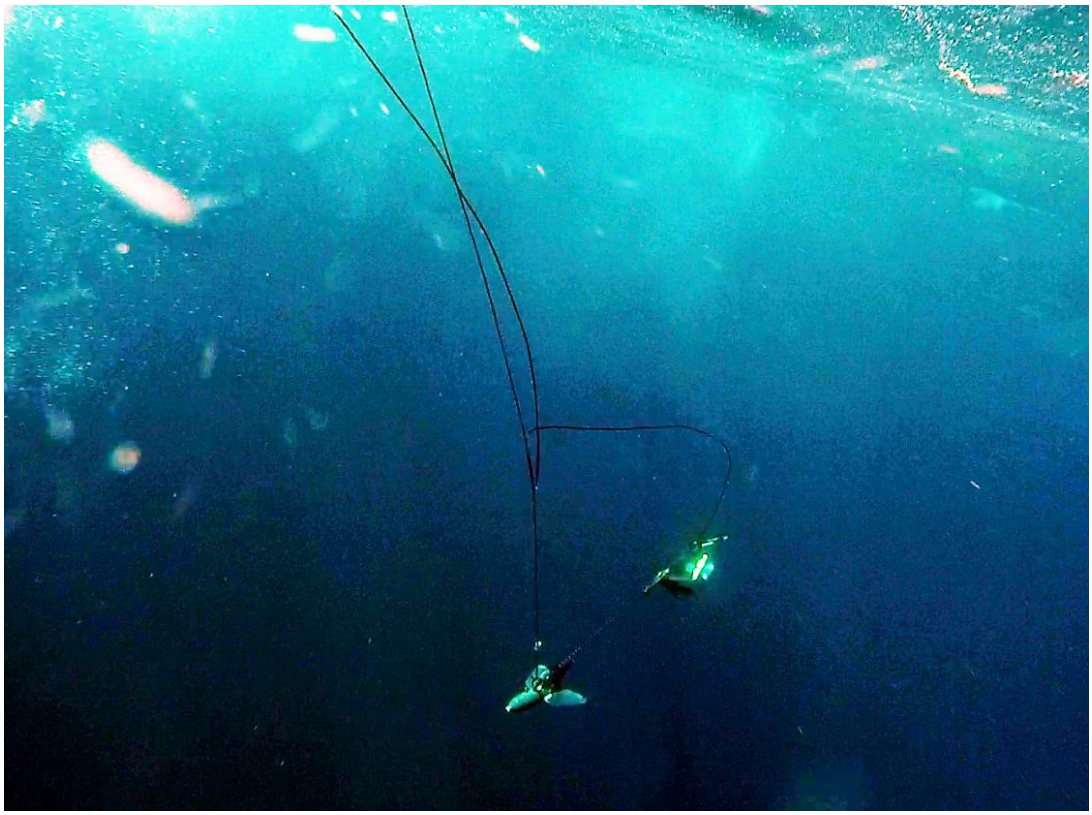
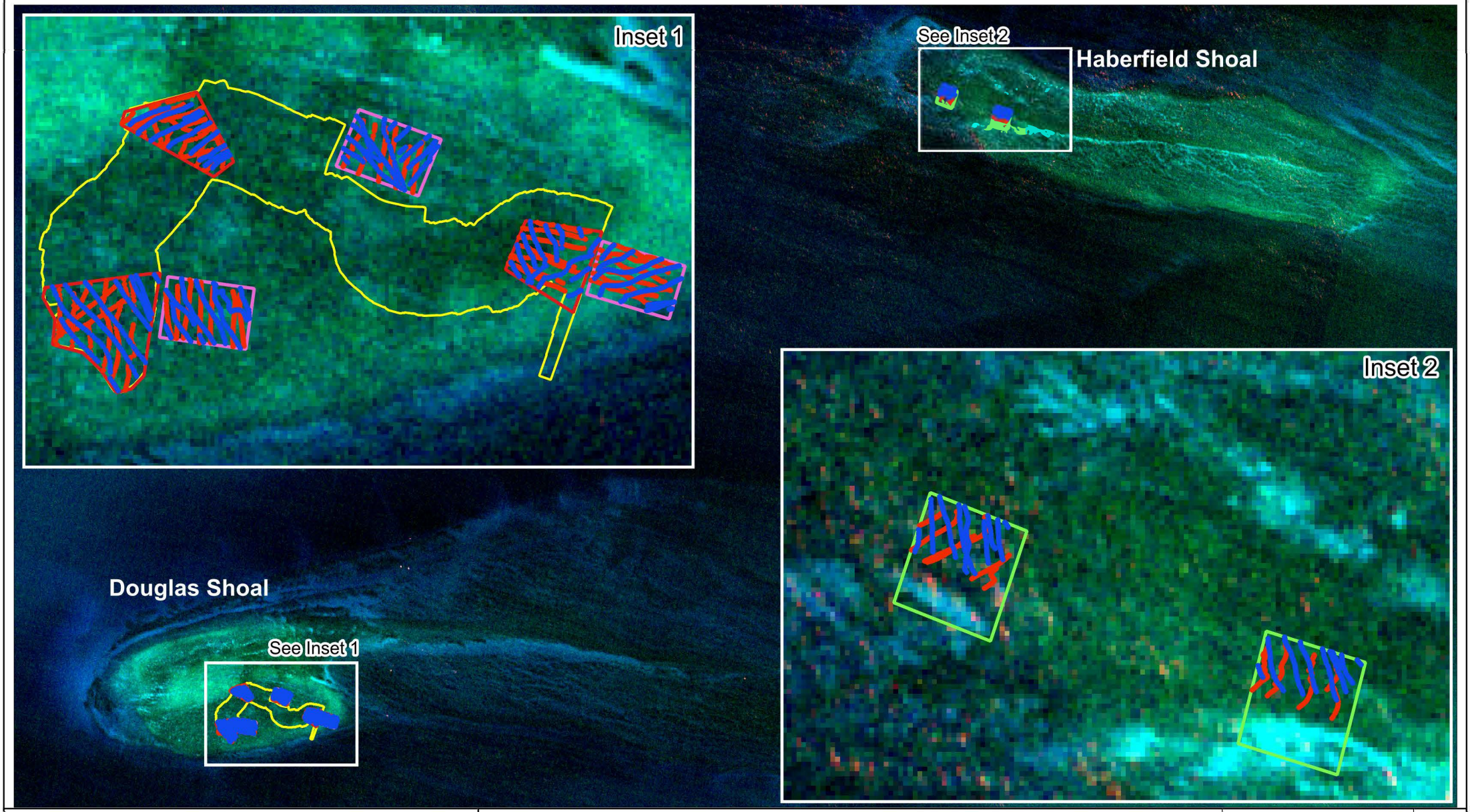


Figure 4.1 Towed camera array in operation at Douglas Shoal

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**LEGEND**

- Event 5
- Event 6

**LEGEND**

- Ship Footprint

Monitoring Locations

- Near-Field
- Regional Ref
- Remediation

Title:

# Indicative Towed Camera Transects

Figure: **4.2**

Rev: **A**

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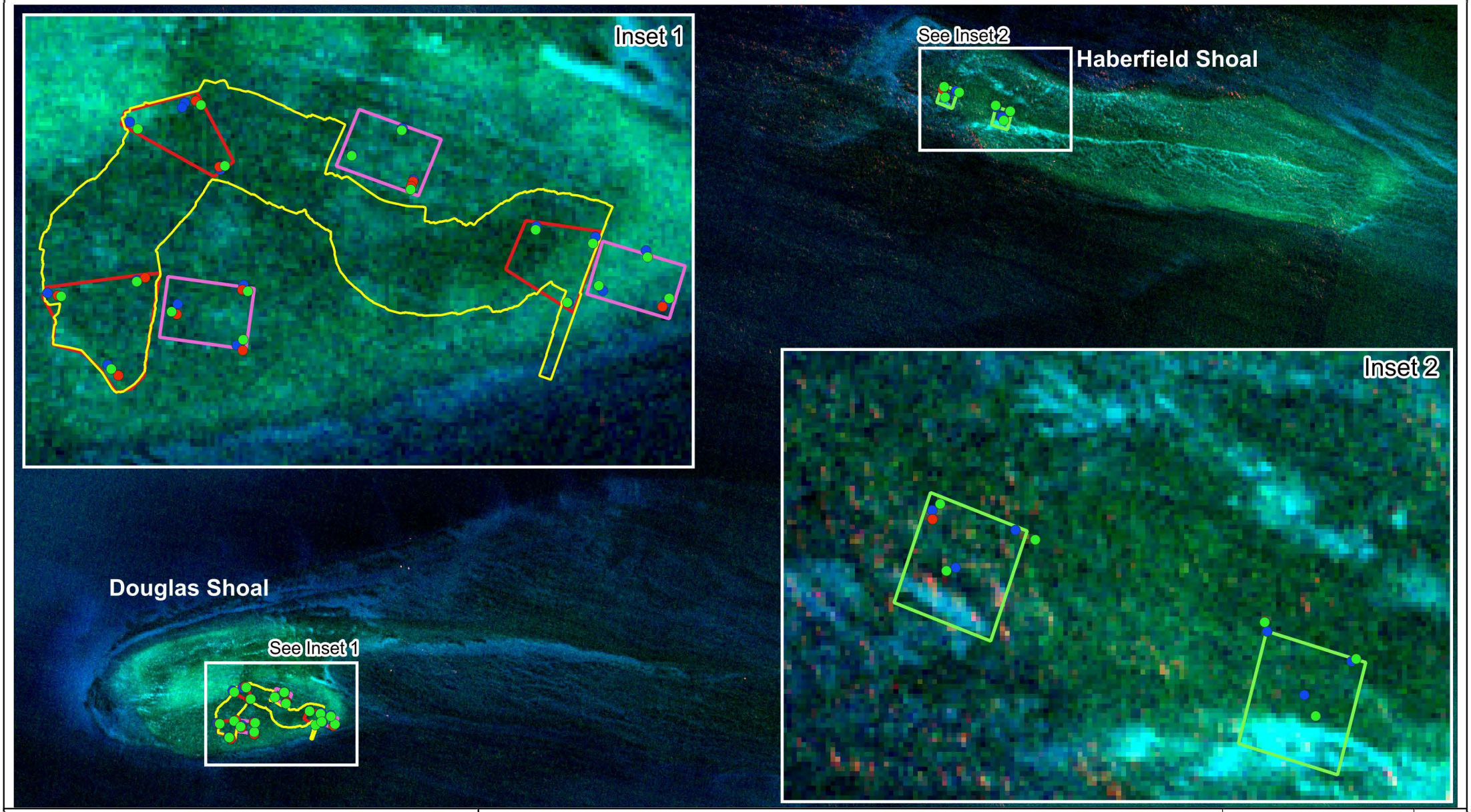
### 4.1.2 Fish Communities

Three baited remote underwater video cameras (stereo BRUVs) capturing 1080 p HD video, were deployed for a 1 hr period at three sites simultaneously within each location. On each BRUV, the stereo cameras were separated by 70 cm, and a bait arm was baited with 500 g of pilchards. The stereo-camera unit was mounted to a 25 kg flat-based steel frame with surface floats (Figure 4.3). The arrangement of sites where BRUVs were deployed within each location is shown in Figure 4.4. BRUV sites were arranged to provide maximum distance between replicates within each location.



Figure 4.3 Synchronisation of cameras and final checks prior to the deployment of a stereo BRUV

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**LEGEND**

- Event 3
- Event 5
- Event 6

**LEGEND**

- Ship Footprint

Monitoring Locations

- Near-Field
- Regional Ref
- Remediation

Title:

# BRUV Sites within Locations

Figure: **4.4**

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### 4.1.3 Tissue Sampling for Contaminants - Fish

Five fish samples were analysed from each location during each baseline survey. Fish were collected with hook and line (Figure 4.5), brought to the surface, pithed and placed individually into fish tubs. Samples consisted of a limited number of common recreationally caught species including tuskfish (C. *venustus*), iodine bream (G. *audleyi*), serranids, red-throated emperor (*L. miniatus*) and lutjanids. Fish tissue sub-samples of 200-250 g were taken from fillets and placed into labelled ziplock bags.

Sub-sampling was done by a deckhand or scientist using at least one nitrile glove worn for handing the fillet, while the knife hand was gloved or un-gloved depending on operator preference. Sub-samples were taken with a stainless-steel filleting knife. The filleting area, knife and fish tubs were washed with Decon-90 and rinsed with seawater between subsampling individual fish.



Figure 4.5 Line fishing (left) to collect reef fish, and tissue sub-sampling (right)

All fish collected were assigned an identification label (site, species etc.), photographed, weighed to the nearest gram, and their total length measured. Tissue sub-samples were logged using standardised pro-forma, collecting the following information:

- Project name and number
- The name of the sample collector
- Date and time of sampling
- Field sample number
- Location (waypoint number)
- Length and weight
- Specimen observations, injuries, and general comments pertaining to the sample.

Samples were frozen and transported by BMT to the National Measurement Institute (NMI) for analysis. During transport, samples were stored on ice until delivered to the laboratory. Muscle tissue samples were analysed for concentrations of copper, zinc, and TBT. Photos of all captured fish are shown in Annex A.

### 4.1.4 Tissue Sampling for Contaminants – Invertebrates and Algae

Divers collected ascidians and macroalgae haphazardly from within each of the monitoring locations (Figure 4.7). Five invertebrate and five macroalgae samples were analysed from each location. Sub-

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sampling of macroalgae from larger specimens was conducted while wearing nitrile gloves. The work area was washed with Decon-90 and rinsed with seawater between sub-sampling.

During event 1 in spring 2019, all macroalgal specimens were *Dictyopteris* sp.; selected due to a potential association between *Dictyopteris* sp. and rubble associated with the grounding footprint. However, due to the virtual absence of this taxon during autumn 2020, specimens of *Dictyota* sp. were collected instead. *Dictyota* sp. was collected preferentially in all subsequent events. However, macroalgae was extremely scarce in events 5 and 6, particularly at location mB, and it was unable to be sampled in sufficient quantities for analysis. Where *Dictyota* was scarce, other macroalgae taxa were sampled.

Holothurians were originally intended to be the invertebrate taxon selected to investigate bioaccumulation, due to their habit of feeding of sediment and relative abundance elsewhere in the region. However, due to the relative absence of holothurians at all locations except mI, holothurians were abandoned in favour of ascidians. Large ascidians resembling *Polycarpa* spp. were selected due to their abundance at all locations, sessile nature, and potential to accumulate metals and TBT through filter feeding. Macroalgae and other sessile fauna were removed from the ascidian before tissue collection. In events 1, 2 and 5, ascidians were submitted to NMI whole, however, dissections were done in the field during event 6 at the request of NMI.  For dissections, the tunicate was cut away between siphons and the soft parts were kept separate from the tunicate in separate bags within the sample bag.



Figure 4.6 Commercial diver and attendant preparing to collect Algae and Ascidians

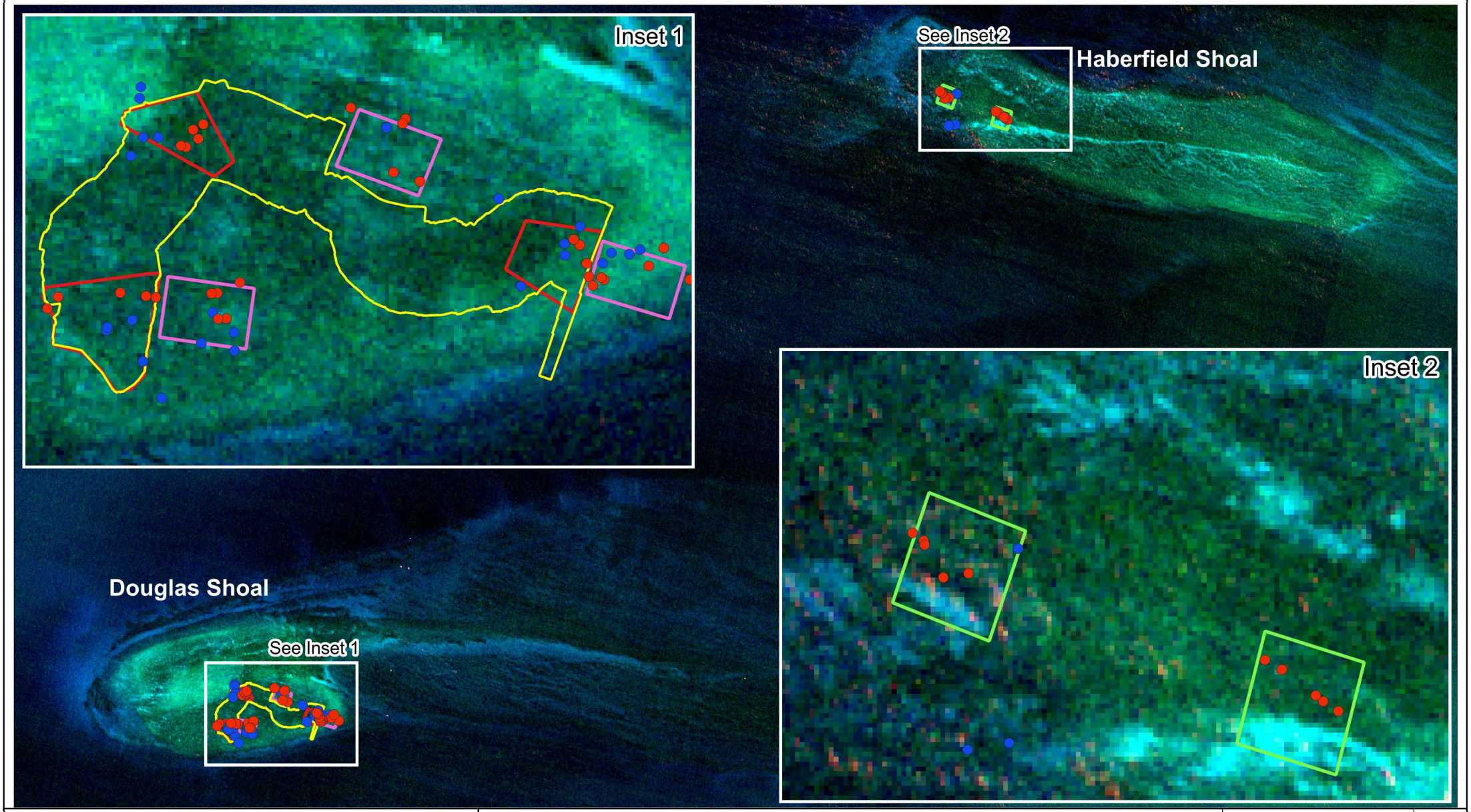
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All samples were assigned an identification label (site, species etc.) and photographed. The following information was collected for each tissue sample:

- Project name and number
- The name of the sample collector
- Date and time of sampling
- Field sample number.

Samples were frozen and transported by BMT to the National Measurement Institute (NMI) for analysis. During transport, samples were stored on ice until delivered to the laboratory, for analysis of copper, zinc, and TBT concentrations.

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**LEGEND**

- Event 5
- Event 6

**LEGEND**

- Ship Footprint

Monitoring Locations

- Near-Field
- Regional Ref
- Remediation

Title:

# Biota Tissue Sample Locations

Figure: **4.7**

Rev: **A**

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### 4.1.5 Water Sampling

At each location, five water samples were collected for laboratory analysis using a van Dorn sampler (Figure 4.8). For each sample, the sampler was lowered to 1 m from the seafloor while drifting through the location before the messenger was deployed to close the apparatus. The van Dorn sampler was operated by a scientist wearing protective gloves, while a dedicated water sampler handling syringes, water, and bottles wore nitrile gloves. Nitrile glove changes occurred between locations. The sampling apparatus was initially washed in Decon-90, then triple rinsed between replicates. Dissolved metal samples were filtered through a 0.45 µm membrane. The time, date, sample number and location were recorded before refrigeration and storage of the sample.

QA/QC samples consisted of the following:

- A rinsate blank (testing the supplied milliQ water)
- A field blank (testing the rinse water from the apparatus)
- A trip blank (left open for a period on board to test for vessel contamination)
- Lab duplicates at 10% of locations (4 replicates)
- Lab triplicates at 5% of locations (2 replicates).

At each sampling position, in-situ water quality measurements were also collected using a YSI Pro DSS water quality meter, which was lowered to a similar depth (approximately 1 m above the seafloor) while collecting a profile of water quality data (Figure 4.9). The data collected included pH, electrical conductivity, salinity, turbidity, temperature and dissolved oxygen.



Figure 4.8 Collecting a water sample at Douglas Shoal using a van Dorn sampler

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Figure 4.9 Measuring *in-situ* water quality at Douglas Shoal during event 1 (left) and event 4- during remediation (right)

### 4.1.6 Sediment Quality

**Contaminants of Potential Concern**

Contaminants of potential concern (COPC) in event 1 were based on previous assessments (summarised in Costen *et al*., 2017), the ship's antifouling history, and the relatively pristine surrounding High Ecological Value environment. For event 1, known contaminants included copper oxide, zinc oxide, and TBT. Suspected or possible other COPCs included pesticides and herbicides listed in Table 4.1, with the associated limit of reporting (LOR). After the multiresidue screen performed in event 1 showed very few detections, herbicides were limited to Diuron only in event 6.

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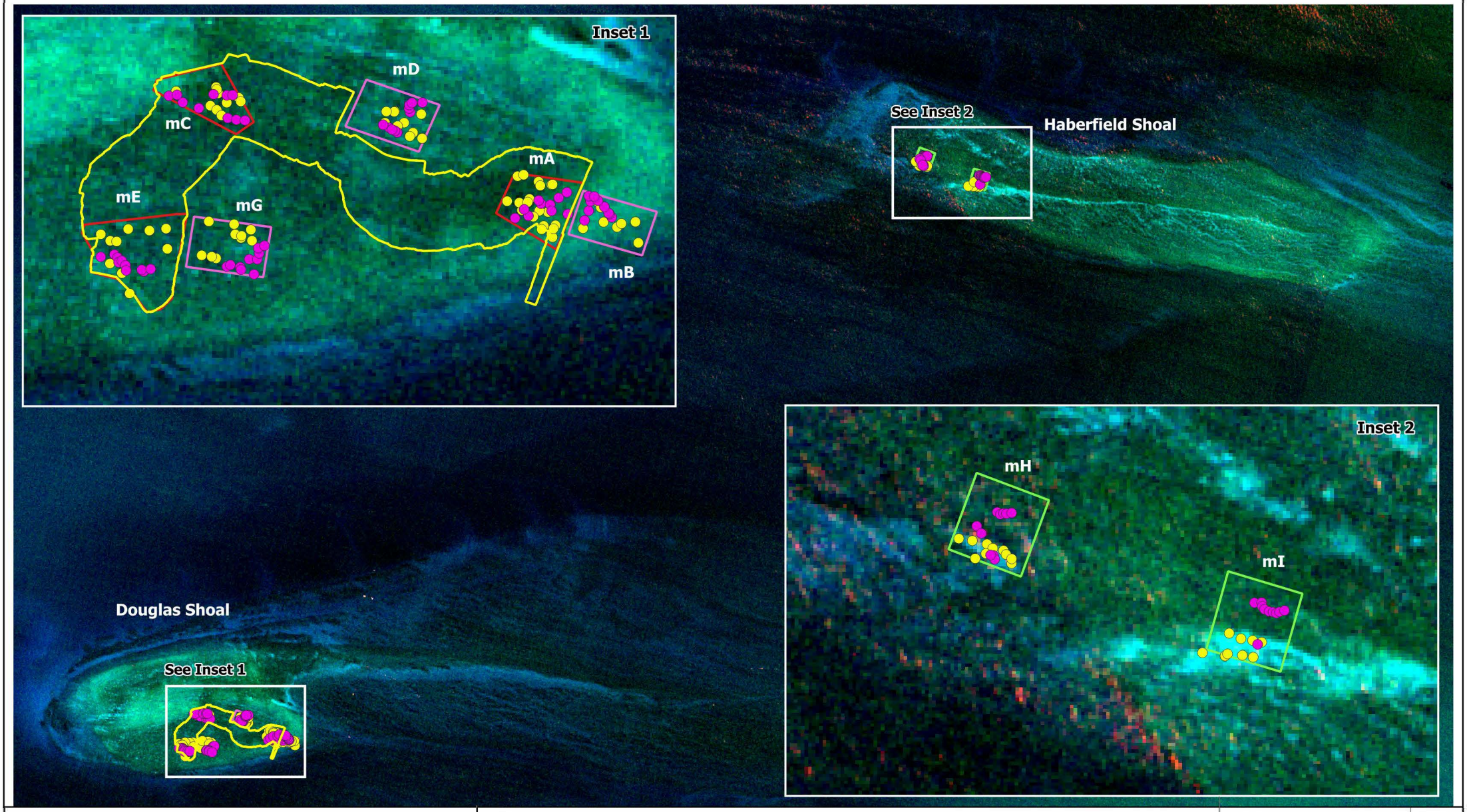
Table 4.1 Sediment Quality Parameters

| Parameter | LOR (mg/kg if unspecified) |
|---|---|
| Metals | |
| Total metals:<br>Sb, As, Cd, Cr, Cu, Co, Pb, Mn, Ni, Se, Ag, V, Zn, Ba | Cd, Se, Ag, Ba: 0.1<br>Co-: 0.5<br>Mn: 10<br>V: 2<br>Al: 50<br>Others: 1 |
| Physical | |
| Particle Sizing (sieve and hydrometer) | 1% |
| Organics | |
| Synthetic Pyrethroids (event 1 only) | 0.05 |
| Phenoxy Acid Herbicides; (event 1 only) | 0.02 |
| Multiresidue Screen (75 pesticides including 21 Organophosphates + (Atrazine, Simazine); (event 1 only) | 0.001-1.0 |
| Diuron | 0.001 |
| Organotins (TBT, DBT, MBT) | 0.5 µg Sn /kg |

**Sampling Sites**

Ten replicate sediment samples were collected within each of the locations shown in Figure 4.10. Sites were haphazardly sampled by divers drifting through the site in areas of unconsolidated sediment that were targeted based on satellite imagery. Large beds of sediment were available at Haberfield Shoal within a slightly deeper trench at the southern boundary of each location. Samples were collected with a van Veen grab from within this sand patch (Figure 4.10).

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**LEGEND**

Ship footprint

Monitoring Locations

- Near-Field
- Regional Ref
- Remediation

- Spring 2019 (Pre-remediation)
- Autumn 2024 (Post-remediation)

Title:

# Sediment Quality Sampling Sites and Locations

Figure: 4.10

Rev: A

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**Collection Methodology**

Two samples in spring 2019, and seven samples in autumn 2024 were collected using a van Veen grab at Haberfield Shoal. The vessel was positioned within the sediment patch using the vessel sounder, surface visibility, and drop camera. The location was marked with an RTK GPS, the grab was deployed and emptied into a 50 L plastic tub. Only samples where the grab had fully closed were accepted.

All remaining samples were collected by divers. The diver's path was traced utilising a tethered GPS[1] on the diver's float. At the point of sample collection, the diver notified the dive supervisor using a combination of radio communications and lines signals. The tether was shortened, and the time of sample was recorded for positioning against the tethered GPS, giving an expected position within 10 m of true position due to tether lay-back.

Samples were photographed approximately 1 m from the substrate, with a 50 cm scale bar in view. Samples were collected by divers using a hand trowel and placed into a PVC collection tube, or directly into a sample bag. The penetration depth was made against a steel rod or trowel depending on sediment depth. Upon surfacing, the sample was emptied into a stainless-steel container, photographed, logged, homogenised, and divided into jars.



Figure 4.11 Collecting a sediment sample from the sea floor

### 4.1.7 3D Modelling

3D models were generated inside the remediation locations, to provide a visual comparison of changes in seafloor before and after remediation. The collection of these data required relatively calm currents, good visibility, and low to moderate algal canopies. Six 3D models and orthomosaics were generated; two sites in each remediation location (Figure 4.13). Models were 10x10 m and were swam over four tiles from the 5 m reference grid in 20219. The same locations were visited in 2024, and mosaics were generated over a larger area to maximise potential overlap with the 2019 data.

[1] Using a helix antenna and waterproof housing 40.8% of hand-held GPS positions were within 0.5 m of true position, 18.6% were within 0.5-1 m, 21.3% were within 1-2 m, and 19.3% were within 2-3.05 m of true position (cm-precision fixed RTK) under dynamic conditions and clear skies in August 2019.

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The centroid of the site was marked using an RTK GPS and shot line, with the shot deployed within 1 m of the position. A diver descended the shot line and placed a series of markers. Tiles marked the north, south, east and western extremities of the site. These were positioned using a compass bearing and a 7 m line from the site centroid. Approximately 800 photos were taken by a diver using paired wide-angle still cameras (Figure 4.12). Photos and positions were built into 3D models using techniques involving:

- Batch processing of photos to remove poorly focused images
- Colour correction to bring up red tones and reduce green and blue levels
- Removal of lens vignetting to homogenise lighting across the field of view
- Photogrammetry using tie points at precisely known locations
- Generation of 3D models and orthomosaics from aligned imagery with Agisoft Metashape.

Within Agisoft Metashape, medium accuracy settings were used to align photos, build the dense point cloud and construct the model.

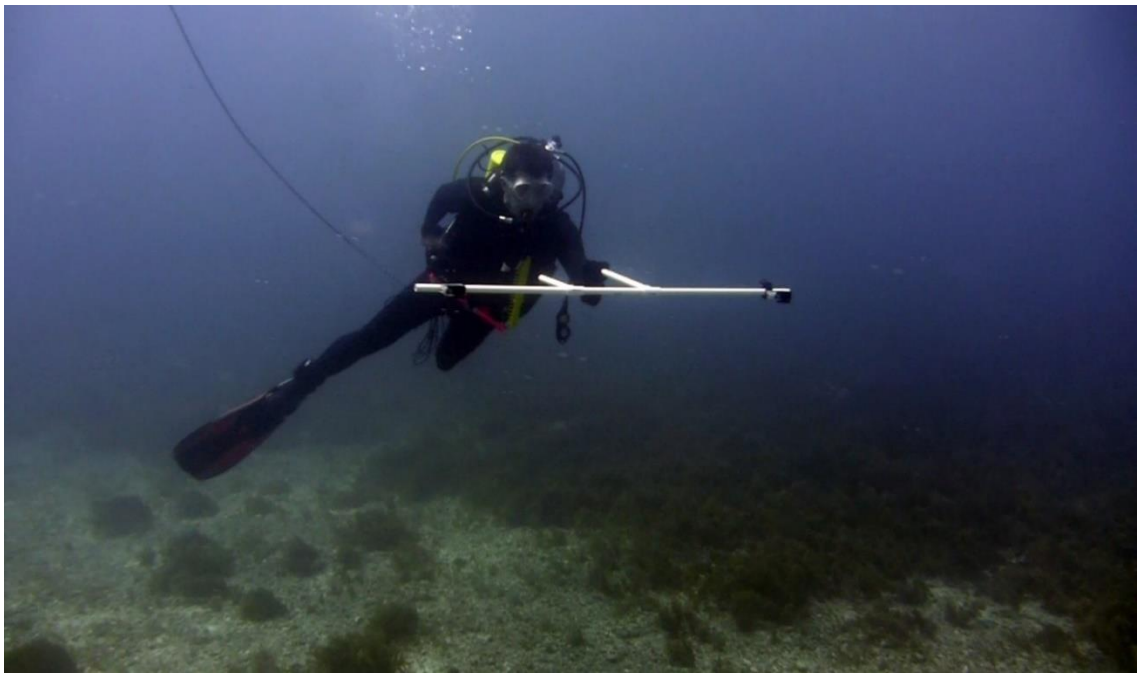
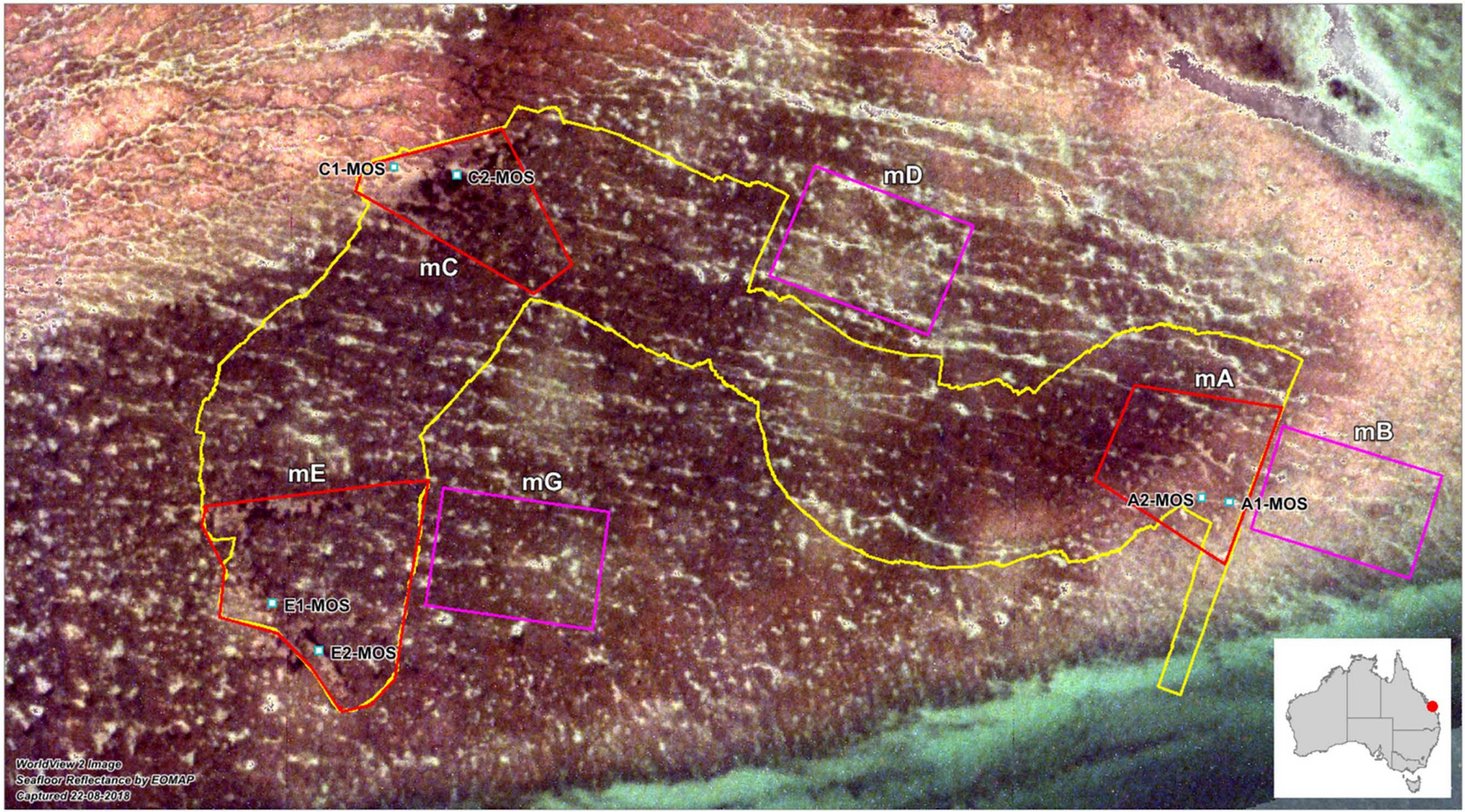


Figure 4.12 Diver collecting mosaic imagery at Douglas Shoal (location mE)

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**LEGEND**

- 3D Sites
- Grounding Footprint

**Monitoring Locations**

- Test Locations to be Remediated
- Near-field Locations (Not Remediated)

Title:

# 3D Model Sites

Figure: **4.13**

Rev: **A**

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0 200 400m

Approx. scale

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### 4.1.8 Acoustic Data Collection

Multibeam and sub-bottom profiling (SBP) datasets were collected by Advisian as a part of the Stream 1 field data collection campaigns (Neale and Boylson 2019) and during the remediation out-survey. While SBP is frequently used to determine and characterise geological strata in upper seafloor strata, the data acquired were not sufficient to determine the depth of sand or gravel above the underlying consolidated reef. Therefore, the SBP results are not presented in this document, but they can be accessed in greater detail in Neale and Boylson (2019) and similarly, this report summarises these collection methodologies and data relevant to monitoring physical habitat.

Sonar data were collected from 22-23 May 2019, over an area inclusive of the entire ship grounding footprint and all the monitoring locations at Douglas Shoal (Figure 4.14). No acoustic data were collected at Haberfield Shoal.

Hardware components of the sonar survey system included:

- R2Sonic 2022 Multibeam Echo Sounder (MBES) operating in multi-frequency mode providing bathymetry and backscatter data
- Innomar SES-2000 Sub-Bottom Profiler
- Applanix POS MV Wavemaster providing positioning, motion, and heading data
- SonTek Castaway CTD providing sound velocity through the water column.

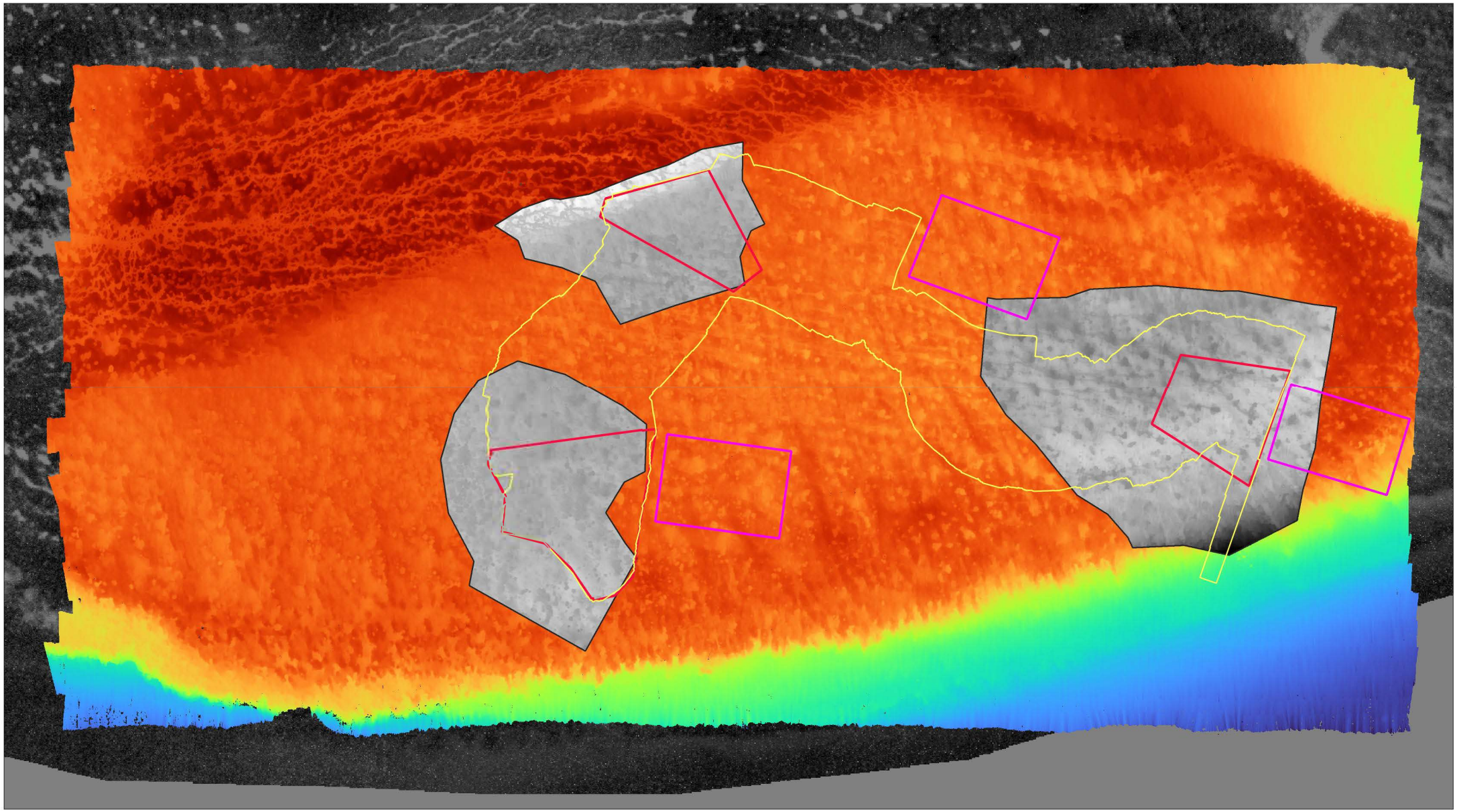
Multibeam data were collected at three frequencies (170kHz, 300kHz, and 400kHz), resulting in a 0.5 m sounding density. Positioning and sound velocity data were applied, and anomalous data were removed using filters and manual checks. Bathymetry data were gridded at a 0.5m bin size using a weighted moving average algorithm and exported for use (Neale and Boylson 2019).

In 2019, the QPS FMGT software package was used for backscatter data processing. The MBES was operated in a multi-frequency manner to provide data from three different frequencies so these could be used to create composite false-colour images to provide information on subtle changes to substrate and sediment types across the survey. Bathymetry data were applied to allow correction of the seabed intensity data for the slope differences across the survey areas, for each frequency. Absorption values were set for each of the frequencies and pixel size and processing parameters set to generate the backscatter data products (Neale and Boylson 2019).

In 2023 the acoustic survey areas were constrained to locations mA, mC and mE as dredge out-surveys, rather than across the entire low-relief terrace (Figure 4.14). Both bathymetry and backscatter data were acquired by the dredge contractor using a Kongsberg EM2040C MBES. Data processing, cleaning, and validation were conducted by Boskalis and supplied to Acoustic Imaging in GSF format. The supplied GSF data had power / gain / absorption values set to 0.0, preventing quantitative comparisons with past data. An absorption value of 127 was adopted by Acoustic Imaging in production of the 2023 backscatter mosaic, based on assumptions about acquisition and environmental parameters including operating frequency, mean depth, temperature and salinity.

Comparisons of seafloor change in the present report were made using raster comparisons between the 170 kHz (2019) backscatter and the supplied 2023 layers to observe changes in hardness. The 2019 backscatter and depth data were subtracted from the 2023 to show changes in depth (m) and hardness as arbitrarily scaled raster values.

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**LEGEND**

EOMAP SSR Imagery 22-08-2018

Monitoring Locations

- Near-Field
- Regional Reference
- Remediation
- Swept Area Shen Neng 1

Advisan Bathymetry (2019)

-8.81115

-28.2367

Advisan Bathymetry (2023)

-9.6

-19.612

Title:

# Acoustic Survey Areas

Figure: **4.14**

Rev: **A**

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## 4.2 Data Analyses

### 4.2.1 Epibenthic Cover

**Point Count Methods**

Random selections of 200 downward facing images were used for analysis from each location. The selected subset of photos was processed using point-count methodologies to determine major cover metrics. Existing automated annotation software (CORALNET) was used to classify a 25-point stratified scatter within each image frame. The cover of major benthic categories and coral genera was quantified for each frame. Classes consisted of 34 hard coral genera (including bleached and unbleached variants where applicable), 14 soft coral genera (as above), five other fauna classifications, nine genera of macroalgae, macroalgal assemblage, turf, crustose coralline algae (CCA), sand, pavement and gravel (detailed further below).

Fully automated approaches have provided comparable results to human expert classifications for coral substrates, while algal substrates typically required semi-automated annotation as per Beijbom *et al*. (2015). Within CORALNET the level of automated assistance was set based on estimates of the machine accuracy (Cohen's kappa) for major functional groups of benthos. This estimate is progressively updated with more training (manual classification) as the project progresses. Beijbom *et al*. (2015) show that a 5% reduction in accuracy does not have a significant impact on the cover estimates of functional groups, therefore, the level of automation was set throughout the project to ensure at least 95% automation accuracy.

Hard coral cover is the highest priority response variable because its vulnerability to project impacts and because it is a building block of habitat supporting the rest of the reef ecosystem. Confidence limits suitable for fully automated classification were rarely achieved in the first and second baseline surveys, apart for some extremely homogeneous substrates such as sand. Machine accuracy never exceeded 95%; therefore, all annotations were done by ecologists. However, machine-learned cover suggestions were frequently correct, making manual annotation substantially faster.

**Classification Conventions**

The classification of macroalgal assemblage, algal turf, pavement, sand, gravel, and bleached coral has an element of subjectivity, particularly where classification points fall on the border between two similar cover types, or in substrates transitioning from class to another. Photo acquisition height allowed a relatively large field of view (~6 $m^2$), enabling greater coverage of the shoal at the cost of finer details in benthos. The consequence of this was that small clumps of mixed macroalgal assemblage occurring in patches less than 10 cm frequently could not be distinguished into individual macroalgal taxa. The macroalgal assemblage class was used where macroalgae appeared to be in multi-species clusters or where it was too small to allow identification.

The term 'rubble', in the context of this project, pertains to incident-derived sediments, and in many cases this could not be determined from towed camera imagery. Therefore, the benthic class 'gravel' was used to classify sediments into particle sizes that approximated coarse gravel and cobble, while 'sand' was used to classify substrates that varied from medium sands to fine gravel.

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The following class definitions and examples (Figure 4.15) were used to better define substrates with elements of subjectivity:

- **Turf:** algal coatings varying from half to 2 cm thick, usually light in colour with poorly defined edges, sometimes mixed with other substrates.
- **Ascidians:** although ascidians were often covered in turfing or macroalgae, only animals with visible siphons were classed as ascidians, otherwise upper biotic coverings were classified.
- **Macroalgal assemblage:** macroalgal clumps dark in colour (red, green, or brown) with insufficient morphology for identification to genus. Moderate to well-defined edges.
- **Pavement:** consolidated reef substratum without any visible turf, macroalgae, or other biota. Often seen on the margin of, or near unconsolidated mobile substrates such as sand or rubble. Large cobble or boulders with thin turf layers were typically classed as turf.
- **CCA:** crustose coralline algae consisting of pink lithified surfaces.
- **Sand:** unconsolidated material varying from coarse sand to very fine gravel (0.5 – 5 mm. Very thin dustings of sand where the substrate beneath was visible and dominant were classified as the underlying substrate.
- **Gravel:** unconsolidated calcium carbonate pieces varying from medium gravel to small cobble material (10-100 mm).
- **Bleached Coral:** While the level of bleaching is typically recorded as a categorical variable, coral bleaching was considered dichotomously, with bleaching in the level 1 category (Seibeck *et al*. 2006) considered bleached and categories 2-6 considered unbleached.

A schematic diagram of the relationships among various benthic cover attributes is presented in Figure 4.17.

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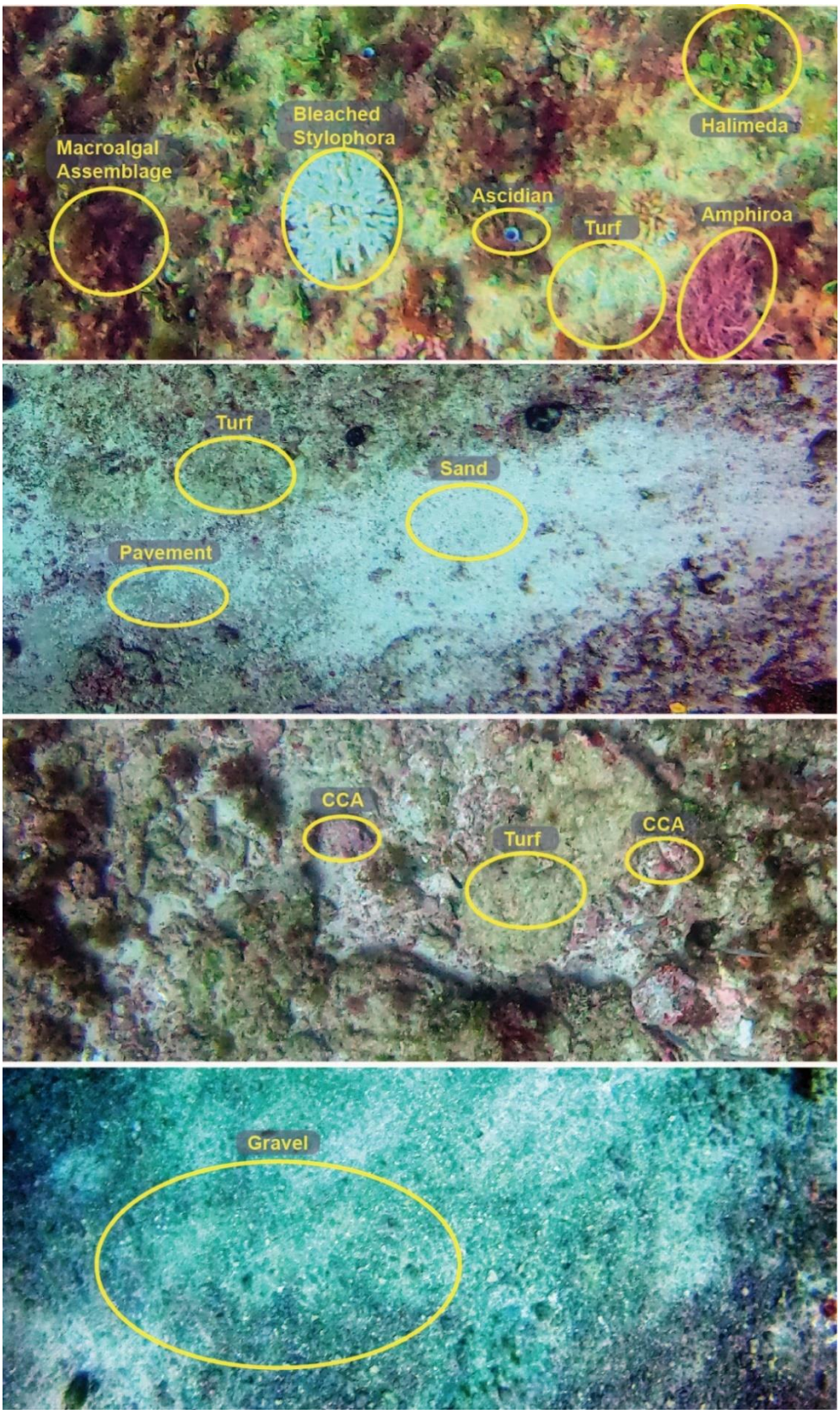



Figure 4.15 Examples of benthic classification conventions

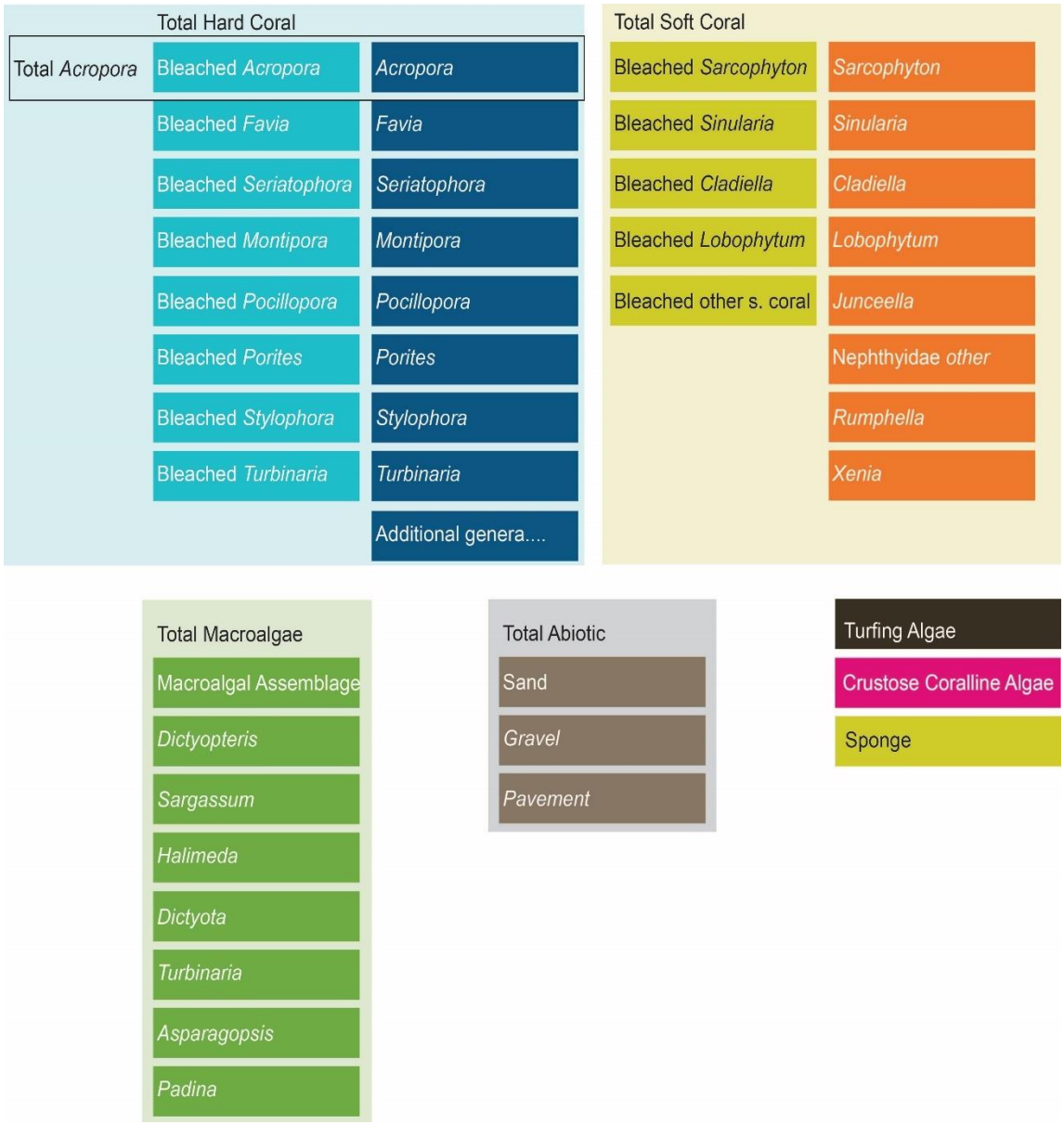



Figure 4.16 Schematic diagram of the relationships between a selection of key cover categories

**Univariate Analysis**

Each photo quadrat served as a unit of replication for use in BACI analyses. Univariate cover metrics (hard coral, soft coral, *Acropora*, turf, macroalgae, *Sargassum*, *Dictyopteris*, gravel and bare substrate) were analysed using the generalised linear mixed model package (glmmTMB) in R (Brooks *et al*. 2017).

Frequency distributions for each variable were generated (Figure 4.17); response variables with a strong zero-bias were analysed using the negative binomial distribution. The R package DHARMa was used to assess residual plots and determine model fit, together with the Akaike Information Criterion (AIC). Response variables including total macroalgae and turf were analysed using Gaussian distribution family with zero-one inflated percent cover data. Differences in the proportions of bleached corals were assessed using the generalised linear models at the treatment level. Specific treatment and before after comparisons were also made using non-parametric Kruskal-Wallis tests to verify linear modelling results using ranked data given the extreme zero-bias in the dataset.

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Interactions between the before / after term, and treatment or location were used as an indicator of potential remediation impacts or benefits. Where significant interactions terms were present, multiple comparisons among locations and/ or treatments were investigated with the enmeans package. Graphs were produced with ggplot2 in R.

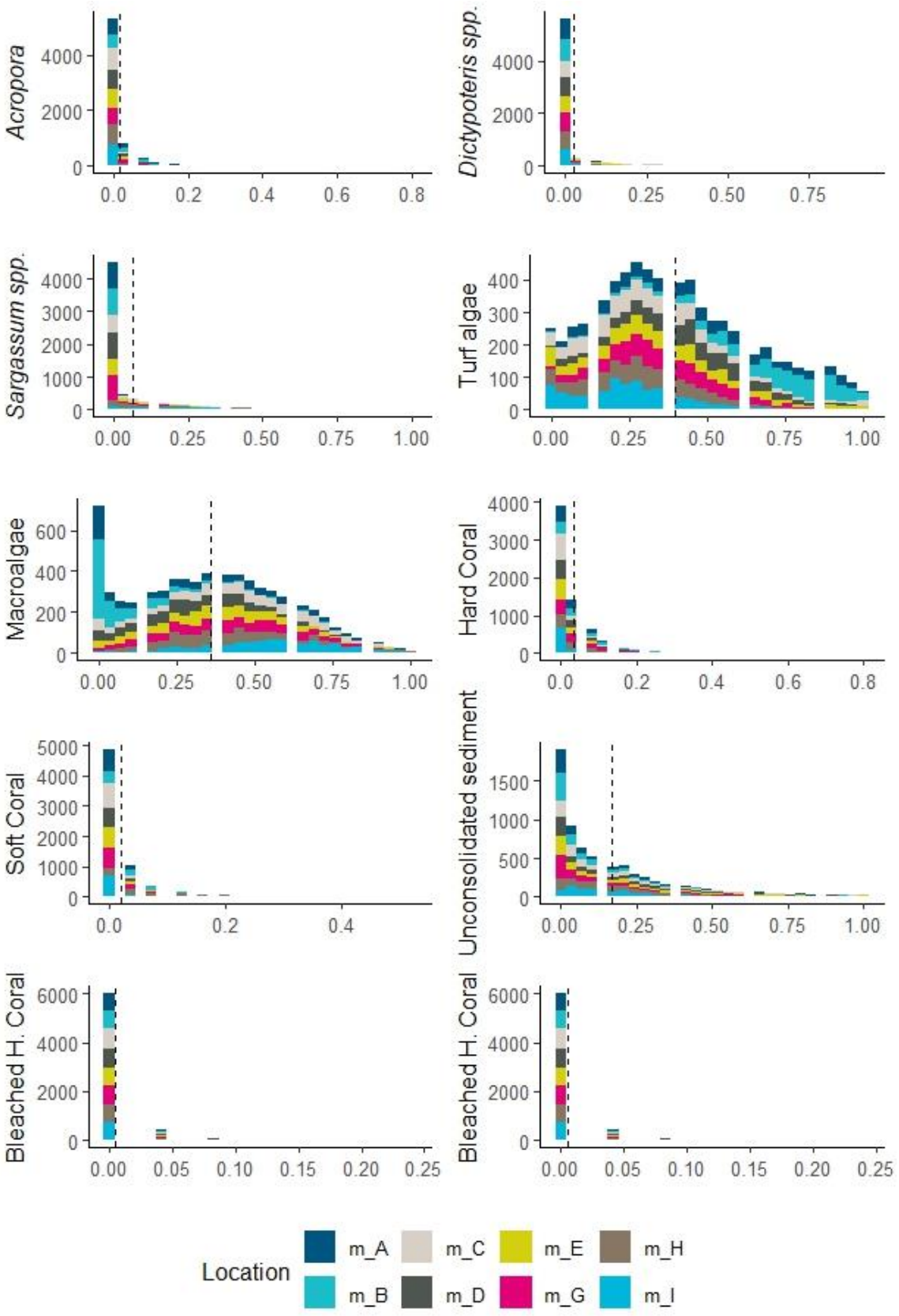



Figure 4.17 Frequency Histograms showing distributions of cover for key Epibenthic classes.

### Multivariate Analyses

Patterns in benthic assemblages were examined using multivariate procedures described by Clarke (1993). All multivariate analyses were done using the software package Primer Version 7.

For all analyses, raw data were 4$^{th}$ root transformed to down-weight highly abundant benthic classes, and similarity matrices were generated using the Bray-Curtis measure of association. This measure performs consistently well in analyses of ecological data sets (Faith *et al*. 1987; Clarke 1993). Similarity matrices were generated from: (i) non-averaged data (i.e. samples not averaged at the location level) and (ii) data averaged by location and time period.

### Site Averaged Data

Spatial and temporal variation in the assemblages were presented graphically using non-metric multidimensional scaling (nMDS) ordinations and cluster analysis (Clarke 1993; Clarke and Ainsworth 1993). Major groupings produced by cluster analysis (group average linking, 50% and 70% Bray Curtis similarity) were superimposed on the ordination. Arrows linking event averages were superimposed on the ordination to illustrate the temporal trajectory and magnitude of variation (distance) in benthic assemblages within locations. SIMPROF permutation tests (Clarke *et al*. 2008) were conducted to identify statistically significant evidence of underlying structure among groups produced by cluster analysis.

A stress value was presented for the ordination as a measure of how well it satisfied all the conditions of its rank similarity matrix. This value is not indicative of any measure of environmental stress, rather, a value of <0.1 indicates that the ordination has represented accurately the relationships among the samples, but values closer to 0.2 indicate that the ordination may have misrepresented the data in high dimensional space.

Permutational ANOVA (PERMANOVA) was used to test for changes in community structure within the BACI framework. Before/after and treatment were considered fixed factors, while location was nested within treatment to focus on locations that differed from one another in a particular treatment. Location-averaged data were used instead of photo-quadrats, given the computational difficulties in permutating a resemblance matrix that contained over 40 million cells.

### Non-averaged Data

High heterogeneity in assemblage structure can be a symptom of ecosystem stress (Warwick and Clarke 1993). Multivariate dispersion was therefore examined to explore within-location variability in assemblages, specifically whether there was any evidence of higher dispersion at remediation locations. The dispersion sequence was calculated to determine multivariate dispersion within locations at each time (see Warwick and Clarke 1993). The analysis was calculated from the similarity matrix generated using non-averaged data, and specifically considers dispersion (variability in assemblages) among replicate transects within locations.

### Spatial Patterns

Georeferenced cover metrics were projected as points and as gridded inverse distance weighted interpolations to show the cover of coral and other major benthic cover categories spatially. These were used to prepare thematic cover maps for key epibenthic indicators in each location.

### QAQC

Epibenthic identifications were performed by two ecologists with differing levels of identification experience.  QA/QC procedures were designed to compare observer 1 (the most experienced observer) with the ecologists and ensure all observers were adhering to identification conventions described in the section above.  Observer 1 was consistent across the entire monitoring program (all events).

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In the pre-remediation events, subsets of 20 images from a range of locations were enumerated by two combinations of observers (image pair 1 vs 2, and image pair 1 v3).

For events 5 and 6, 10% of the dataset spread over all locations was enumerated by both observers. The results were compared, particularly for classifications with elements of subjectivity, such as differences between bleached and un-bleached corals; and between turf and macroalgal assemblage. Figure 5.1 shows the improvement in classification consistency between observers. After the QA/QC results were deemed sufficiently similar for observers to complete annotation of the remaining image set.

It should be noted that any difficult or obscured identifications were left for observer 1 and identification consensus communication between observers continued for the duration of annotation.

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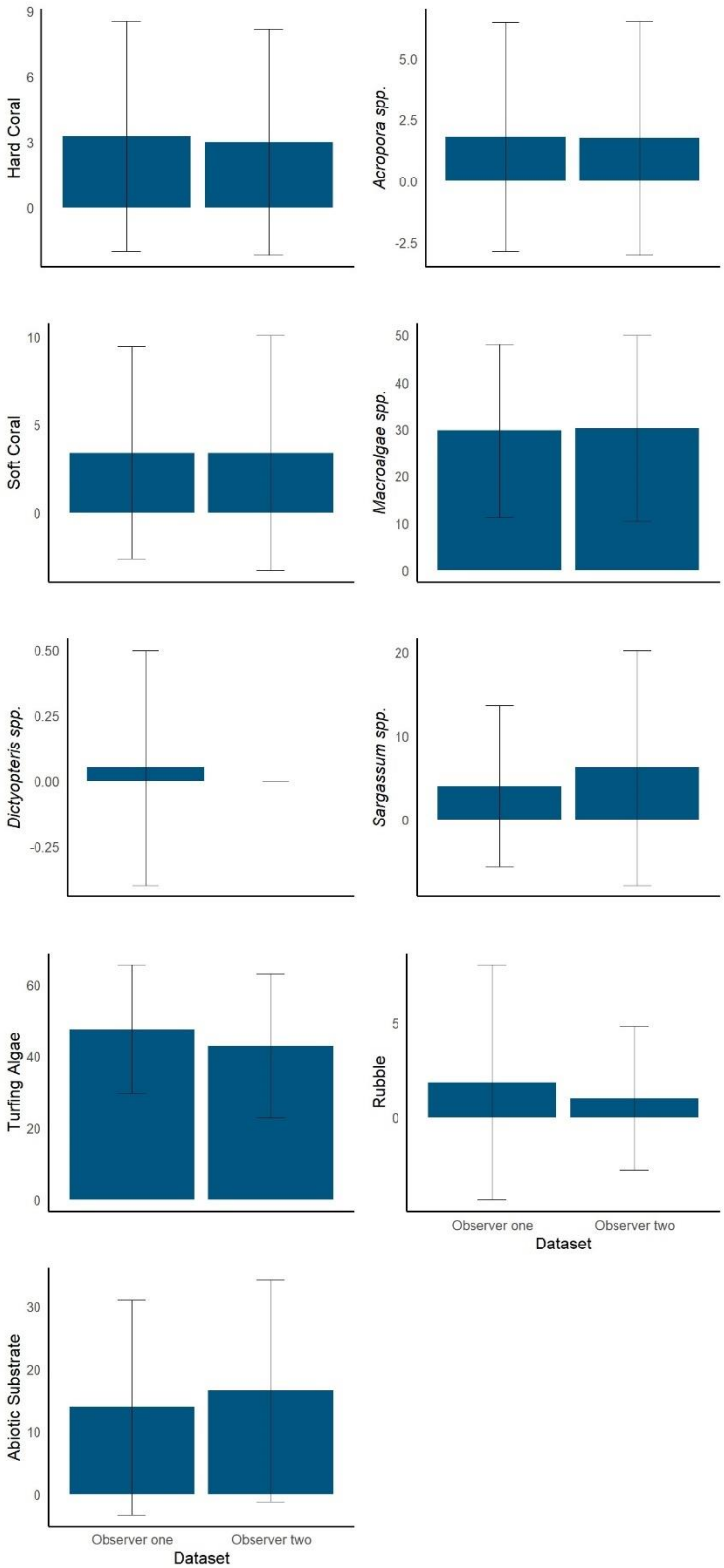



Figure 4.18 Epibenthic QA/QC results for key classification types (mean +/- SE)

### 4.2.2 Fish Communities

EventMeasure was used to calibrate imagery, enumerate communities, and measure fish. The first 30 minutes of footage was analysed from each deployment. Simultaneous short deployments within each location were designed to reduce the incidence of recording the same individuals in different replicate units.

Fish larger than 20 cm total length (Figure 4 20) were measured from the point of MaxN (the point in time when the largest number of individuals for a given species were observed). Biomass for each individual was calculated using published length to weight relationships from Fishbase and published literature values. Where relationships were missing for certain species, congener relationships were used instead. Elasmobranch biomass was separated from *teleost* (bony fish) biomass, given the relative scarcity of elasmobranchs and very large impact of a single elasmobranch observation on biomass overall.

The following metrics were derived from the dataset for analysis:

- Richness
- Diversity (Simpson's D)
- Abundance (the sum of the highest number of fish observed for each species [maxN])
- MaxN of key taxa including tuskfish (*Choerodon venustus*), iodine bream (*Gymnocranius audleyi*), species of unicorn fish (*Naso spp.*), and red-throated emperor (*Lethrinus miniatus*)
- Biomass of prominent taxa including *C. venustus* and elasmobranchs
- Biomass of fish greater than 20 cm (B20).

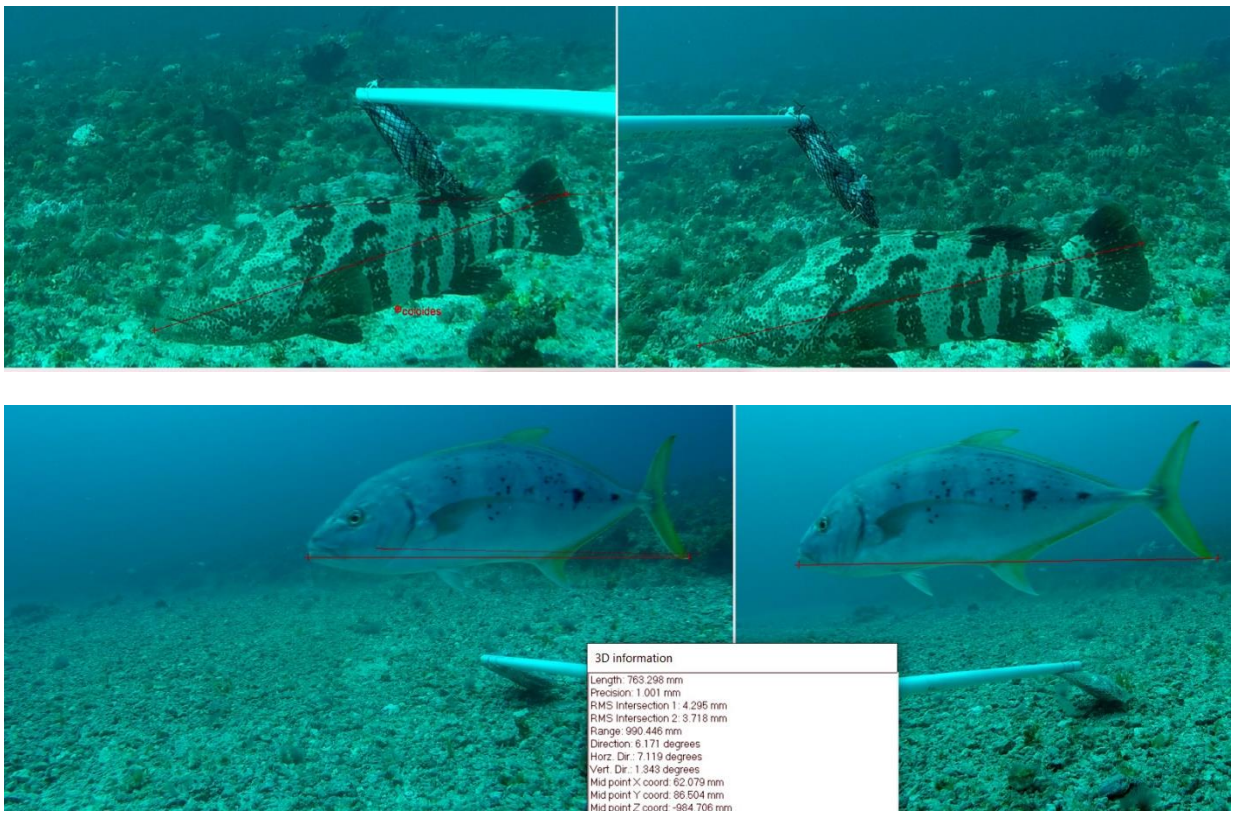



Figure 4.19 Example total length measurements for fish with convex (above) and forked tails (below)

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### Univariate Analyses

Each BRUV deployment served as a unit of replication for use in BACI analyses. Univariate metrics (B20 biomass, abundance, richness, Simpson's diversity) were analysed using glmmTMB in R (Brooks *et al*. 2017).

Frequency distributions for each variable were generated; count variables with a strong zero-bias were analysed using a truncated Poisson or negative-binomial distribution, depending on the level of dispersion. Biomass data were analysed using the Tweedie distribution which handled non-integer data with strong zero-bias. Zero-inflated data were used and the choice of family in modelling was based on frequency distributions, the level of overdispersion, and the best model performance based on the AIC and residual plots produced in DHARMa. Simpson's diversity was analysed with the beta-distributed regression family for data distributed between 0 and 1.

Sampling event was considered a random factor, while before/after, treatment and location were fixed factors. A BACI framework was used to interrogate the interaction between treatment (remediation, nearfield and control) and before/ after. Significant interactions in these terms, specifically a between before/after and treatment or location signifying an increase in a particular taxon at test locations relative to reference locations controls, was interpreted as an impact or positive restoration outcome depending on the nature of the change. Multiple comparisons among locations and events were investigated with the enmeans package, and graphs were produced with ggplot2 in R Studio.

### Multivariate Analyses

All multivariate routines were conducted using the PRIMER v7 software. For all analyses, raw data were initially transformed (fourth root) and similarity matrices were generated using the Bray-Curtis measure of similarity. Similarity matrices were generated from: (i) non-averaged data (i.e. data not averaged at the location level) and (ii) data averaged by location.

### Site Averaged Data

Spatial and temporal variation in the assemblages was presented graphically using nMDS ordination and cluster analysis. Major groupings produced by cluster analysis (50-55% Bray Curtis similarity) were superimposed on the ordination. Arrows linking locations across time trajectories (i.e. survey 1 to survey 2) were superimposed on the ordination to illustrate the temporal trends and magnitude of variation (distance) in fish assemblages within sites.

### Non-averaged Data

High heterogeneity in assemblage structure can be a symptom of ecosystem stress (Warwick and Clarke 1993). Multivariate dispersion was therefore examined to explore within-location variability in assemblages, specifically whether there was any evidence of higher dispersion for the various factors (i.e. survey times, locations treatments). The dispersion sequence was calculated to determine multivariate dispersion within locations at each time. The analysis was calculated from the similarity matrix generated using non-averaged data (i.e. full replicated dataset).

Permutational ANOVA (PERMANOVA) was used to test for changes in community structure within the BACI framework. Before/after and treatment were considered fixed factors, while location was nested within treatment to focus on locations that differed from one another in a particular treatment. Unlike benthic communities which involved thousands of replicate photos transects, BRUV datasets only consisted of three replicates per location, therefore, non-averaged data were used.

### Identification Conventions

Fish that were too distant to be accurately identified were not included until their identity could be confirmed. Frame grabs of some distant fish were taken into Adobe Photoshop for colour correction and enhancement to assist with identification. Small juvenile *Choerodon* and *Lethrinus* that were unable to

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be identified were classified as 'sp.' of their respective genera. It is likely that *Lethrinus rubrioperculatus* and *L. ravus* were both present but could not be distinguished on video, therefore all individuals were typed as *Lethrinus rubrioperculatus.* Similarly, most small blue pomacentrids with or without white markings were considered all as *Pomacentrus australis*, and while the species displays significant phenotypic variability, it is likely that this taxon contained other pomacentrid species. Most cardinalfish (apogonids) were typed as *Apogon sp.* due to their small size and usual distance from the camera.

**QAQC**
All BRUV analyses and identifications were performed by marine ecologists with PhD and/or Master (MSc) qualifications in the field of coral reef fish ecology. Tentative or uncertain identifications were cross referenced between both ecologists so that there was consensus in identification.

Length measurement accuracy was assessed by analysing measurement error of a 37 cm calibration device. This was expressed as a percentage of the total length based on 10 measurements at the point of initial calibration and at the end of the campaign. Length (and biomass) data were adjusted for BRUV arms 2 and 3 in events 5 and 6 by the mean error percentage.

Table 4.2 BRUV unit start and final measurement error estimates

| Rig | Percentage Error (%) (375.4 mm length) |
|---|---|
| Event 3 (2023) | |
| 1 | 1.60 |
| 2 | 1.77 |
| 3 | 1.72 |
| Event 5 (2023) | |
| 1 | 0.92 |
| 2 | 0.41 |
| 3 | 9.52 |
| Event 6 (2024) | |
| 1 | 11.05 |
| 2 | -4.77 |
| 3 | 0.89 |

### 4.2.3 Contaminant Concentrations

**Biotic Tissue**
Mean (± SE) concentrations of TBT, copper and zinc in tissue samples from ascidians, macroalgae and fish were calculated and graphed in R. Each tissue sample served as a unit of replication for use in separate BACI analyses for each response variable. Concentrations of copper and zinc were normalised and analysed using glmmTMB in R (Brooks *et al*. 2017), while meaningful statistical analyses could not be applied to TBT due to a lack of data above the LOR.

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Frequency distributions for each variable were generated for each response variable which were then analysed with Tweedie-distributed generalised linear models. Sampling event was considered a random factor and location and before/after were treated as fixed factors.

**Sediment**

Temporal differences in the sediment concentrations of TBT, copper, arsenic, chromium, nickel, manganese, zinc and vanadium were analysed with Tweedie-distributed generalised linear models in R (Brooks *et al*. 2017). Concentrations of metals/ metalloids were compared to screening levels in ANZG (2018). Particle size percentages were also visually inspected for comparisons between sites.

QA/QC assessments of field and laboratory procedures were made following the methods outlined in NAGD (2009), with fine-scale spatial replication (duplicate samples) taken at 10% of sites and sample triplication (testing for laboratory variation) at 5% of sites. Relative percent differences (RPD) for duplicates and relative standard deviation (RSD) for assessments were made against criteria based on mean concentrations and the limit of reporting (LOR), detailed further in section 5.6.4.

**Water**

Water contaminants were visually inspected against levels of reporting, Australian and New Zealand Guidelines for high ecological conservation in marine water (99% species protection) (ANZG 2009) and the tributyltin oxide chemical assessment by the World Health Organisation (WHO 1999).

### 4.2.4 Rugosity and Depth

Multibeam survey data were adjusted to the Lowest Astronomical Tide (LAT) based on tidal planes for Tyron Island tide station (1.63m below Mean Sea Level [MSL]). Horizontal data were referenced to UTM Zone 56S, WGS84. Depths at Haberfield Shoal were gathered by querying the GBR 30m digital elevation model provided by Geoscience Australia (2017). A 1.6 m offset was applied to bring the GBR 30 m depths from MSL to LAT.

Rugosity measurements were made by dividing contoured surface area from the 0.5 m digital elevation model by the horizontal planar surface area of each location using 12D. This was only done for locations at Douglas Shoal. While a division by planar surface would take better consideration of sloped versus flat areas of interest, the primary comparison of interest will be changes in rugosity within locations, making slope bias of lesser importance.

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# 5 Key Findings

## 5.1 Epibenthic Cover

### 5.1.1 General Patterns

There were 1,600 images analysed in each event giving 6,400 images across four survey events (1, 2, 5 and 6). Imagery analysed for event 3 did not completely cover each of the locations, therefore, it was used in geospatial analyses pooled with all the before imagery to make before and after spatial comparisons.

The dominant epibenthic cover forms across the locations were macroalgae and turf; however, the degree of dominance varied substantially among different locations and through time (Figure 5.1). Most locations were typically comprised 20-60% total macroalgae, and 20-80% turf algae (Figure 5.1). Locations that were very high in macroalgae had less turf and vice versa, while combined totals of the two forms of cover typically made up 60% to greater than 80%.

Location mB was situated on the southeast extremity of the low-relief terrace and was dominated by turfing algal substrates with relatively high coral cover, particularly tabulate Acropora (Figure 5.1). Locations mC and mE, within priority remediation areas had high initial gravel and macroalgal cover. Location mA at the initial grounding site tended to be relatively mid-range for most cover forms with slightly higher hard coral cover than other grounding locations and more turf than macroalgae. Locations at Haberfield Shoal (mH and mI) basically encompassed the range of variation in major cover forms observed at Douglas Shoal; with mH having the highest cover of hard and soft coral, and mI having among the lowest (Figure 5.1).

### 5.1.2 Univariate Patterns and Temporal Change

Remediation impacts or improvements were interpreted as changes in cover observed in a remediation and/or nearfield treatment that were not observed in the reference treatment, or vice versa (section 5.1.1).These were represented statistically as interactions between treatment and/or location and the before vs after term (Table 5.1 and Table 5.2). Interactions were most prominent for the benthic cover categories of gravel, hard coral, turf, and various macroalgal taxa and are largely consistent with the expected early changes in cover associated with remediation.

Patterns in the cover of hard coral and *Acropora* were not consistent with adverse remediation impacts at locational and at treatment scales. *Acropora* cover was significantly higher in the post-remediation period in the direct remediation and nearfield treatments, but this increase in cover was not observed at Habberfield Shoal (reference locations). Total hard coral cover was variable through time at the nearfield and remediation treatments, but it steadily declined at reference locations (section 5.1.1). This suggests that the remediation had very little demonstrable impact to coral cover at the scale of locations. Sub-locational scale spatial changes are discussed in section 5.1.4. There was no evidence of change in soft coral cover with respect to remediation at sites or treatments.

Changes in macroalgae showed strong seasonal, stochastic and remediation-related changes. The cover of *Dictyopteris* was extremely high in the first monitoring event, then it became scarce in all subsequent events at all monitoring locations, suggesting this was a broad-scale community change unaffected by season across the entire monitoring program. For macroalgae as a whole, a seasonal pattern was observed with proliferation in spring (events 1 and 5) and a reduction in cover in autumn (events 2 and 6). Total macroalgae was significantly lower in the post-remediation period at locations mC and mG, higher at mA, and did not change significantly at the remaining locations (Figure 5.1, Annex B). For total macroalgae across treatments, there was also a significant interaction with

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before/after, where all treatments experienced a large reduction in cover in the post-remediation period, particularly in event 6. The final reduction in macroalgae was greatest in the reference treatment, which experienced a greater seasonal reduction in macroalgae than the other treatments at Douglas Shoal between events 5 and 6. However, the overall before after comparison showed greater reductions in total macroalgae at Douglas Shoal compared to Habberfield Shoal. For *Sargassum* there was greater cover in the post-remediation period at Habberfield Shoal compared with both treatments at Douglas Shoal. While a strong seasonal decline was observed, at the end of autumn 2024 (E6) *Sargassum* cover was greater than levels in the pre-remediation period. Of all univariate response variables, the cover of *Sargassum* was most consistent with an unintended remediation impact, resulting a reduction in cover in remediation and nearfield treatments at Douglas Shoal relative to Habberfield Shoal.

Turfing algae followed an inverse distribution to that of total macroalgae, which is likely the result of turfing algae being visible in the absence of macroalgal canopies, and due to the transition between these cover types as parts of the turf eventually grow into mature macroalgae. From a treatment perspective (section 5.1.1), the increase in turf between events 5 and 6 was much steeper than between events 1 and 2, and the greatest overall increase in turf was in the remediation treatment. This was likely due to the colonisation of bare surfaces after remediation which can be seen in satellite imagery (Figure 3.1).

Changes in gravel show a major reduction in cover in the post-remediation period at remediation locations mE, mC, and mE associated with remediation. While other locations also experienced significant before and after variation in gravel cover, these were minor compared to the scale of reduction observed in the remediation treatment (section 5.1.1).

For unconsolidated material (sand and gravel), the trend is slightly more complicated and likely represents some apparent increases that are related to the seasonal pulses of macroalgae (obstructing view of the sand), and the wave-driven movement of sand across the shoals. As macroalgae cover reduced in the autumn seasons, there was likely a subsequent increase in sand visibility, which is the most likely explanation at Habberfield Shoal. In the remediation treatment, a small increase in unconsolidated material in event 6 may be the result of sand moving into the previously cleared areas of pavement.  The sand component of the unconsolidated material class can be seen in orthomosaics starting to fill depressions that were vacuumed completely during remediation (section 5.2).  These results suggest that remediation has created a significant reduction in the cover of gravel in direct remediation areas, not seen in adjacent nearfield or reference locations.

Detailed statistical analyses and pairwise tests are listed in Annex B.

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Table 5.1 Summary analysis of deviance table for generalized linear models at Locations. Significance codes: 0 = ***, 0.001 =**, 0.01 = *, 0.05 = blank

| Response | Parameter | Chi Sq | df | P>Chi | |
|---|---|---|---|---|---|
| **Hard coral** | | | | | |
| | Location | 125.29 | 7 | < 2.2e-16 | *** |
| | Before vs After | 1.31 | 1 | 0.25 | |
| | Location*B.A. | 24.43 | 7 | 0.001 | *** |
| ***Acropora*** | | | | | |
| | Location | 160.347 | 7 | <2.2e-16 | *** |
| | Before vs After | 45.791 | 1 | 1.31e-11 | *** |
| | Location*B.A. | 12.740 | 7 | 0.07 | |
| **Soft coral** | | | | | |
| | Location | 377.30 | 7 | < 2.2e-16 | *** |
| | Before vs After | 1.098 | 1 | 0.29 | |
| | Location*B.A. | 7.78 | 7 | 0.35 | |
| **Macroalgae** | | | | | |
| | Location | 1307.74 | 7 | < 2.2e-16 | *** |
| | Before vs After | 118.01 | 1 | < 2.2e-16 | *** |
| | Location*B.A. | 126.57 | 7 | < 2.2e-16 | *** |
| ***Dictyopteris*** | | | | | |
| | Location | 107.86 | 7 | < 2.2e-16 | *** |
| | Before vs After | 60.288 | 1 | 8.192e-15 | *** |
| | Location*B.A. | 44.130 | 7 | 2.017e-07 | *** |
| ***Sargassum*** | | | | | |
| | Location | 314.04 | 7 | < 2.2e-16 | *** |
| | Before vs After | 193.60 | 1 | < 2.2e-16 | *** |
| | Location*B.A. | 127.06 | 7 | < 2.2e-16 | *** |
| **Turf** | | | | | |
| | Location | 2387.68 | 7 | < 2.2e-16 | *** |
| | Before vs After | 2.64 | 1 | 0.104 | |
| | Location*B.A. | 378.696 | 7 | < 2.2e-16 | *** |
| **Unconsolidated Sediment** | | | | | |
| | Location | 120.02 | 7 | < 2.2e-16 | *** |
| | Before vs After | 14.58 | 1 | 0.0001 | *** |
| | Location*B.A. | 95.94 | 7 | < 2.2e-16 | *** |
| **Gravel** | | | | | |
| | Location | 202.13 | 7 | < 2.2e-16 | *** |
| | Before vs After | 0.11 | 1 | 0.73 | |
| | Location*B.A. | 214.66 | 7 | < 2.2e-16 | *** |

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Table 5.2 Summary analysis of deviance table for generalized linear models at Treatments. Significance codes: 0 = ***, 0.001 =**, 0.01 = *, 0.05 = blank

| Response | Parameter | Chi Sq | df | P>Chi | |
|---|---|---|---|---|---|
| **Hard coral** | | | | | |
| | Treatment | 19.96 | 2 | 4.62 e-05 | *** |
| | Before vs After | 0.22 | 1 | 0.64 | |
| | Treatment*B.A. | 12.37 | 2 | 0.002 | ** |
| ***Acropora*** | | | | | |
| | Treatment | 22.22 | 2 | 1.5 e-05 | *** |
| | Before vs After | 21.74 | 1 | 3.1e-06 | *** |
| | Treatment*B.A. | 9.32 | 2 | 0.009 | ** |
| **Soft coral** | | | | | |
| | Treatment | 207.77 | 2 | < 2.2e-16 | *** |
| | Before vs After | 0.43 | 1 | 0.51 | |
| | Treatment*B.A. | 1.32 | 2 | 0.52 | |
| **Macroalgae** | | | | | |
| | Treatment | 465.1 | 2 | < 2.2e-16 | *** |
| | Before vs After | 118.92 | 1 | < 2.2e-16 | *** |
| | Treatment*B.A. | 10.17 | 2 | 0.006 | ** |
| ***Dictyopteris*** | | | | | |
| | Treatment | 75.86 | 2 | < 2.2e-16 | *** |
| | Before vs After | 50.68 | 1 | 1.085e-12 | *** |
| | Treatment*B.A. | 45.81 | 2 | 1.12e-10 | *** |
| ***Sargassum*** | | | | | |
| | Treatment | 110.89 | 2 | < 2.2e-16 | *** |
| | Before vs After | 160.63 | 1 | < 2.2e-16 | *** |
| | Treatment*B.A. | 116.25 | 2 | < 2.2e-16 | *** |
| **Turf** | | | | | |
| | Treatment | 829.47 | 2 | < 2.2e-16 | *** |
| | Before vs After | 2.85 | 1 | 0.09 | |
| | Treatment*B.A. | 13.69 | 2 | 0.001 | ** |
| **Unconsolidated Sediment** | | | | | |
| | Treatment | 21.63 | 2 | < 2.01e-05 | *** |
| | Before vs After | 12.83 | 1 | 0.0003 | *** |
| | Treatment*B.A. | 68.73 | 2 | 1.19e-15 | *** |
| **Gravel** | | | | | |
| | Location | 153.37 | 2 | < 2.2e-16 | *** |
| | Before vs After | 0.30 | 1 | 0.58 | |
| | Treatment*B.A. | 227.21 | 2 | < 2.2e-16 | *** |

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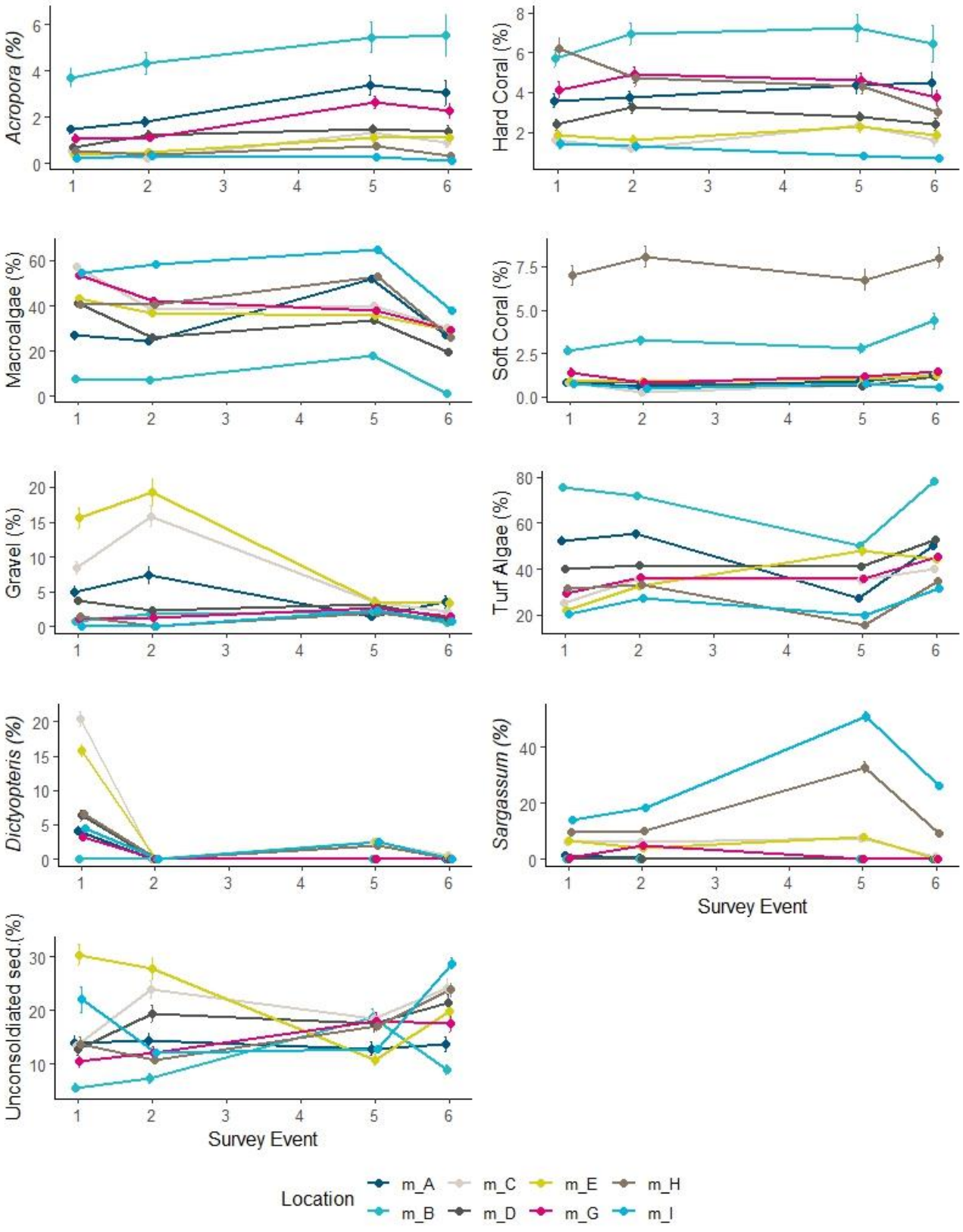



Figure 5.1 Mean (± SE) Epibenthic percentage cover (%) between events by locations

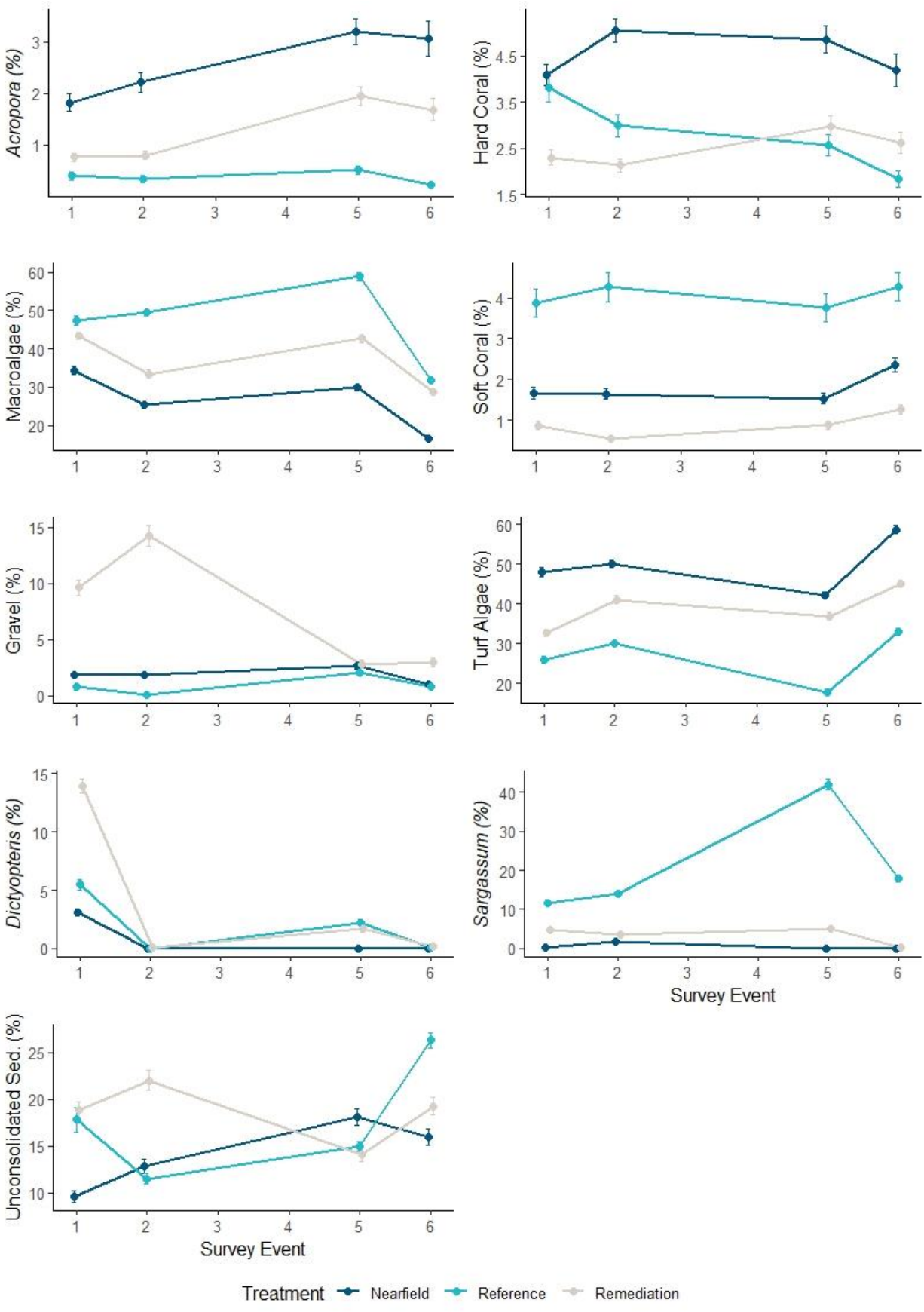



Figure 5.2 Mean (± SE) epibenthic percentage cover (%) between events by treatment

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### 5.1.3 Multivariate Analyses

Multivariate cluster analyses illustrate that there was a high degree of community clustering associated with sampling events at Douglas Shoal, suggesting that temporal changes were affecting many locations similarly (Figure 5.3). The dendrogram also shows that communities at Habberfield Shoal locations were entirely discrete from Douglas Shoal, and that location mB at Douglas Shoal formed a cluster discrete from other locations except during event 5. These clusters are shown in two-dimensional community space in Figure 5.4.

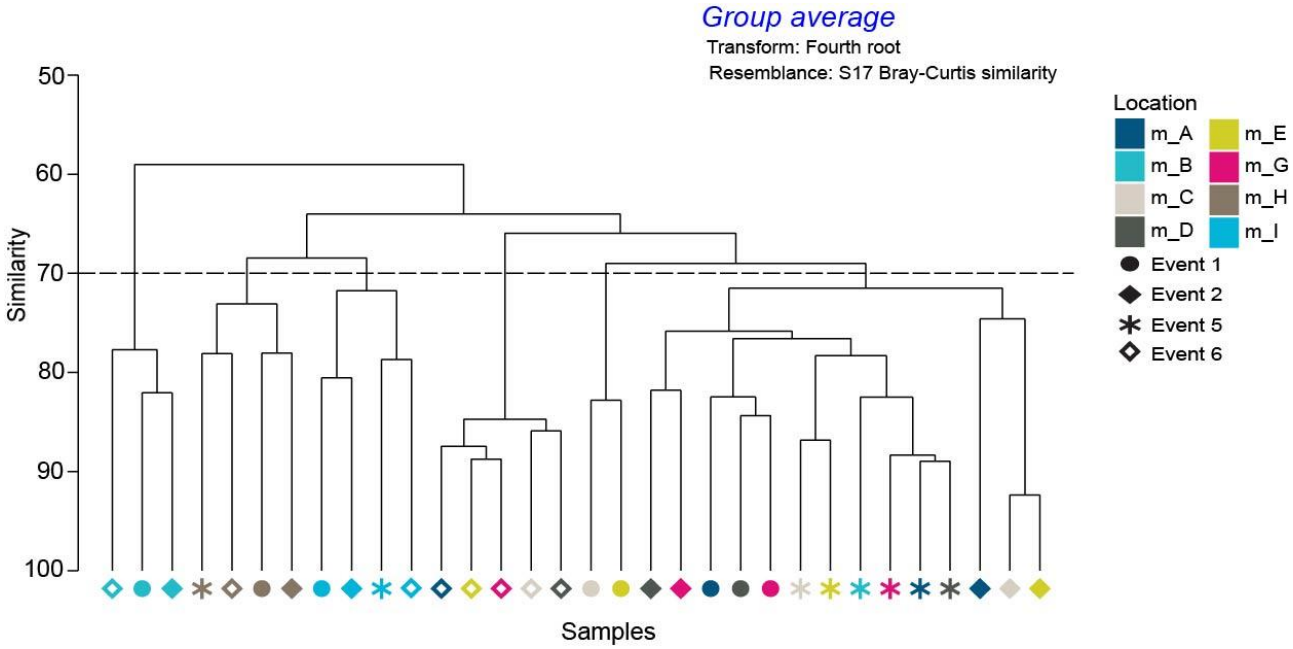



Figure 5.3 Dendrogram for hierarchical clustering of benthic assemblage data averaged within eight locations sampled at two times (group-average linking of Bray-Curtis similarities, fourth root-transformed abundance data). The locations/time groupings correspond to the division line fixed at 70% similarity level

The upper pane of the nMDS (Figure 5.4) shows similarities and differences in epibenthic communities as proximity on the graph, with similar communities close and disparate communities distant from one another, and temporal changes within locations indicated by arrows. While there were large differences in the position of communities, all locations (except for mB) showed remarkable consistency in the direction of change, moving to the upper right between events 1 and 2, down and/or centrally between events 2 and 5, and down and to the right between events 5 and 6. Location mB began at the far right of the plot, moved upwards, then centrally, then back to the far right of the plot between events 5 and 6.

The lower pane of Figure 5.4 shows each of the sampling events with respect to major community vectors, where the direction and length of the line shows the relative influence of each taxon upon the marker's position in community space. For most locations, the first movement between events 1 and 2 was consistent with a loss of *Sargassum* and *Dictyopteris* and an increase in bleached *Acropora* spp. and turfing algae. For mB, the change was associated with more macroalgal assemblage and less sand (Figure 5.4, Table 5.3). Between events 2 and 5, losses in macroalgal assemblage and gravel were driving the movement towards the bottom of the plot, and between events 5 and 6 the movement rightward at Habberfield Shoal was the result of a loss of *Sargassum* and increase in turfing algae (Figure 5.4, Table 5.3). For most locations at Douglas Shoal, the movement observed between events 5 and 6 was driven by a loss of macroalgal assemblage and increase in increase in *Asparagopsis* and sand. For mB, the change was driven by a loss of macroalgal assemblage and sand and increase in *Acropora.*

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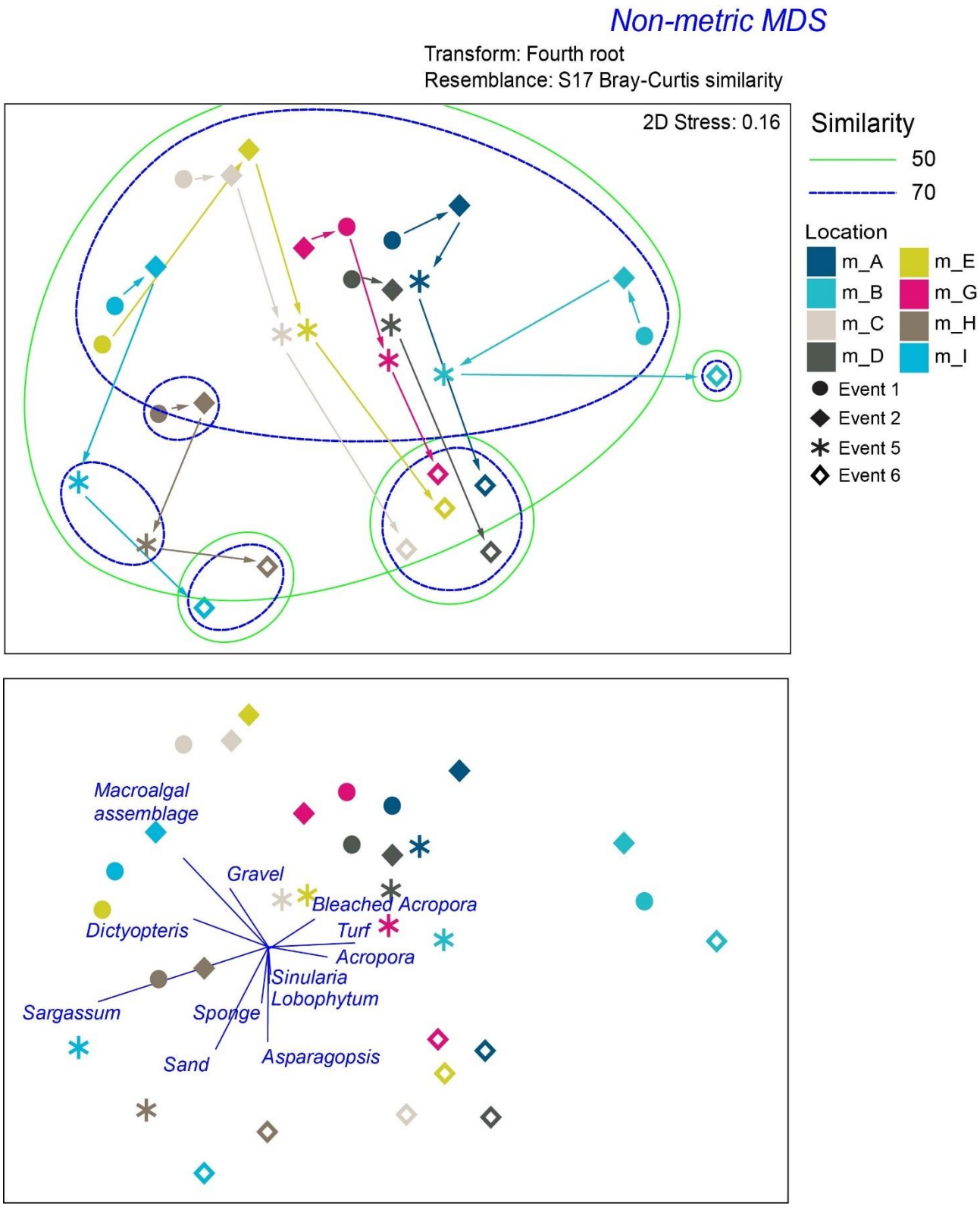



Figure 5.4 A two-dimensional nMDS ordination of location-averaged epibenthic data pictured twice. Temporal vectors show movements through time (above) and key community response vectors (Pearson >0.55) show how the abundance of different taxa affected site position in space (below)

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The relative percentage covers of *Acropora,* bleached *Acropora, Asparagopsis, Sargassum, Dictyopteris* and gravel expressed as bubble areas (Figure 5.5) present an complementary depiction of the patterns shown in Figure 5.4. Relatively high cover of *Acropora* can be seen at locations mA and mB and mG, and the higher levels of bleaching observed in event 2 can be seen as larger bubbles in the upper and right-hand sides of the plot. *Asparagopsis* cover increased substantially in event 6 at Douglas Shoal in the lower central part of the plot, and *Sargassum* was dominant in the left-hand side of the plot particularly at Habberfield Shoal in the post-remediation period. The plot shows abundant *Dictyopteris* in event 1 influencing placement as a vector to the upper left side of the plot. Lastly, the reduction in gravel cover particularly in the post-remediation period is shown as a move from the upper left side of the plot.

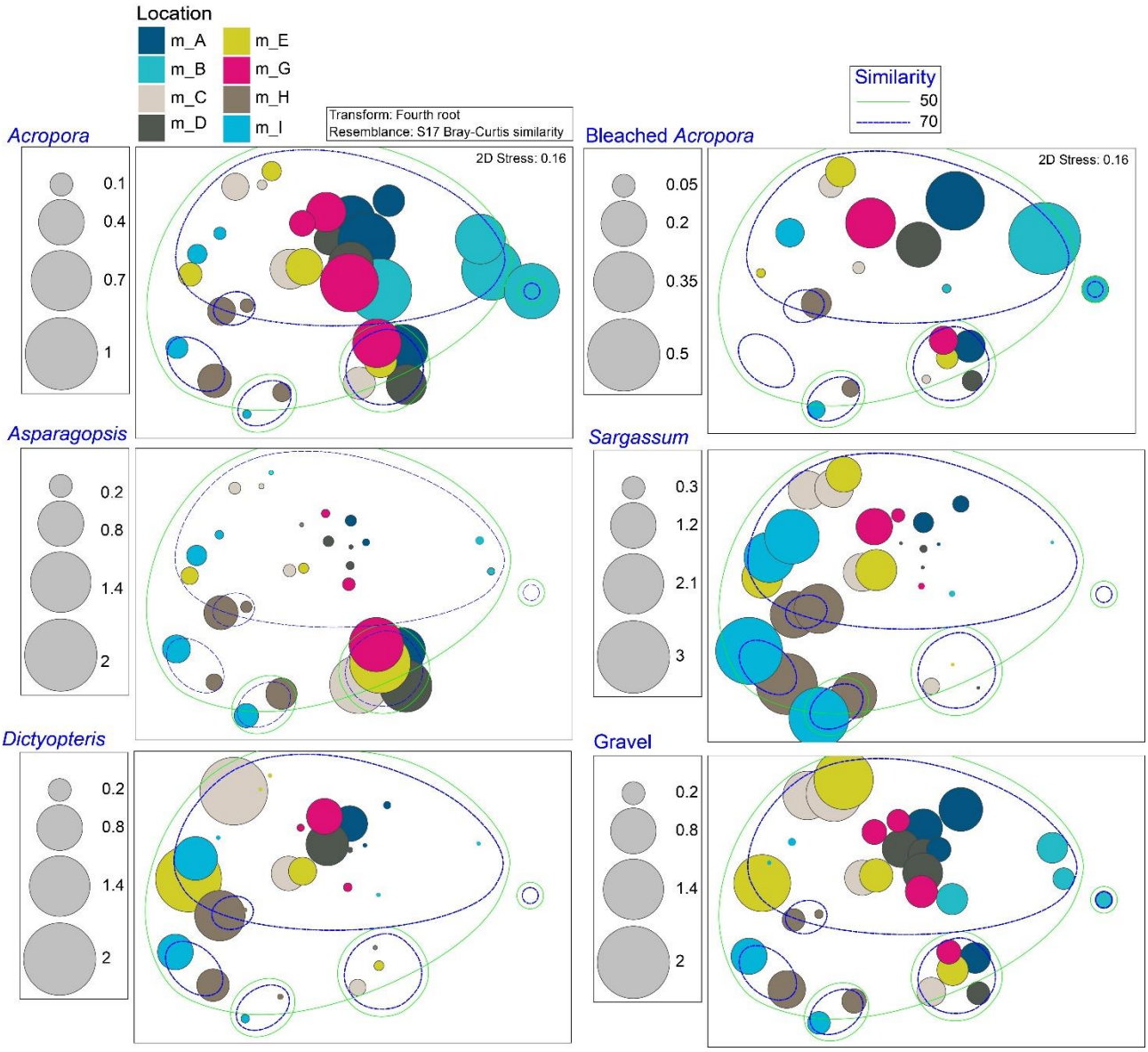



Figure 5.5 Bubble plots showing the relative abundance of key taxa using the nMDS ordination in Figure 5.4. Larger circles represent greater relative benthic cover

Similarity percentage analyses (SIMPER) on the full data set (non-averaged data) shows that changes in various macroalgae groups and abiotic substrates, were the primary drivers of temporal changes in communities within each location (Table 5.3). This was likely due to more abiotic substrate becoming visible after reductions in macroalgal cover.

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Table 5.3 Bray Curtis similarity index between survey events within each location, and main contributing to differences between survey events in sequence from SIMPER

| Event x Site | Contrasting Event x Site | Bray-Curtis Similarity | Highest contributing epibenthic factors |
|---|---|---|---|
| 1, mA | 2, mA | 79.57 | Algae other (17%), Sand (12%) |
| 1, mB | 2, mB | 82.04 | Algae other (12%), Sand (11%) |
| 1, mC | 2, mC | 77.79 | *Dictyopteris* (21%), Gravel (14%) |
| 1, mD | 2, mD | 78.27 | Sand (14%), Pavement (12%) |
| 1, mE | 2, mE | 70.03 | *Dictyopteris* (16%), Gravel (13%) |
| 1, mG | 2, mG | 76.33 | Sand (13%), *Sargassum* (9%) |
| 1, mH | 2, mH | 78.04 | Sand (9%), *Dictyopteris* (8%) |
| 1, mI | 2, mI | 80.53 | Sand (16%), *Sargassum* (16%) |
| 2, mA | 5, mA | 67.21 | Algae other (19%), Sand (14%) |
| 2, mB | 5, mB | 71.52 | Sand (13%), Algae other (13%) |
| 2, mC | 5, mC | 77.12 | Gravel (15%), Sand (14%) |
| 2, mD | 5, mD | 80.24 | Sand (16%), Pavement (13%) |
| 2, mE | 5, mE | 72.62 | Gravel (16%), Sand (13%) |
| 2, mG | 5, mG | 73.80 | Sand (13%), *Sargassum* (8%) |
| 2, mH | 5, mH | 70.49 | *Sargassum* (9%), Sand (7%) |
| 2, mI | 5, mI | 70.34 | Algae other (20%), *Sargassum* (14%) |
| 5, mA | 6, mA | 67.54 | Algae other (14%), Sand (11%) |
| 5, mB | 6, mB | 68.06 | Algae other (20%), Sand (14%) |
| 5, mC | 6, mC | 71.10 | Algae other (12%), *Asparagopsis* (11%) |
| 5, mD | 6, mD | 69.39 | Algae other (17%), Sand (13%) |
| 5, mE | 6, mE | 69.62 | *Asparagopsis* (13%), Sand (12%) |
| 5, mG | 6, mG | 77.15 | Sand (12%), *Asparagopsis* (11%) |
| 5, mH | 6, mH | 78.09 | *Sargassum* (10%), Turf (7%) |
| 5, mI | 6, mI | 78.69 | Algae other (12%), Turf (10%) |

The shade plot illustrates the dominant benthic classes among locations and over time in matrix view (Figure 5.6), with the intensity of shading showing the relative percent cover. There was a major reduction in cover of the *Dictyopteris* spp. after event 1, and *Sargassum* spp. from the beginning to the end of the monitoring campaign, except for Habberfield Shoal (reference) locations during event 5. Increases in *Acropora* spp., *Halimeda* spp. and turfing algae are notable at most locations as the monitoring campaign progressed. Sand also became more prevalent, with the largest increases occurring at the reference treatments at the end of monitoring. Bleaching was highest in mA and mB during event 2, with less frequent, more evenly distributed bleaching observed across locations in event 6.

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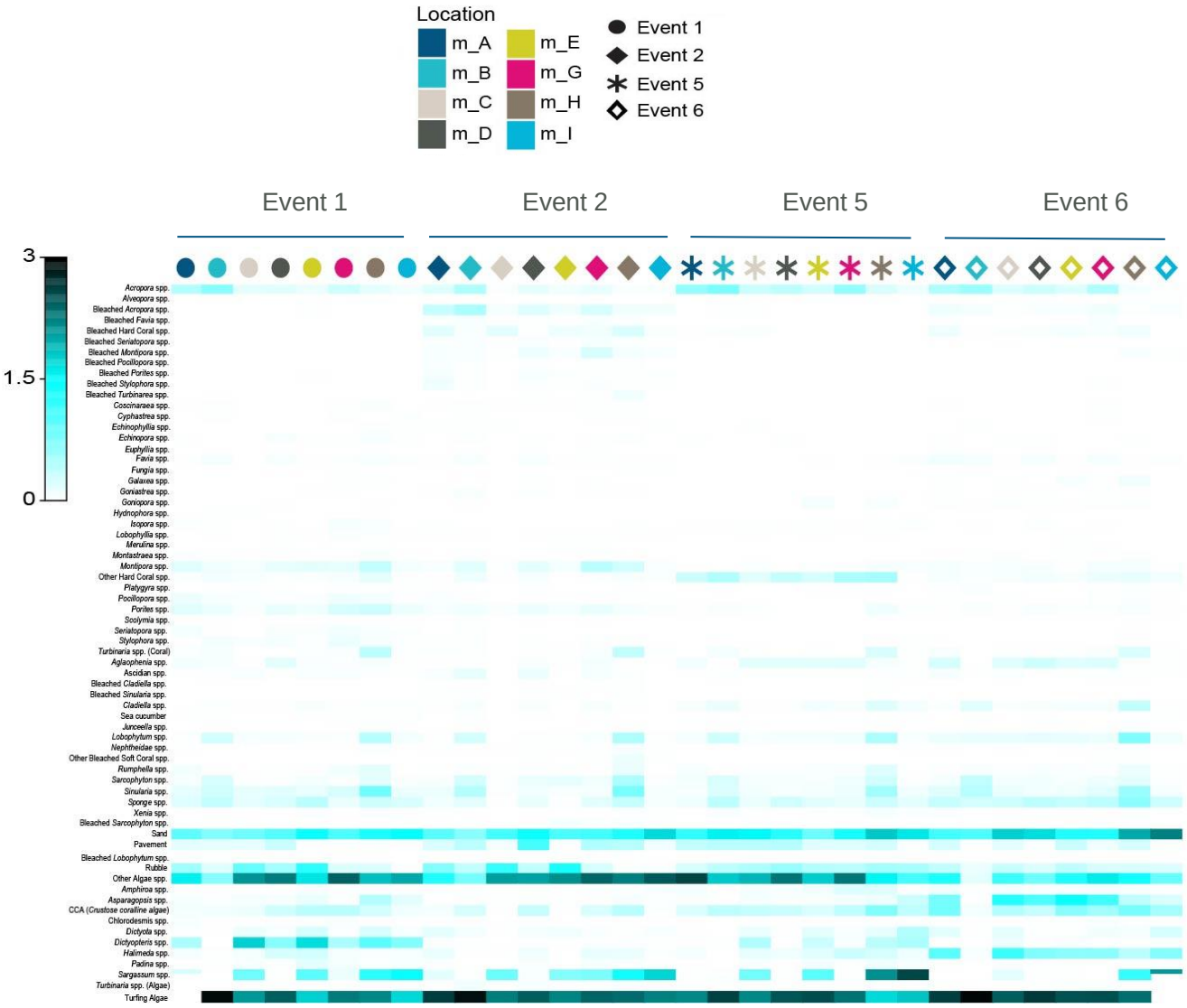



Figure 5.6 Shade plot showing 4th root transformed abundance of the benthic categories based on location and time averaged data

PERMANOVA analyses (Table 5.4) show that benthic communities differed significantly before and after remediation overall, among treatments, among locations nested within treatments, and most importantly, that the way treatments varied was different between the before and after periods. This final interaction term suggests that communities at Douglas Shoal were affected differently to communities at the Habberfield Shoal locations. In summary, the combined univariate and multivariate analyses suggest that remediation has not impacted total coral cover or the cover of acroporids, but significant reductions in gravel have occurred in the remediation treatment, as expected. The only evidence of unintended impact (at the locational or treatment scales) was the limited recovery of *Sargassum* in events 5 and 6 at Douglas Shoal locations, set against strong growth at Habberfield Shoal over the same period.

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Table 5.4 PERMANOVA results for changes in benthic communities

| Source | df | SS | MS | Pseudo-F | P | Unique Perms |
|---|---|---|---|---|---|---|
| Before/After | 1 | 2610.2 | 2610.2 | 15.111 | **0.002** | 998 |
| Treatment | 3 | 5432.9 | 1811 | 2.8559 | **0.006** | 970 |
| Location(Treat) | 5 | 3684.7 | 736.93 | 2.4037 | **0.003** | 999 |
| B.A*Treat | 2 | 886.08 | 443.04 | 2.5732 | **0.026** | 999 |
| B.A*Loc(Treat) | 5 | 860.07 | 172.01 | 0.56107 | 0.964 | 997 |
| Residual | 15 | 4598.7 | 306.58 | | | |
| Total | 31 | 18131 | | | | |

### 5.1.4 Spatial Patterns in Epibenthos

Spatial mapping of epibenthos before and after remediation showed marked declines in the cover of coral, gravel and macroalgae after remediation and a commensurate increase in turfing algae (Figure 5.7 to Figure 5.14). For most benthic cover categories, the areas of greatest change coincided with the dredge head track, suggesting modification occurred direct removal of substrate.

Changes in hard coral cover were greatest in the dredge footprint and in monitoring locations mA and mB (Figure 5.7). Hard coral cover was typically low (0 to 5%), with the highest cover observed consistently at locations mA, mB, mG and mH. Reference location mI had little to no change throughout the monitoring campaign, while hard coral cover decreased at location mH. Post-remediation, hard coral cover notably decreased at mE and at mC along the margin of the high-relief terrace where cover had been higher before remediation. Hard coral cover was also higher along the south-eastern ridge of the low-relief terrace at locations mA and mB after remediation.

The cover of *Acropora* spp. across the monitoring locations was very similar to the spatial extent observed for hard coral cover, with spatial changes occurring in the same locations, i.e. in the dredge footprints and along the south-eastern ridge of the low-relief terrace (Figure 5.8). At the reference locations, *Acropora* spp. had low detection prevalence and cover (0 to 1%), both before and after remediation activities.

Temporal changes in soft coral were largely indiscernible before and after remediation with some faint loss apparent in the dredging footprint at locations mC and mE (Figure 5.9). Cover remained relatively consistent (1 to 10%) among sites before and after remediation, except for mH where colonies were more established (10 to 15%). Location, mH was the most spatially heterogeneous location where soft coral cover fluctuated dramatically over small spatial scales.

The change in the distribution of gravel before and after remediation was the benthic cover category that most closely mimicked the path of the dredge head (Figure 5.10). The areas of highest cover in remediation locations mA, mC, and mE coincided with the area targeted by the remediation. These areas of concentration were not observed in the post-remediation data suggesting most of the gravel had been removed by the remediation.

Macroalgae cover decreased in all locations after remediation except for mA and areas of mB and spatial patterns showed evidence of direct removal at some remediation locations but not others (Figure 5.11). Reductions associated with remediation were visible at locations mC and mE, but

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macroalgal cover appeared to increase at location mA after remediation. Cover was greatest at the reference locations mI and mH and lowest at mB where little macroalgae was observed (0 to 15%).

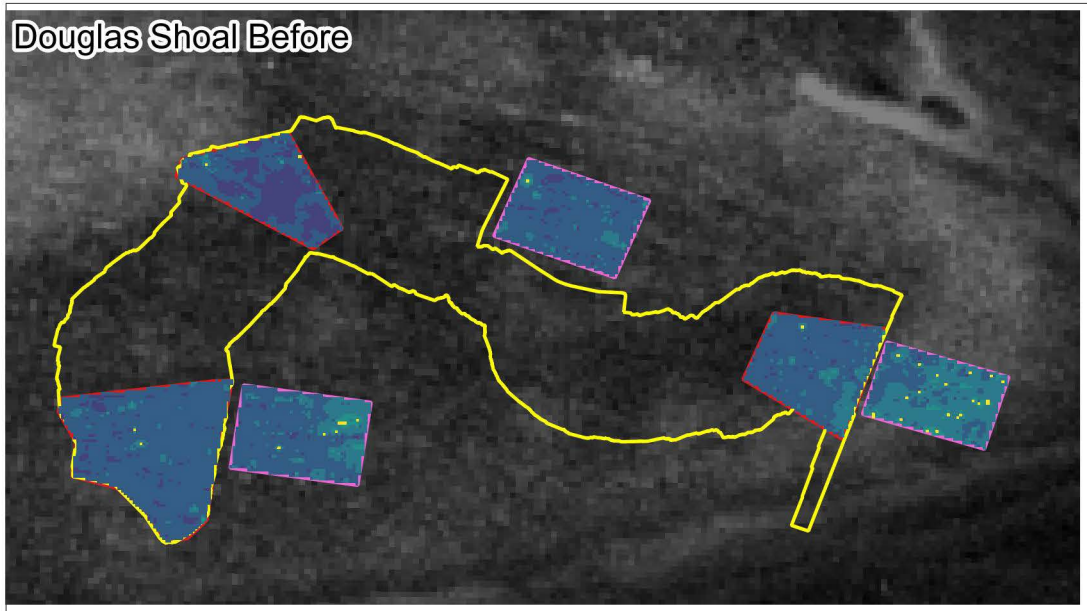
The cover of *Sargassum* spp. was consistently low (0 to 15%) across Douglas Shoal before and after remediation, while cover increased markedly at reference locations at Habberfield Shoal after remediation (Figure 5.12). Habberfield Shoal had a greater cover of *Sargassum* spp. both before and after remediation activities but showed high spatial heterogeneity. The increase in *Sargassum* spp. at reference sites and not Douglas Shoal suggests that remediation may have inhibited its growth or recruitment.

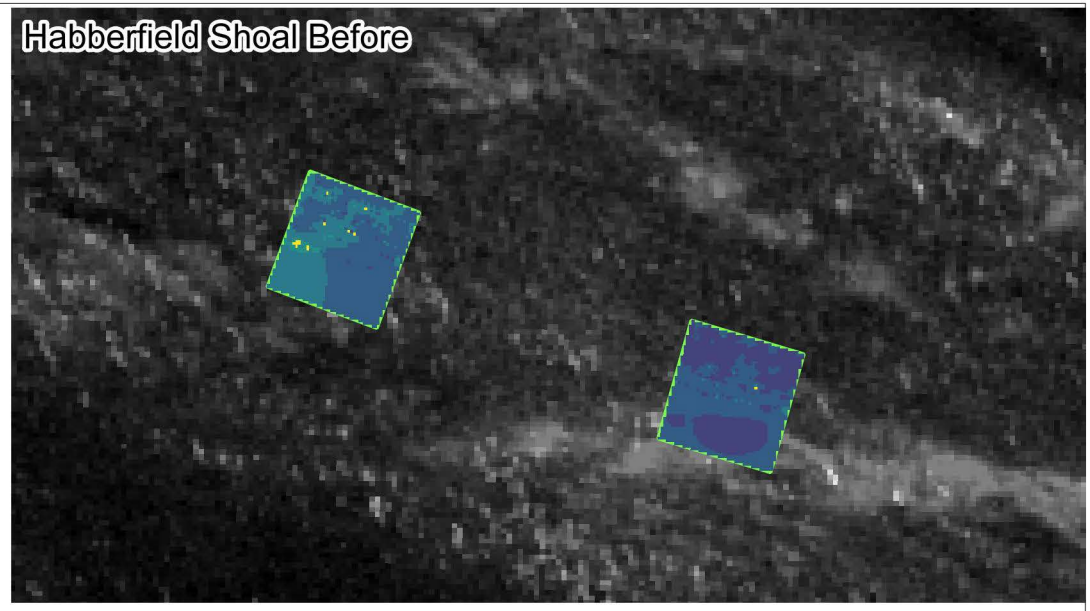
The cover of turfing algae was typically lower after remediation at all locations, with patches of higher cover in the direct remediation footprints (Figure 5.13). Along high relief terrace in mC there was sporadic cover of greater than 75%, and similarly in mE there were patches of 50 to 75% associated with the dredge head path. Some striping in the post-remediation period is apparent and is the result of differences in cover between events 5 and 6 which were combined to construct the layer. Within reference locations, turfing algae decreased at mH but increased at mI.

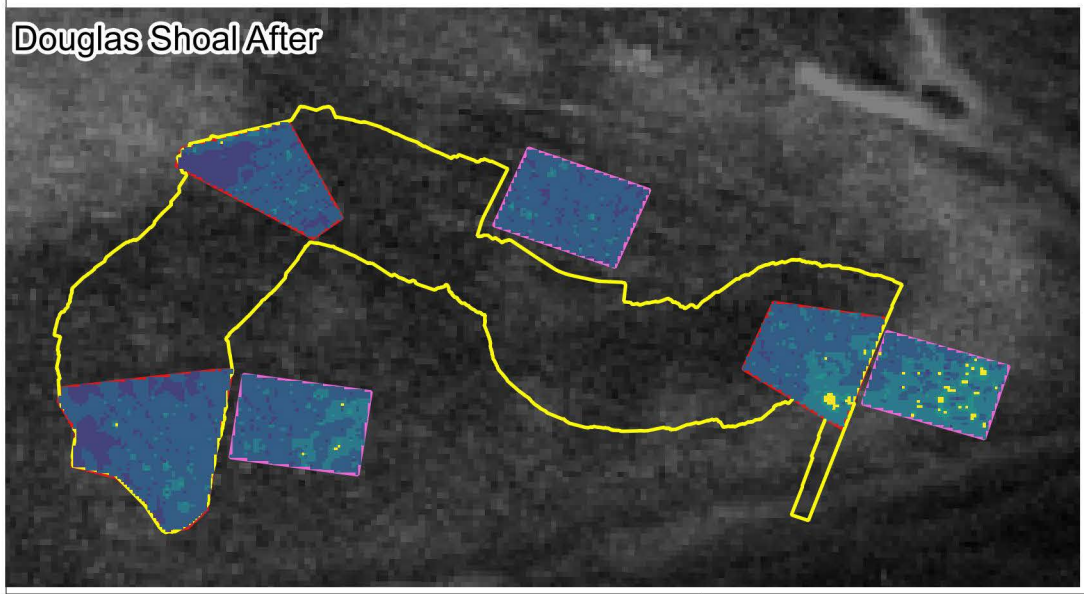
The change in the distribution of unconsolidated material (sand and gravel, Figure 5.14) before and after remediation was similar to the pattern observed for gravel, with more noise, representing mobile sands. The greatest reduction in unconsolidated material occurred in dredge head path.

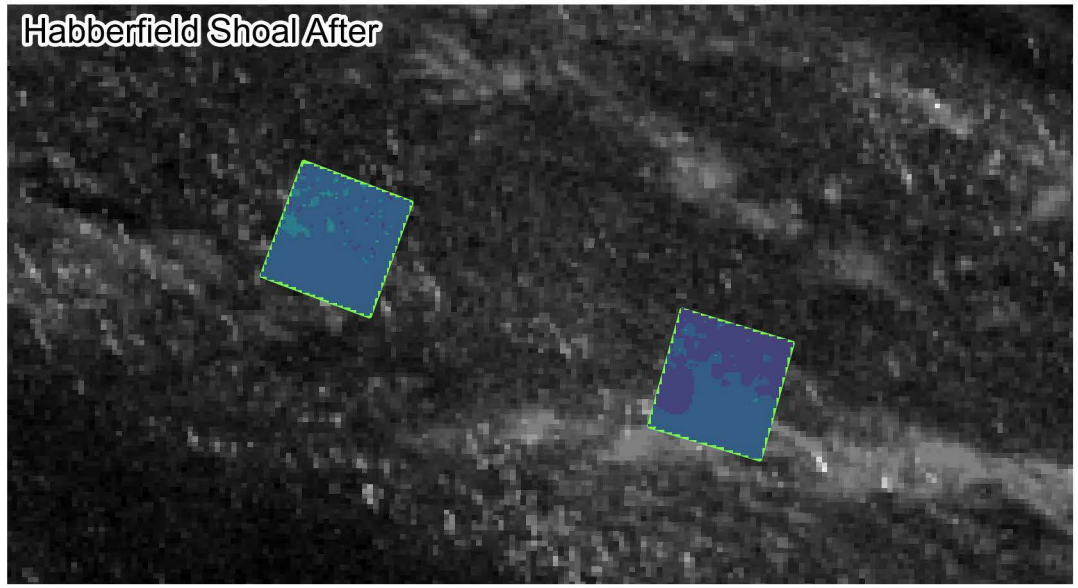
These spatial data show some collateral damage of hard corals in the direct remediation areas, a reduction in macroalgal substrates, and an increase in turfing algae over the underlying pavement unearthed by the remediation. There is some evidence that *Sargassum* may have been affected within and adjacent to the remediation, otherwise no remediation “plume effects” are apparent in the spatially interpolated cover data.

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**LEGEND**

Percentage Cover (%)

- 0
- 0 to 1
- 1 to 5
- 5 to 10
- 10 to 15
- Greater than 15

- Ship footprint

Monitoring Locations

- Near-Field
- Regional Ref
- Remediation

Title:

# Hard Coral Cover Before and After Remediation Activities

Figure: **5.7**

Rev: **A**

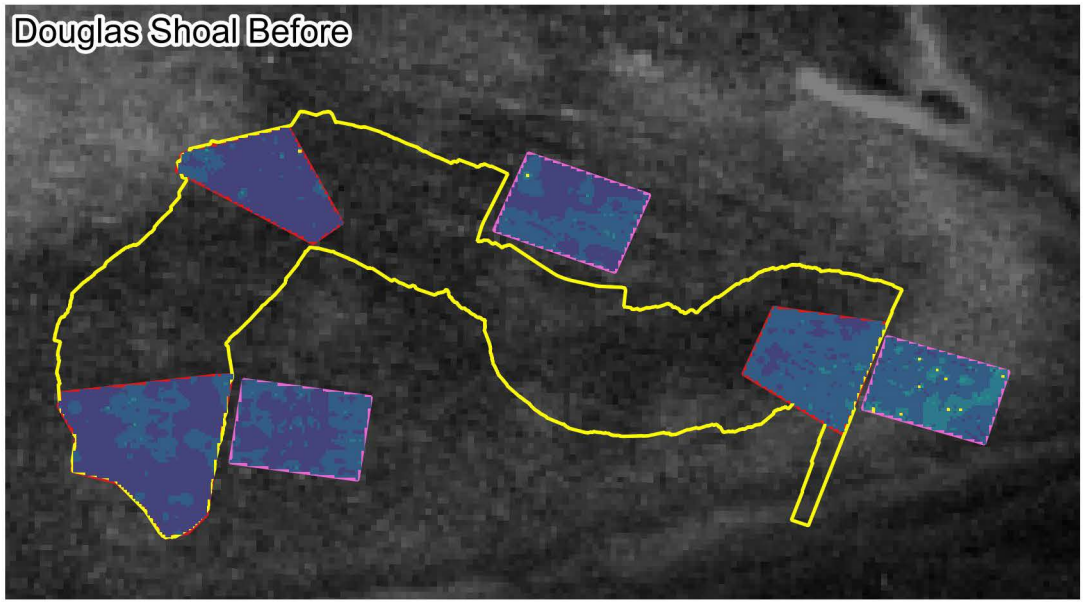
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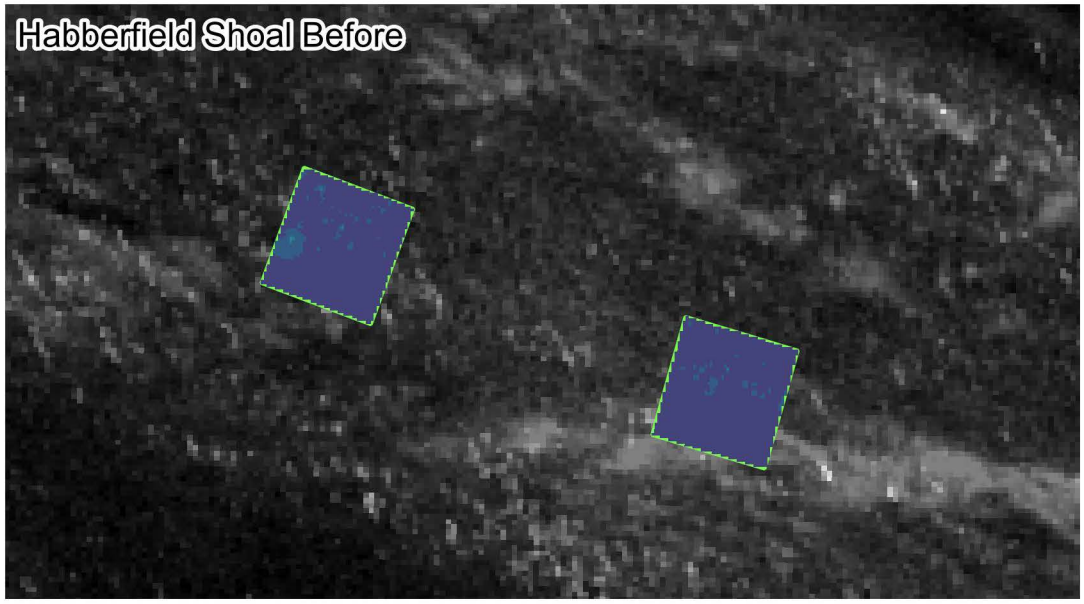
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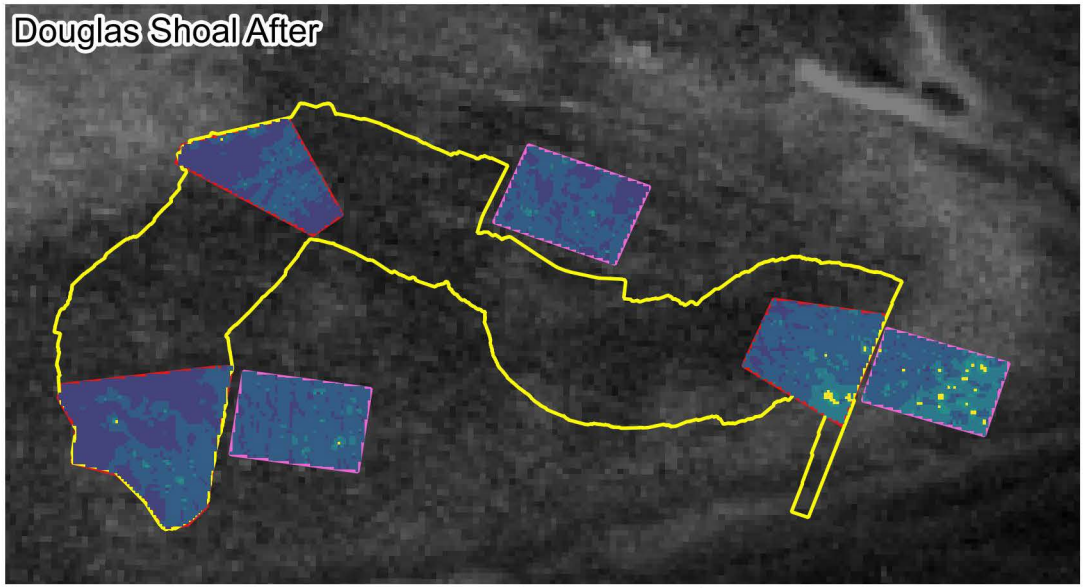
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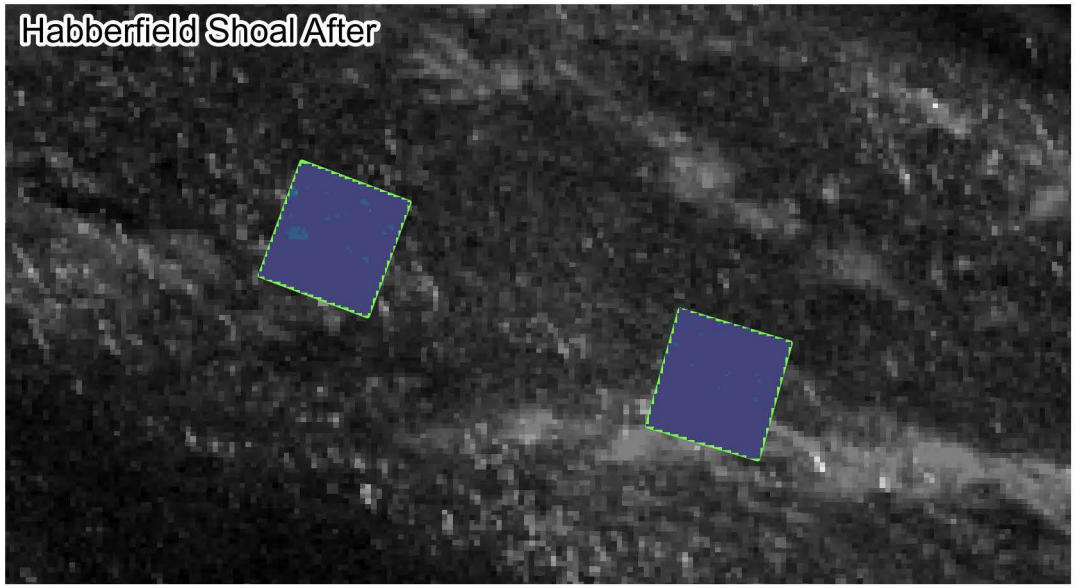
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**LEGEND**

Percentage Cover (%)

- 0
- 0 to 1
- 1 to 5
- 5 to 10
- 10 to 15
- Greater than 15

- Ship footprint

Monitoring Locations

- Near-Field
- Regional Ref
- Remediation

Title:

# Acropora spp. Cover Before and After Remediation Activities

Figure: **5.8**

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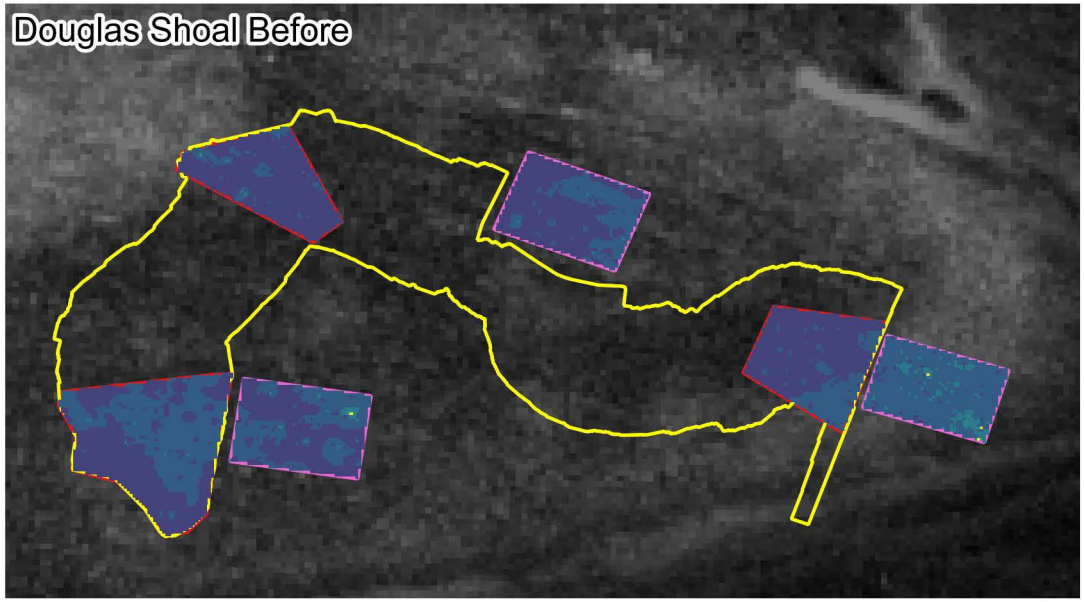
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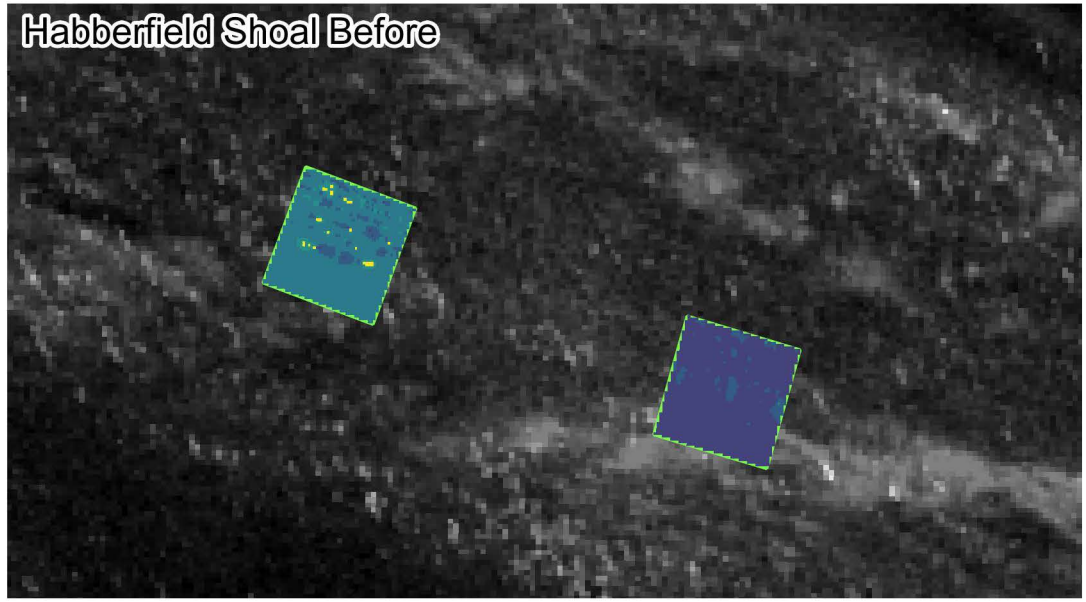
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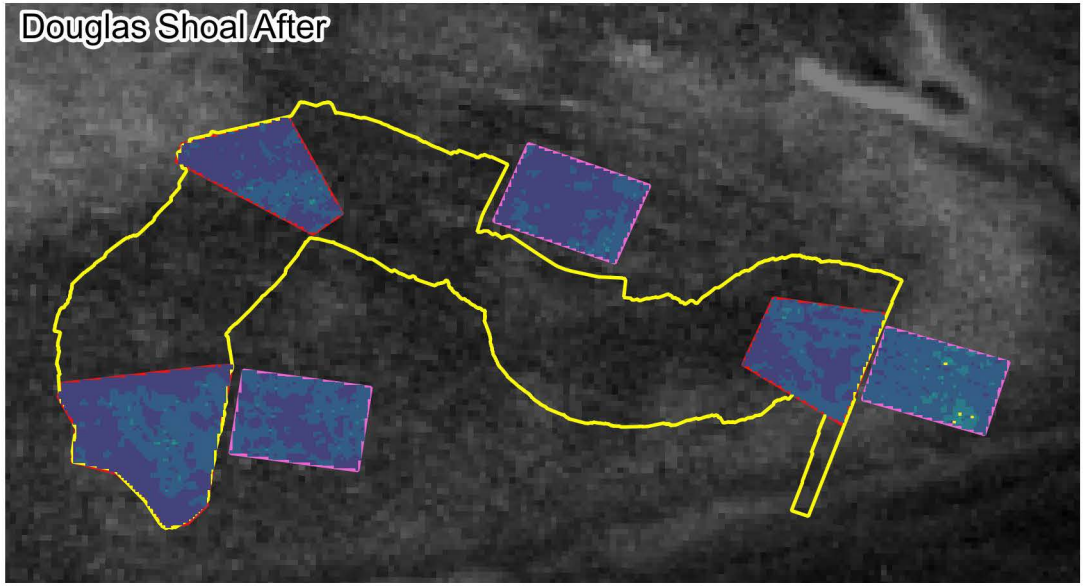
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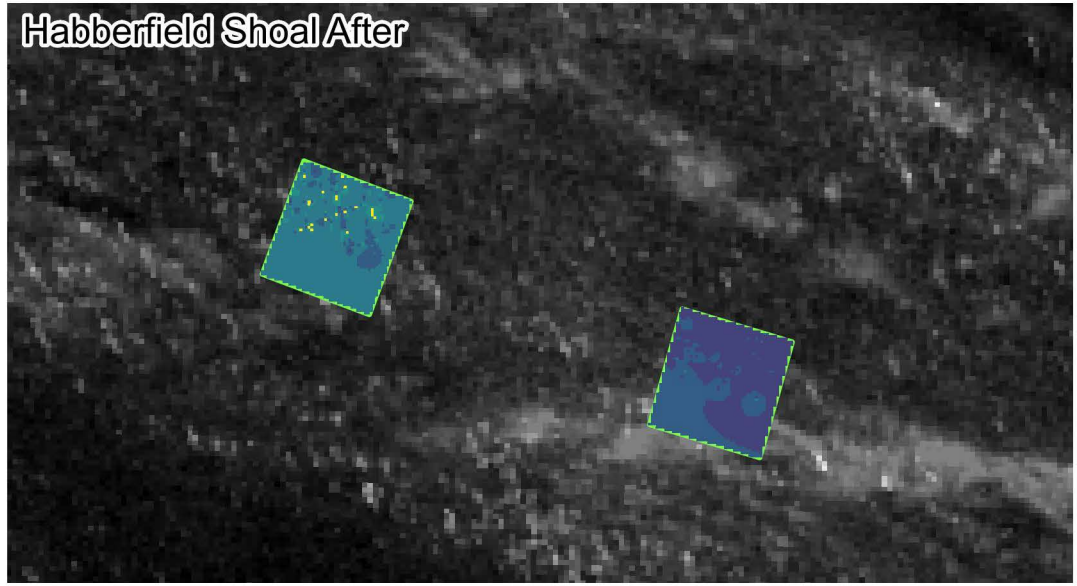
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**LEGEND**

Percentage Cover (%)

- 0
- 0 to 1
- 1 to 5
- 5 to 10
- 10 to 15
- Greater than 15

- Ship footprint

Monitoring Locations

- Near-Field
- Regional Ref
- Remediation

Title:

# Soft Coral Cover Before and After Remediation Activities

Figure: **5.9**

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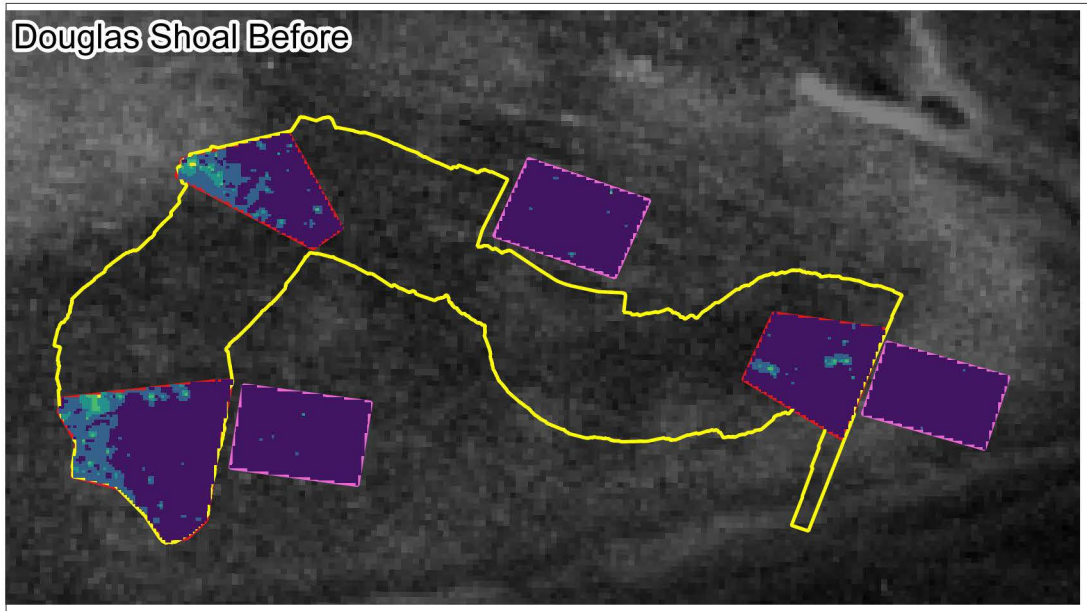
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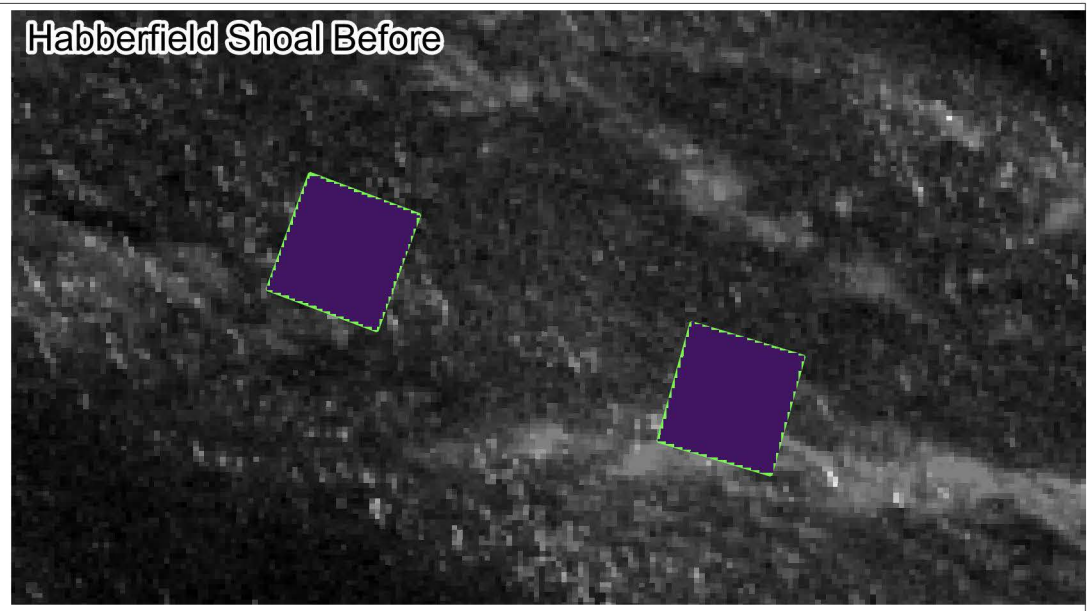
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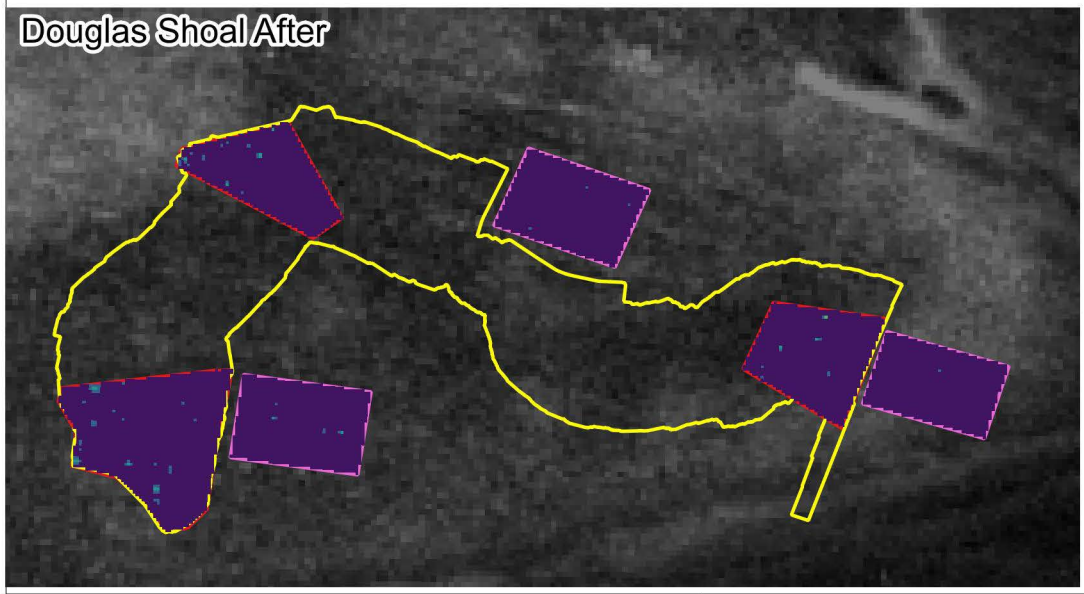
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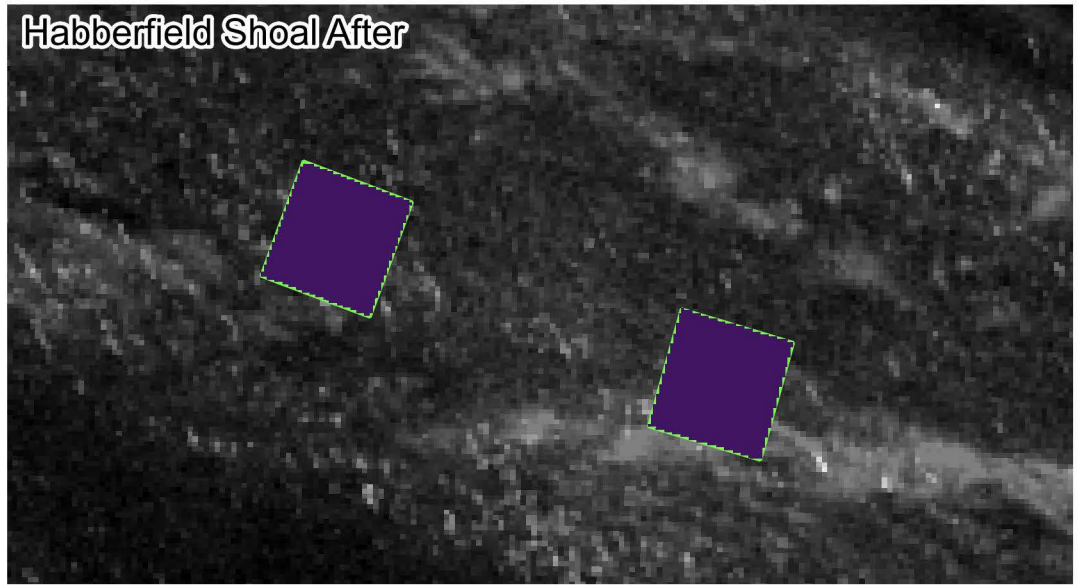
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**LEGEND**

Percentage Cover (%)

- 0
- 0 to 15
- 15 to 30
- 30 to 50
- 50 to 75
- Greater than 75

- Ship footprint

Monitoring Locations

- Near-Field
- Regional Ref
- Remediation

Title:

# Gravel Cover Before and After Remediation Activities

Figure: **5.10**

Rev: **A**

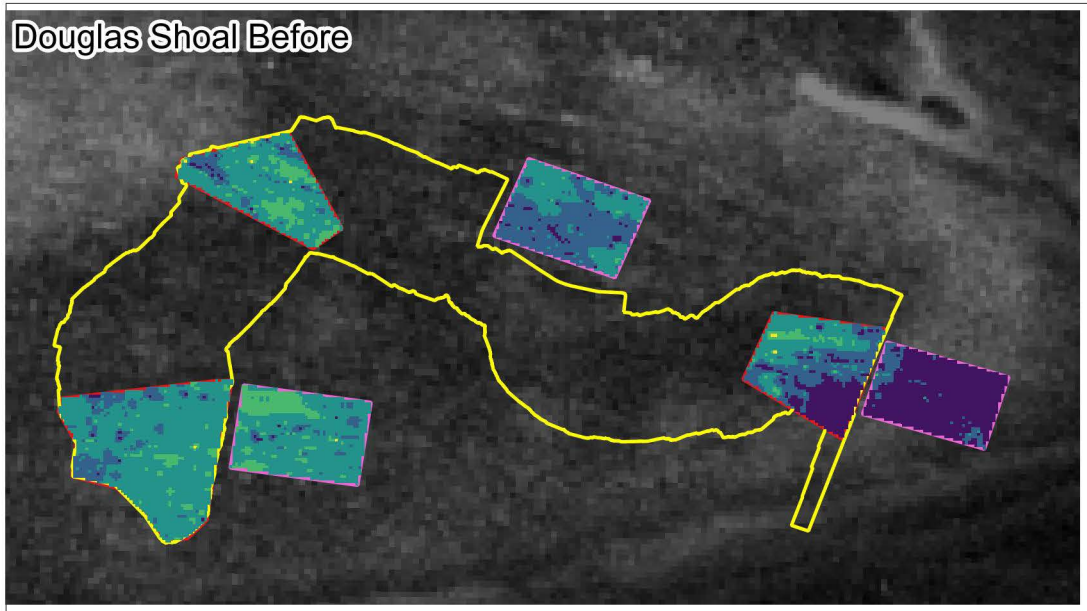
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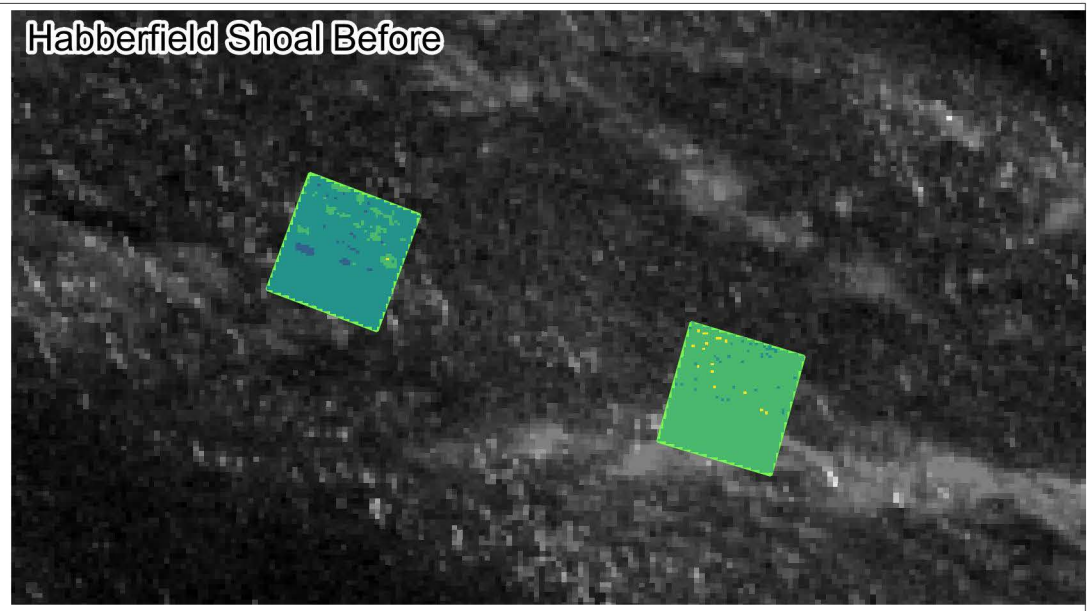
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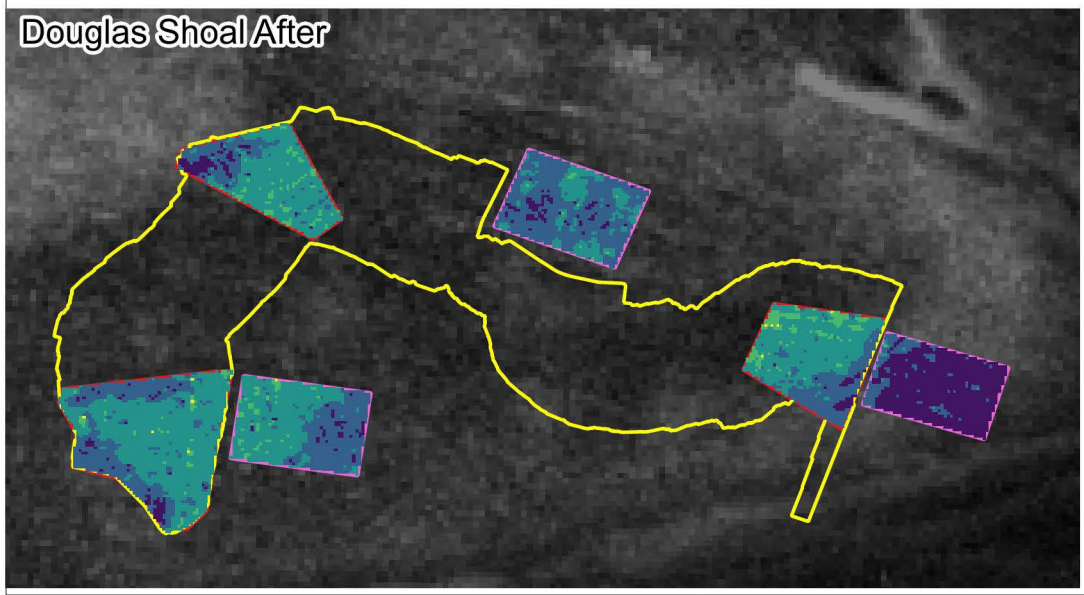
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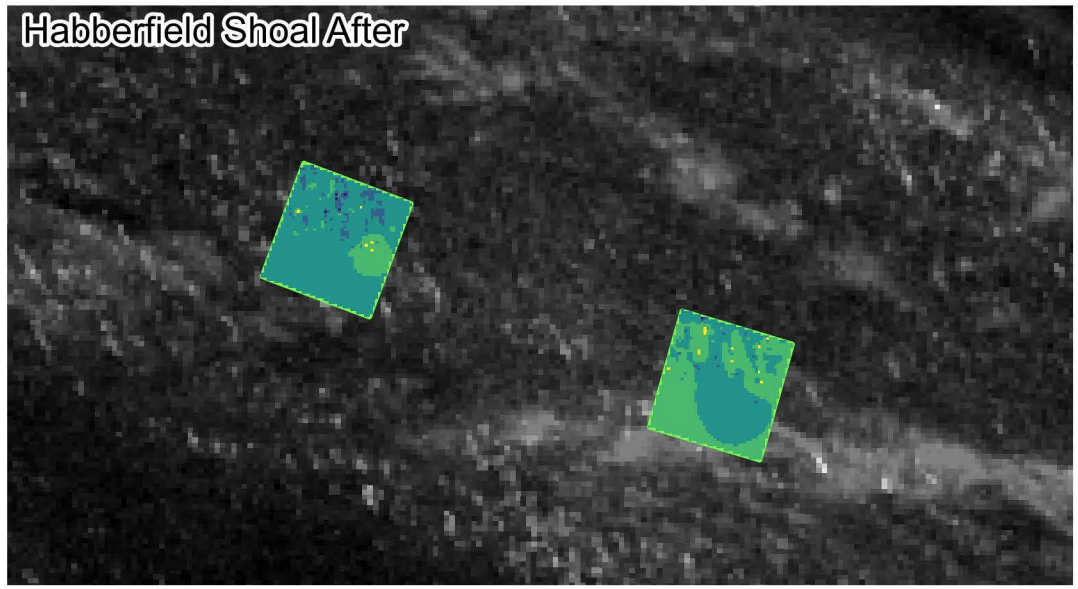
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**LEGEND**

Percentage Cover (%)

- 0
- 0 to 15
- 15 to 30
- 30 to 50
- 50 to 75
- Greater than 75

Ship footprint

Monitoring Locations

- Near-Field
- Regional Ref
- Remediation

Title:

# Macroalgae spp. Cover Before and After Remediation Activities

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N

0 75 150 m

Figure: 5.11

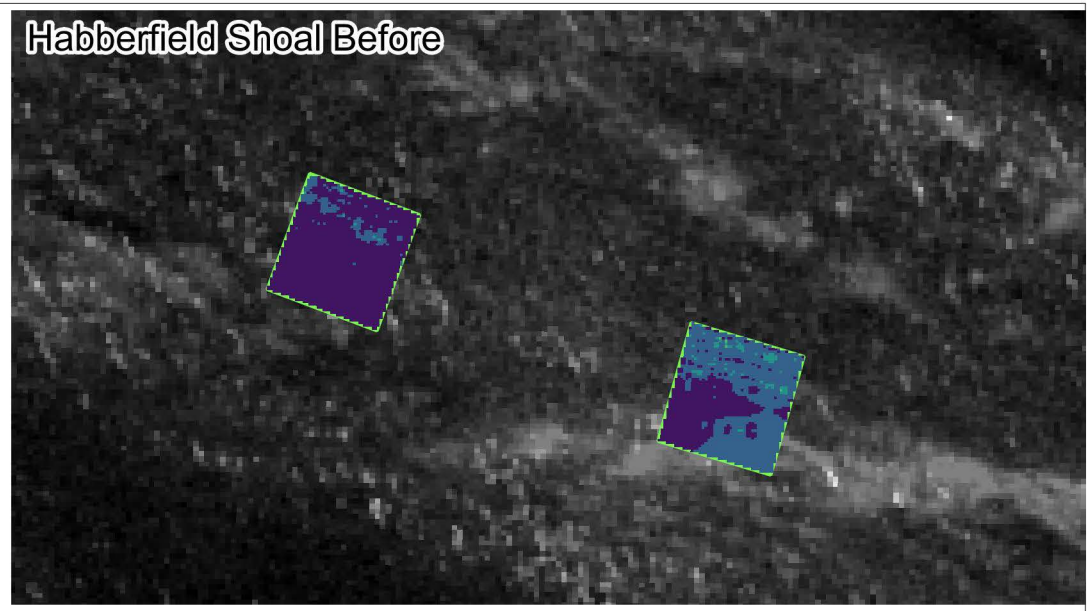
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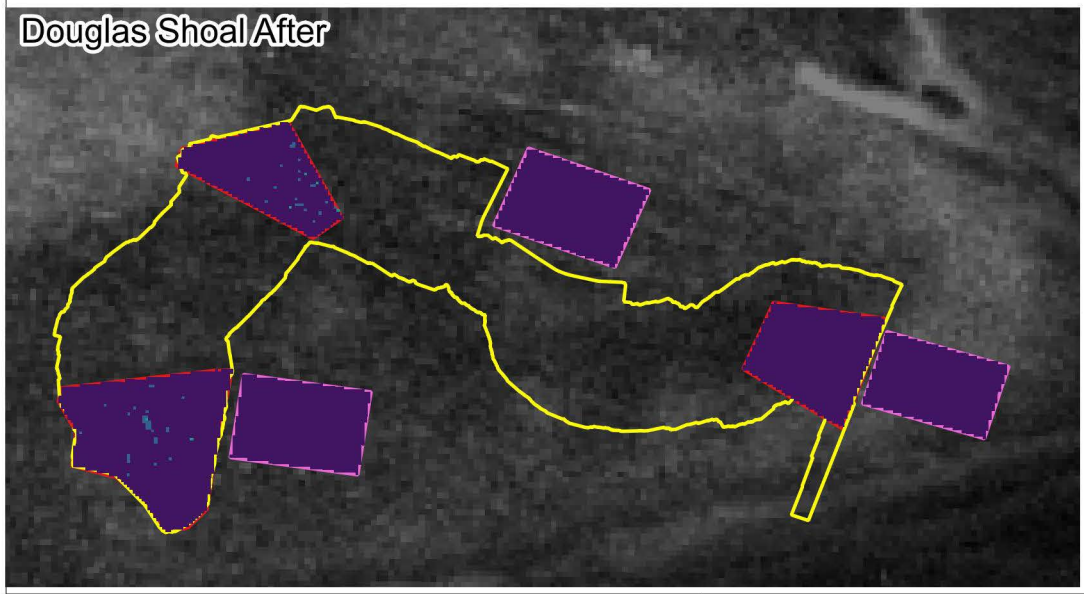
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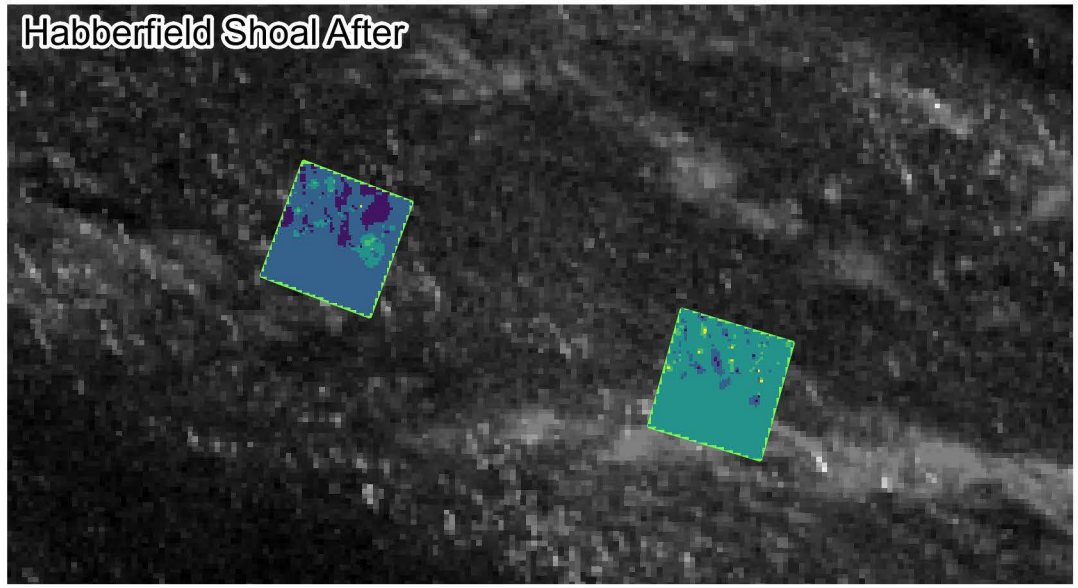
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**LEGEND**

Percentage Cover (%)

- 0
- 0 to 15
- 15 to 30
- 30 to 50
- 50 to 75
- Greater than 75

Ship footprint

Monitoring Locations

- Near-Field
- Regional Ref
- Remediation

Title:

# Sargassum spp. Cover Before and After Remediation Activities

Figure: **5.12**

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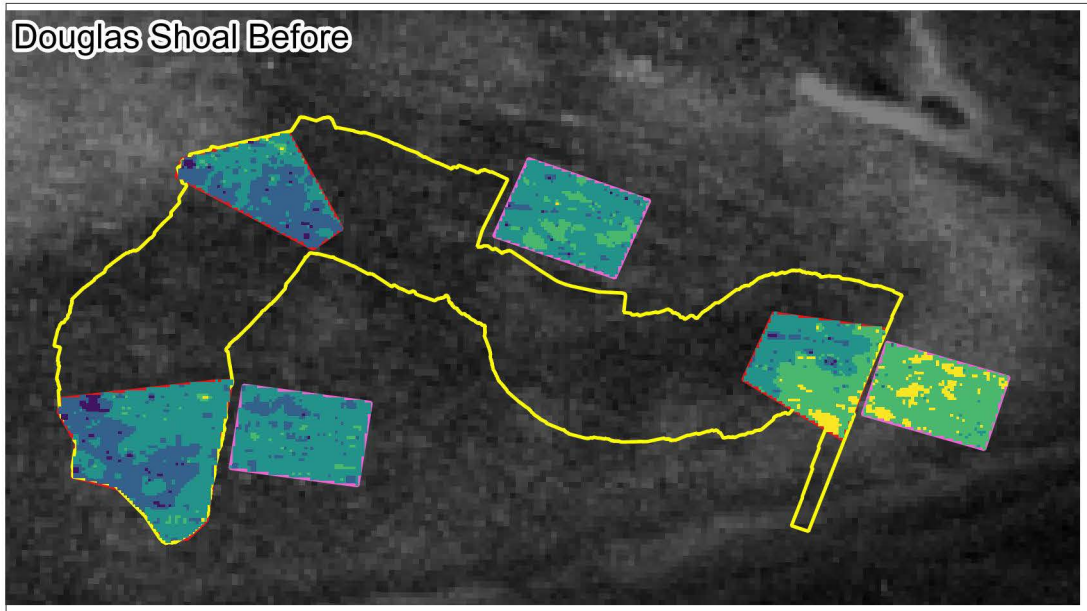
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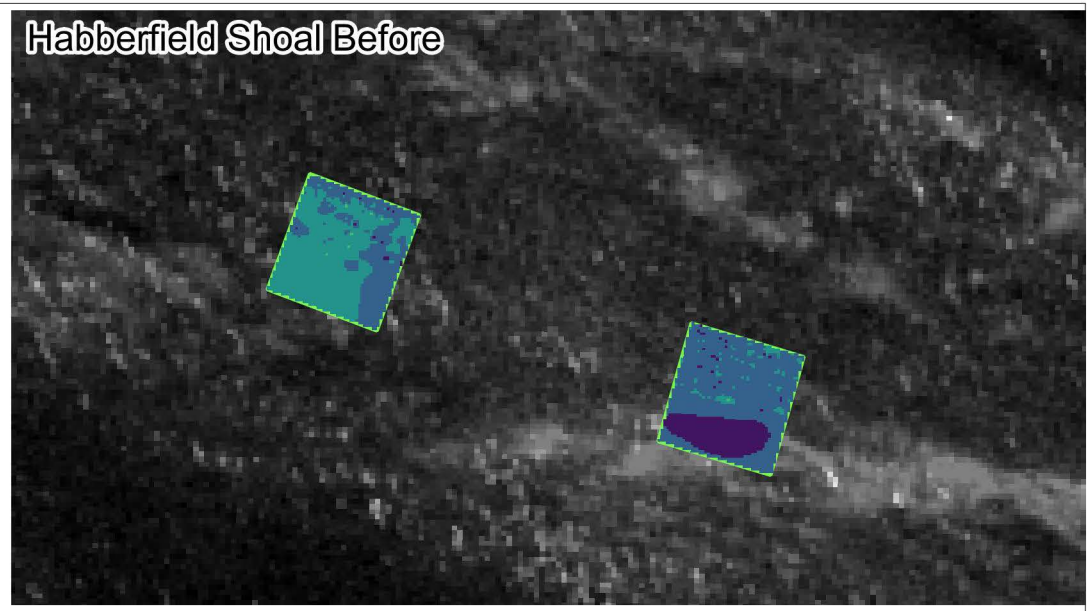
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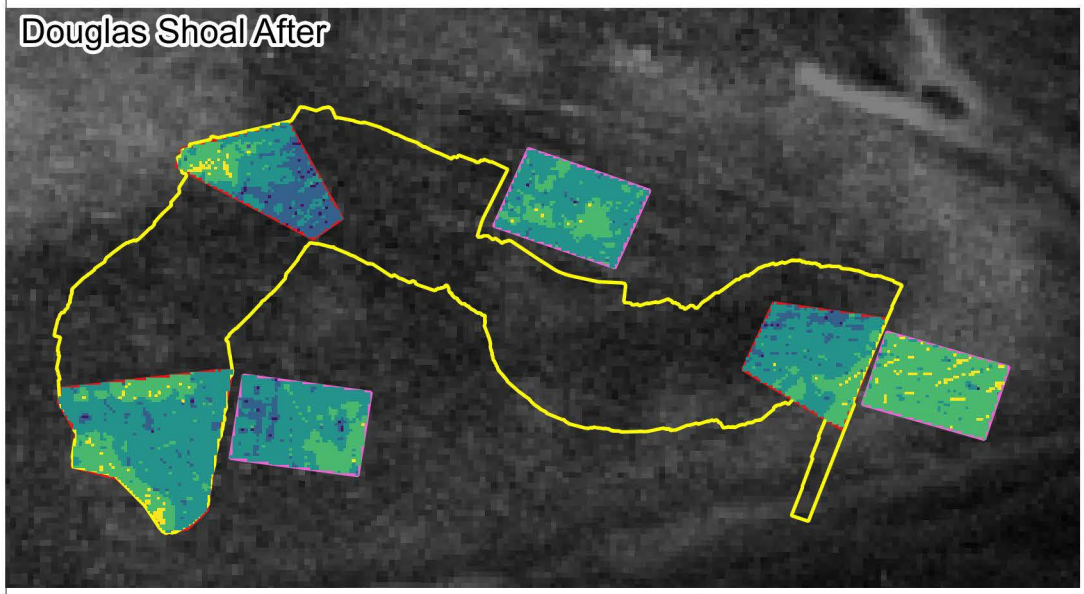
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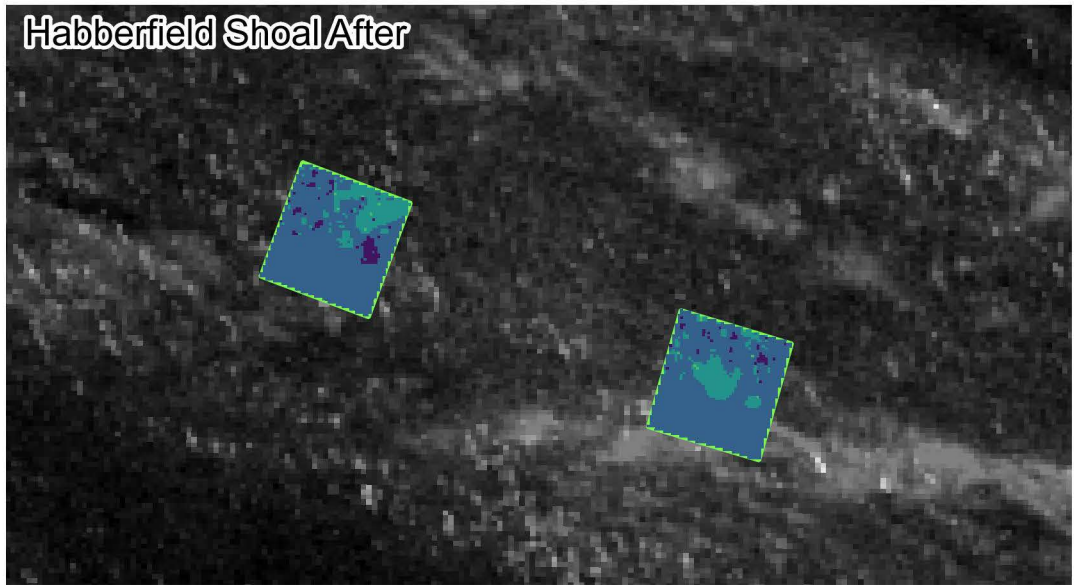
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**LEGEND**

Percentage Cover (%)

- 0
- 0 to 15
- 15 to 30
- 30 to 50
- 50 to 75
- Greater than 75

Ship footprint

Monitoring Locations

- Near-Field
- Regional Ref
- Remediation

Title:

# Turf Algae Cover Before and After Remediation Activities

Figure: 5.13

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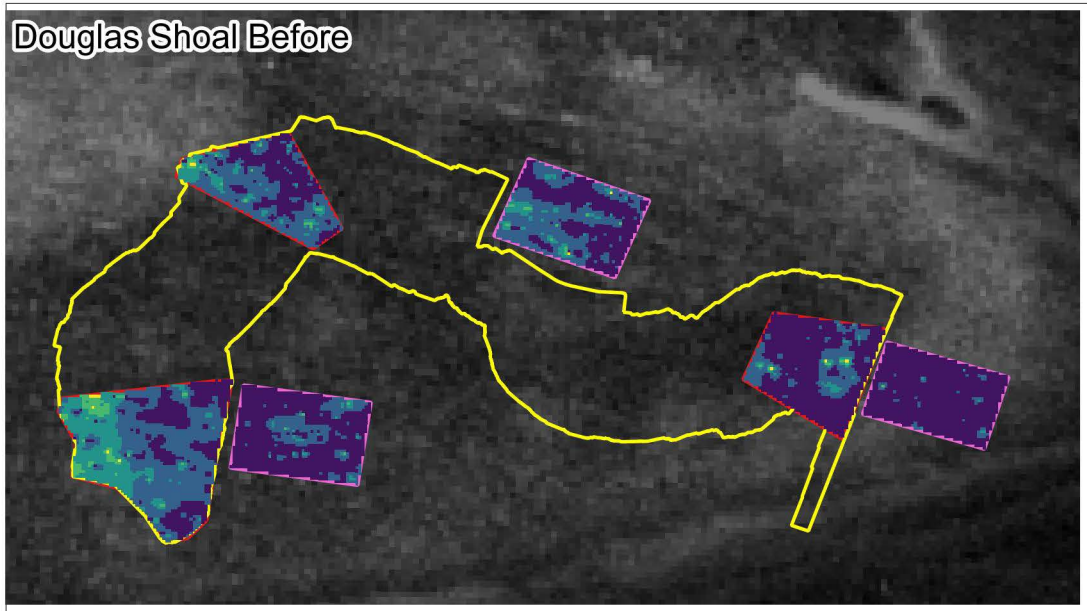
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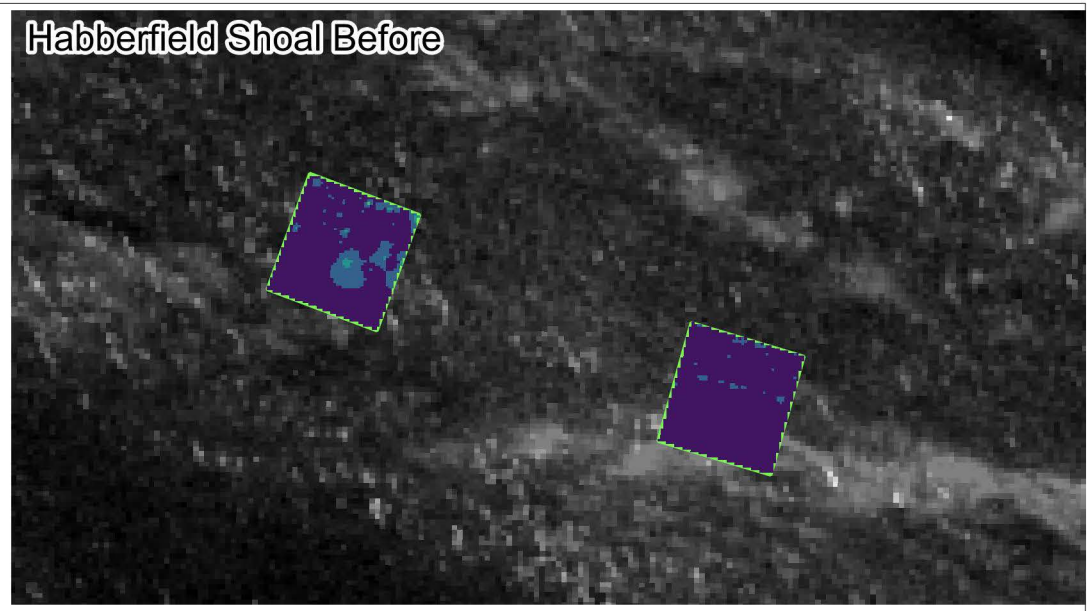
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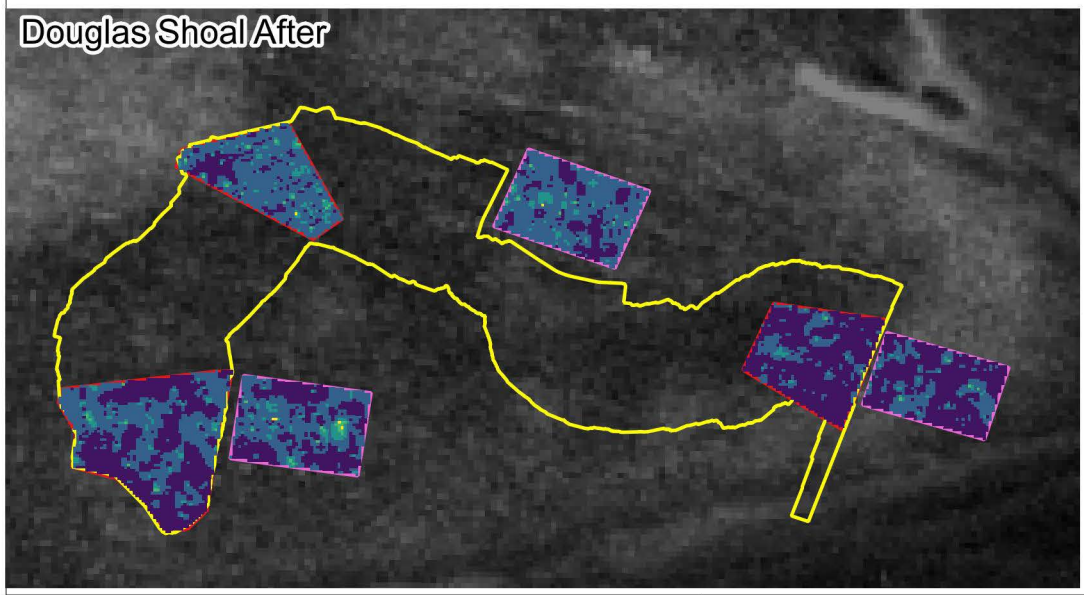
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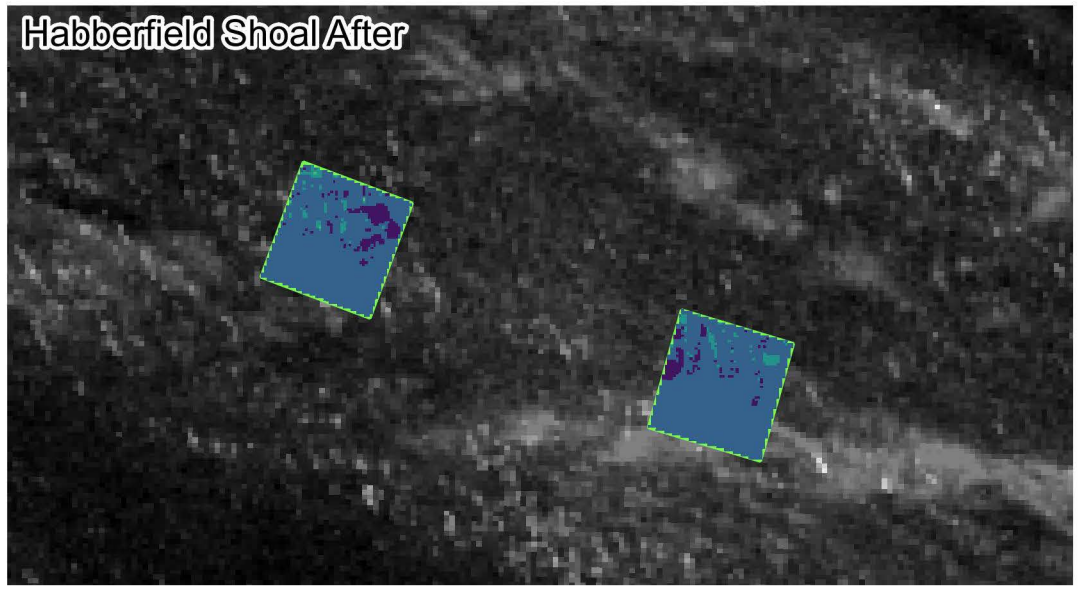
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**LEGEND**

Percentage Cover (%)

- 0
- 0 to 15
- 15 to 30
- 30 to 50
- 50 to 75
- Greater than 75

- Ship footprint

Monitoring Locations

- Near-Field
- Regional Ref
- Remediation

Title:

# Unconsolidated Sediment Cover Before and After Remediation Activities

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N

0 75 150 m

Figure: **5.14**

Rev: **A**

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### 5.1.5 Coral Bleaching

Two coral bleaching events were observed during the monitoring program (events 2 and 6), with the event 2 bleaching resulting in more bleached coral cover and affecting more colonies (Figure 5.15, Figure 5.16). Pairwise comparisons were made among treatments only, due to the low percent cover estimates and presence of numerous zero values (Table 5.5 and Table 5.6).

Coral bleaching was virtually absent in 2019, but very extensive in 2020 (event 2) affecting up to 35% of hard coral colonies and up to 0.5% of soft coral colonies at various locations. In 2024 (event 6), bleaching affected up to 10% of hard coral colonies and up to 0.2% of soft coral colonies. Figure 5.15 shows the percentage of total seafloor cover (upper plots) and the mean proportion of hard or soft coral colonies bleached (lower plots). This was an important distinction for assessing the overall changes in cover potentially within the monitoring program, because high mean proportions of bleaching do not necessarily translate to high bleaching cover overall. For example, the highest proportion of bleached hard corals in event 2 occurred at location mA, but the highest (seafloor) cover of bleached corals occurred at location mB (Figure 5.15 ).

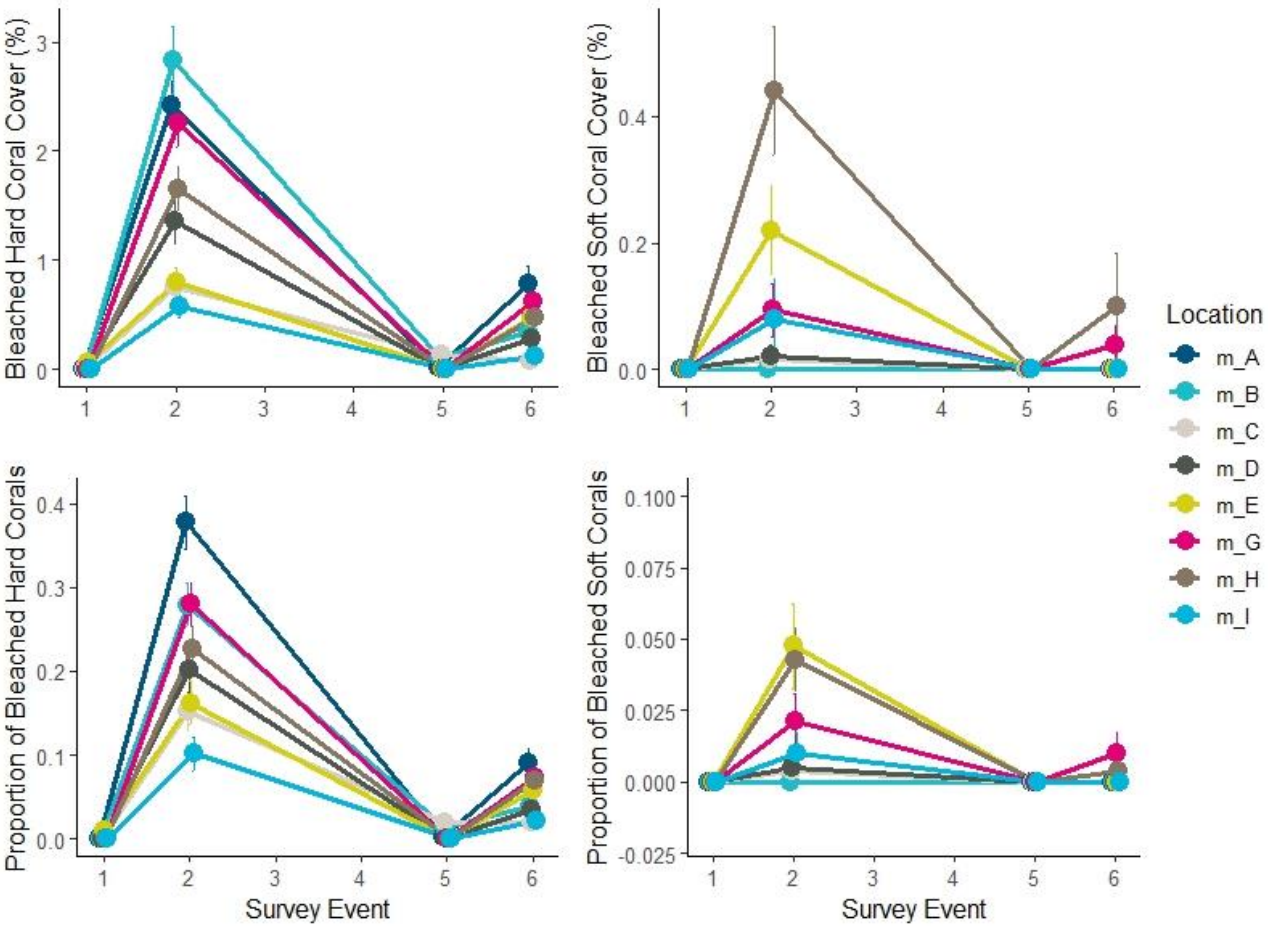



Figure 5.15 Location means (±SE) of hard coral bleaching (above left) and soft coral bleaching cover (above right) relative to total seafloor cover. Proportions of hard (lower left) and soft (lower right) corals bleached relative to total respective coral categories

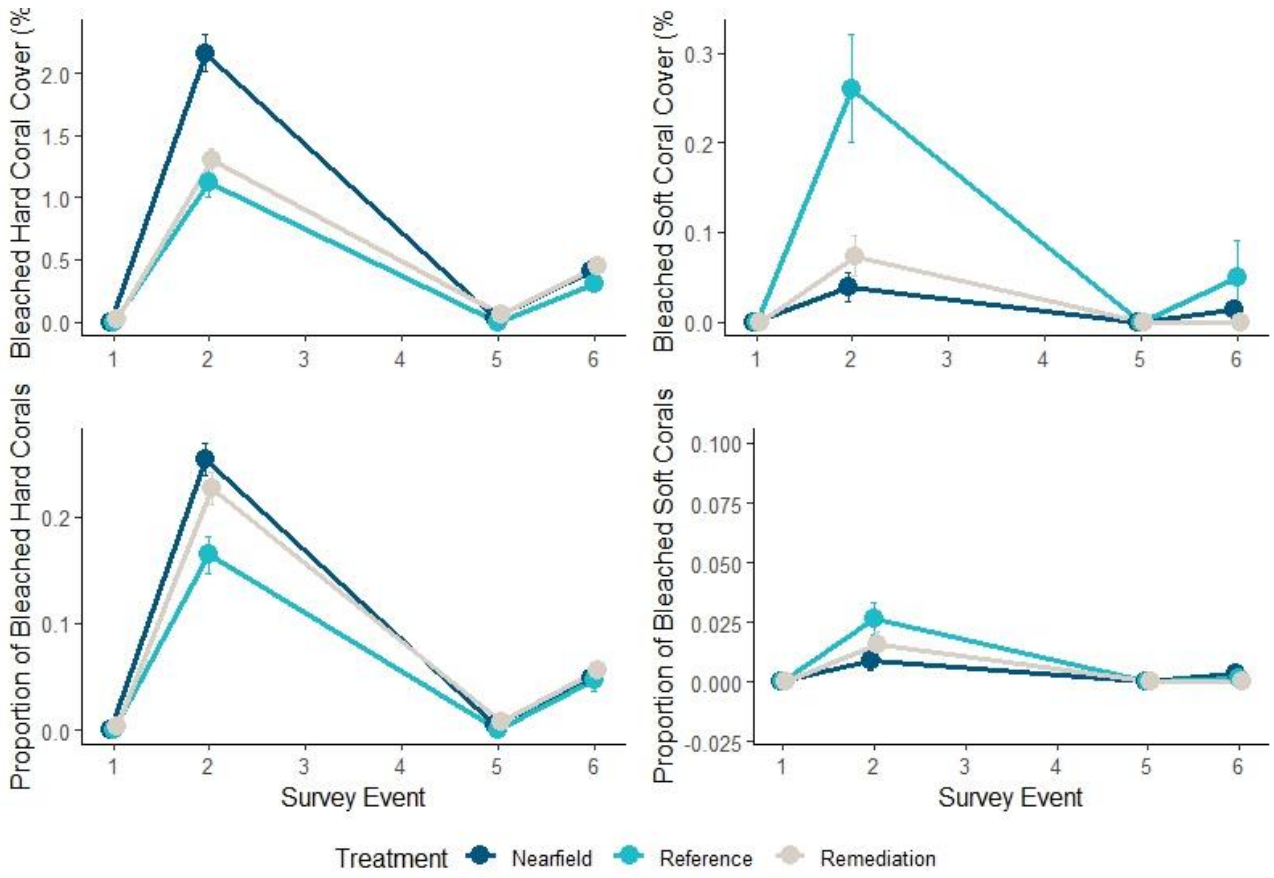



Figure 5.16 Treatment means (±SE) of hard coral bleaching (above left) and soft coral bleaching cover (above right) relative to total seafloor cover. Proportions of hard (lower left) and soft (lower right) corals bleached relative to total respective coral categories

In event 2 there was higher bleached hard coral cover and a greater proportion of bleached corals at both Douglas Shoal treatments compared to the reference treatment. As such, there was concern early in the monitoring program that differential bleaching in the remediation treatment prior to the remediation works could obscure potential impact of remediation. However, hard coral cover increased in remediation locations in the post-remediation period, and the cover of *Acropora* spp. also increased in the nearfield and remediation treatments relative to reference sites (section 5.1).

This contrasted with the reduction in hard coral cover at Habberfield Shoal, which may have been the result of subsequent mortality after both bleaching events, although the cause of the reduction is not known. Likewise, there were no significant differences in coral bleaching (hard or soft coral) among the treatments post-remediation. This indicates that the remediation activities did not contribute to bleaching at Douglas Shoal, and differential rates of bleaching based on treatment were not observed.

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Table 5.5 Differences in the proportion of bleached hard coral after Remediation based on Kruskal-Wallace rankings. Significant differences (p<0.05) are Highlighted

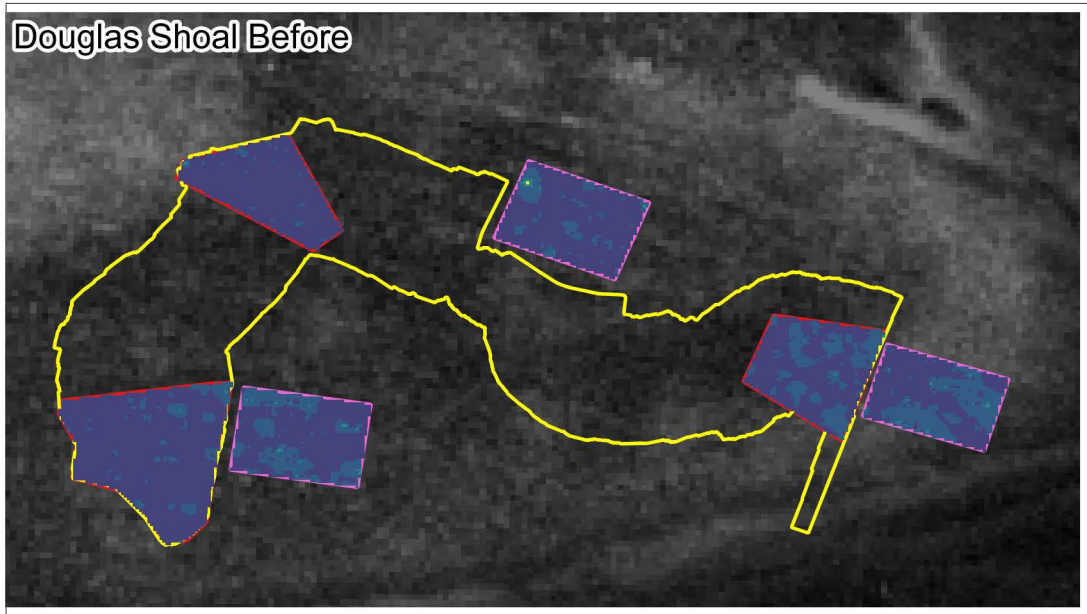
| Treatment / B.A. | Nearfield After | Nearfield Before | Reference After | Reference Before | Remediation After |
|---|---|---|---|---|---|
| **Nearfield Before** | **< 2e-16** | - | - | - | - |
| **Reference After** | 0.33 | **< 2e-16** | - | - | - |
| **Reference Before** | **9.3e-11** | **4.0e-05** | **9.3e-11** | - | - |
| **Remediation After** | 0.37 | **< 2e-16** | 0.08 | **1.2e-08** | - |
| **Remediation Before** | **2.5e-15** | **0.00018** | **5.0e-14** | 0.34 | **6.5e-13** |

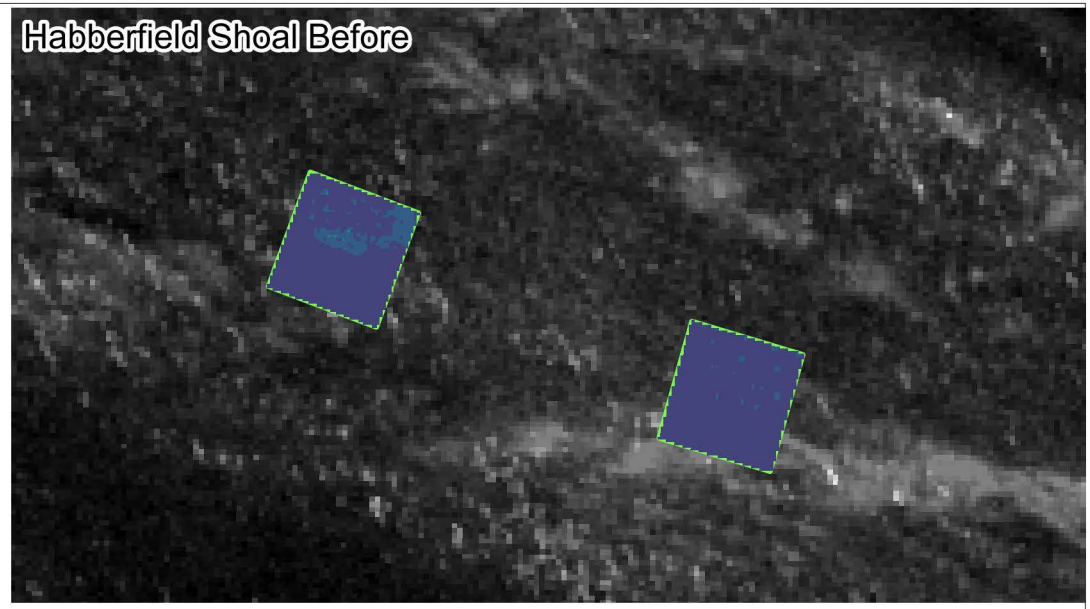
Table 5.6 Differences in the proportion of bleached soft coral after Remediation based on Kruskal-Wallace rankings. Significant differences (p<0.05) are Highlighted

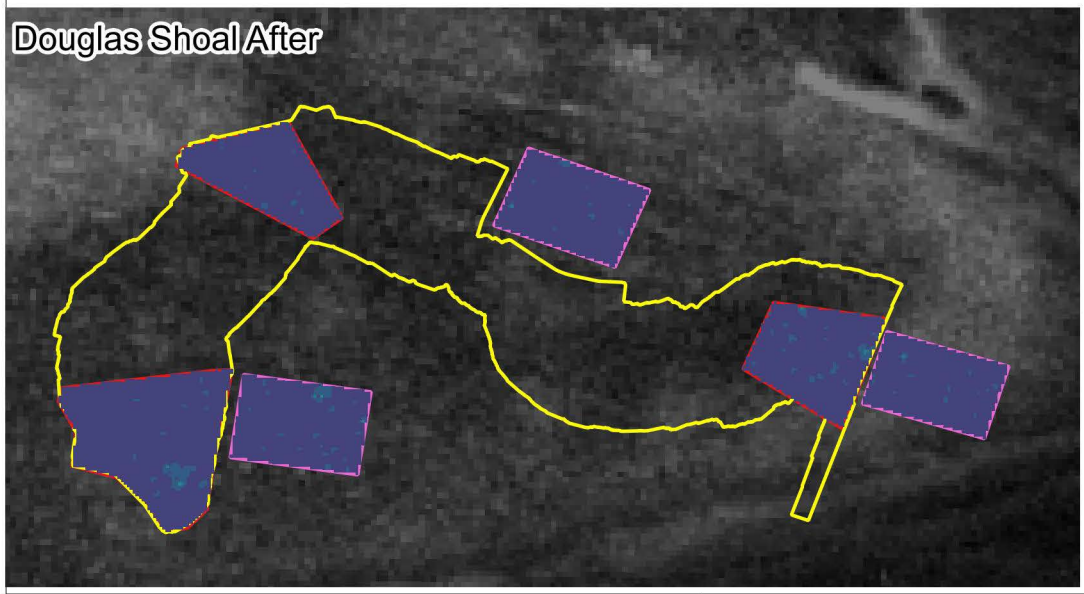
| Treatment / B.A. | Nearfield After | Nearfield Before | Reference After | Reference Before | Remediation After |
|---|---|---|---|---|---|
| **Nearfield Before** | 0.22 | | | | |
| **Reference After** | 0.68 | 0.448 | | | |
| **Reference Before** | **1.5e-06** | **7.5e-05** | **0.00015** | | |
| **Remediation After** | 0.21 | **0.04** | 0.14 | **1.2e-07** | |
| **Remediation Before** | **0.03** | 0.32 | 0.15 | **0.001** | **0.004** |

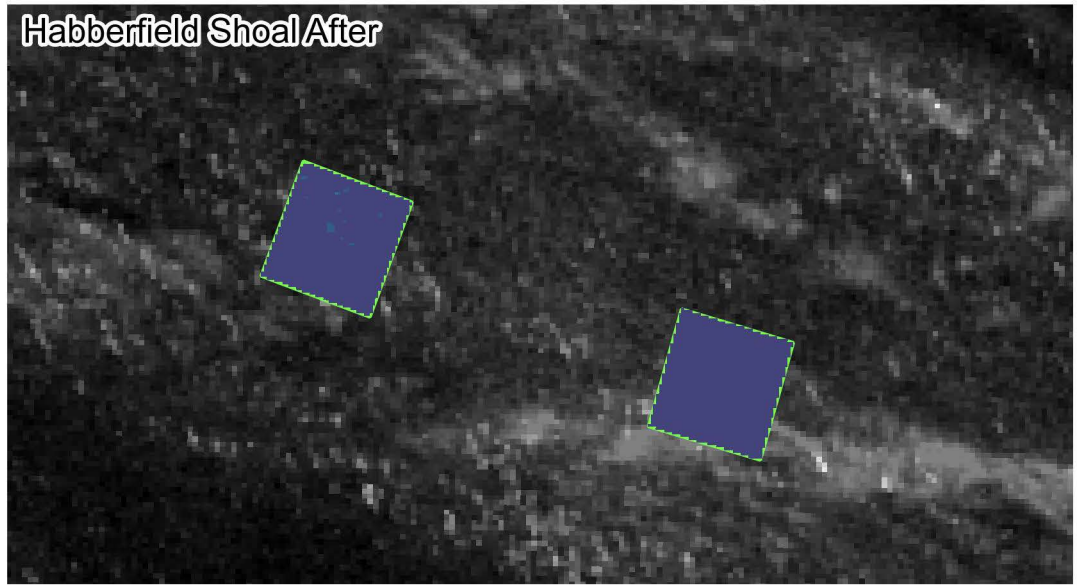
The reduction in bleaching between the before and after remediation periods is also visually obvious as a reduction in extent (Figure 5.17). The reduction in bleaching extent after remediation was spread evenly across the monitoring locations and did not show any signs of localised (dredge-related impact).

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**LEGEND**

Percentage Cover (%)

- 0
- 0 to 1
- 1 to 5
- 5 to 10
- 10 to 15
- Greater than 15

- Ship footprint

Monitoring Locations

- Near-Field
- Regional Ref
- Remediation

Title:

# Bleached Hard Coral Cover Before and After Remediation Activities

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N

0 75 150 m

Figure: 5.17

Rev: A

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## 5.2 3D Modelling

The six 3D models generated at Douglas Shoal during events 1 and 6 depicted changes that varied from complete removal of prior substrate to a proliferation of plating corals (Figure 5.18 to Figure 5.26). Sites AMOS1, AMOS2 and CMOS1 showed the least evidence of damage, while sites CMOS2, EMOS1, and EMOS2 experienced removal of unconsolidated substrate and a reduction in epibenthic communities on consolidated substrates. Sites were positioned in areas that were expected to experience the highest level of change; in mA sites were located near the initial grounding site, against the high-relief terrace in mC, and sitting within the rubble bed at mE. In all temporal comparisons, the Autumn 2024 capture showed less dense macroalgal assemblages and turf compared to spring 2019.

Both before and after models collected in mA had similar gross morphologies and showed similar temporal changes in benthic cover. Sand channels and potholes which were the major vertical relief features for this location. Close-ups of the orthomosaics show that between spring 2019 and autumn 2024, plate corals had increased markedly in size and many were partially or completely bleached. While the bleaching event in 2020 was more severe at Douglas Shoal than the 2024 event, many of the acroporid corals affected by the previous event had survived and grown, as seen in the before and after close-up views in Figure 5.18 and Figure 5.19. No evidence of direct physical remediation damage or sediment removal is visible in either image.

The vertical relief, epibenthic cover and degree of temporal change varied greatly between the two models developed at mC before and after remediation. Site CMOS1 was located near the base of the high relief terrace and had the highest vertical relief compared to all the other models (1.25 m change in bed elevation). The models show unconsolidated sand and rubble material within groove formation at the base of the terrace (Figure 5.22). Compared to the 2019 model, the autumn 2024 model showed less unconsolidated sediment in the groove parts of the site, and one physical remediation scar is visible in the lower right-hand side of the image at the boundary of the mosaic.

The second mC model (CMOS2, Figure 5.23) showed substantial modification after remediation. It was comparatively flat due to the absence of spur and groove formation, with an estimated initial change in elevation of 0.2 m. This location was selected in an area of unconsolidated sediment likely to undergo some form of physical remediation. Between 2019 and 2024, the cover of unconsolidated sediment and macroalgae (particularly *Dictyopteris* sp.) was greatly reduced. The 2024 image shows a flat area of pavement with developing macroalgal assemblages and some thin sand tracks moving across the site. There are some physical remediation scars in a north-south orientation over the consolidated substrate.

Both 3D models at location mE showed extensive changes between 2019 and 2014, including near-complete removal of unconsolidated substrate, the introduction of previously buried potholes and visible dredge scars (Figure 5.24, Figure 5.25). The 2024 models were also devoid of large macroalgae (particularly *Dictyopteris* sp.) which was extremely prevalent in spring 2019 at both sites. Site EMOS1 contained a large boomerang-shaped groove that was filled with sediment in 2019 and was virtually empty of sediment in 2024. Similarly, to the left of this feature (west) was another depression that was filled with sediment in 2019 and in 2024 had two concentric potholes that were buried in 2019. Scars from direct physical remediation damage ran from the north-west to the south-east across the higher sections of the site.

Site EMOS2 was a straight expanse of unconsolidated sediment situated directly beneath a part of the grounding footprint where the Shen Neng 1 rested prior to salvage. Most of the rubble and all the *Dictyopteris* sp. was gone from EMOS2 in 2024. Beneath the rubble bed were four large potholes and a light covering of sand could be seen over parts of the site. Scars from the remediation were visible running north-south in the 2024 capture.

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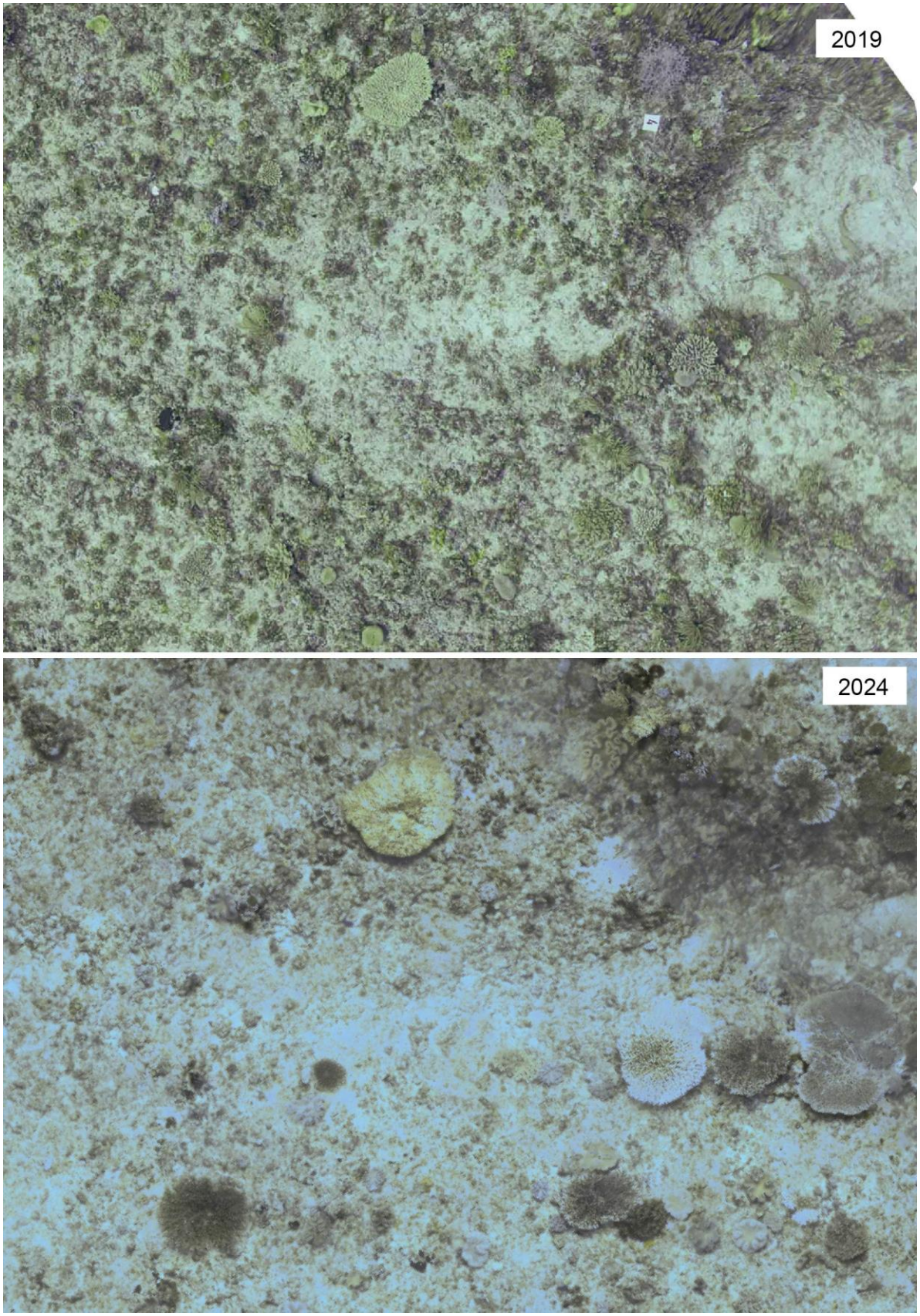



Figure 5.18 Close-up comparisons of orthomosaics from site AMOS1

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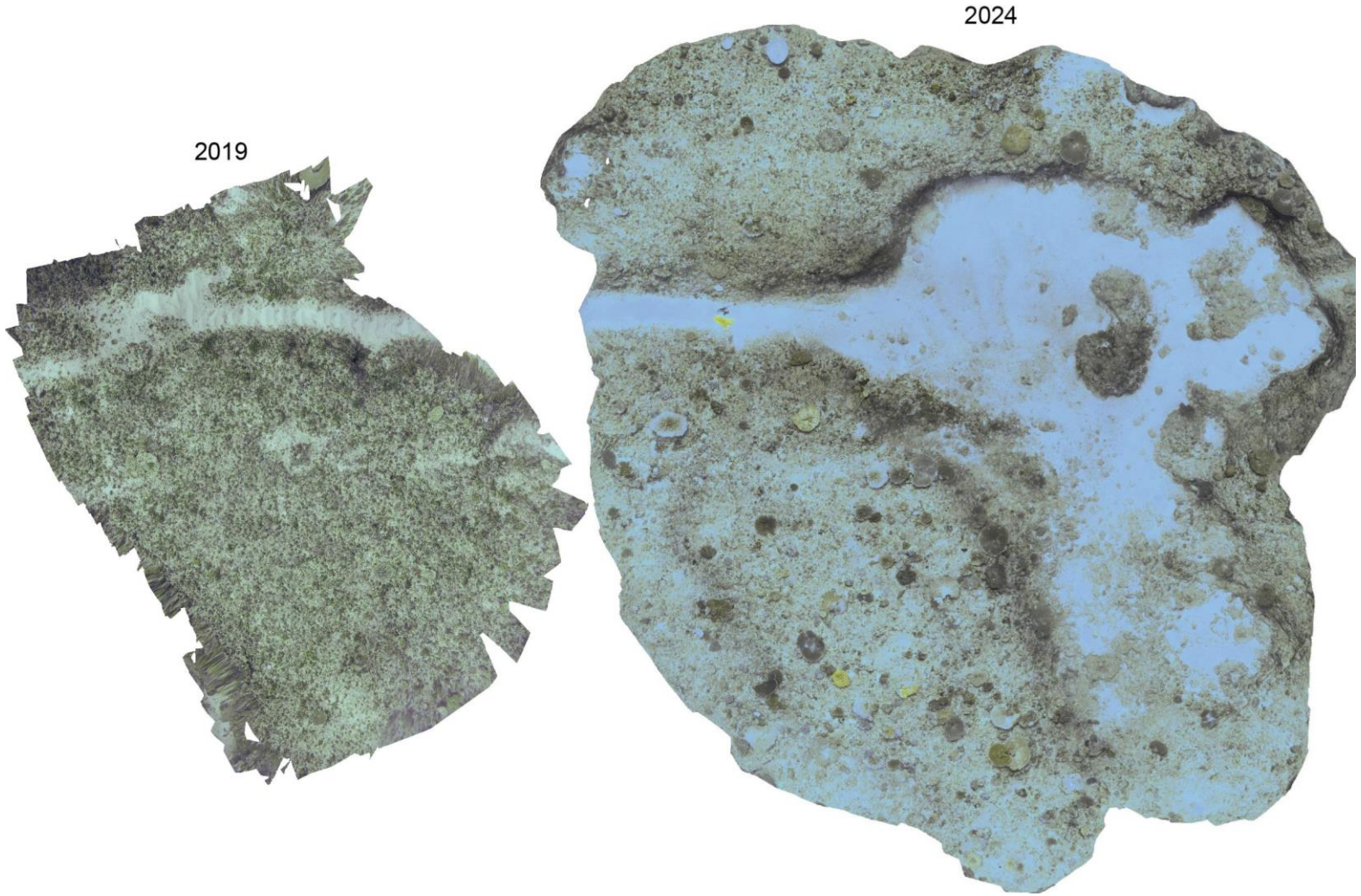



Figure 5.19 Temporal comparison of the orthomosaic at site AMOS1

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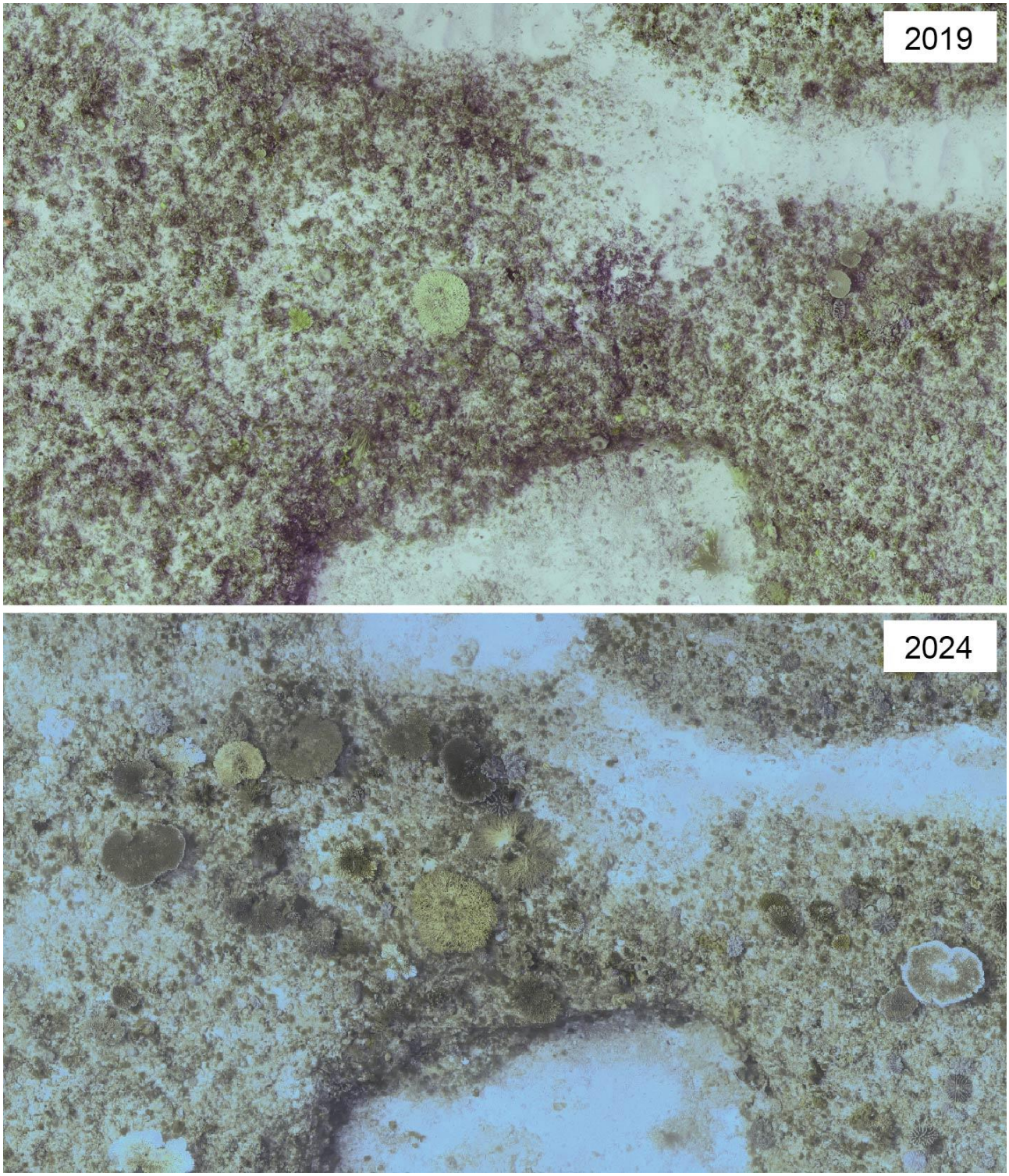



Figure 5.20 Orthomosaic of site AMOS2

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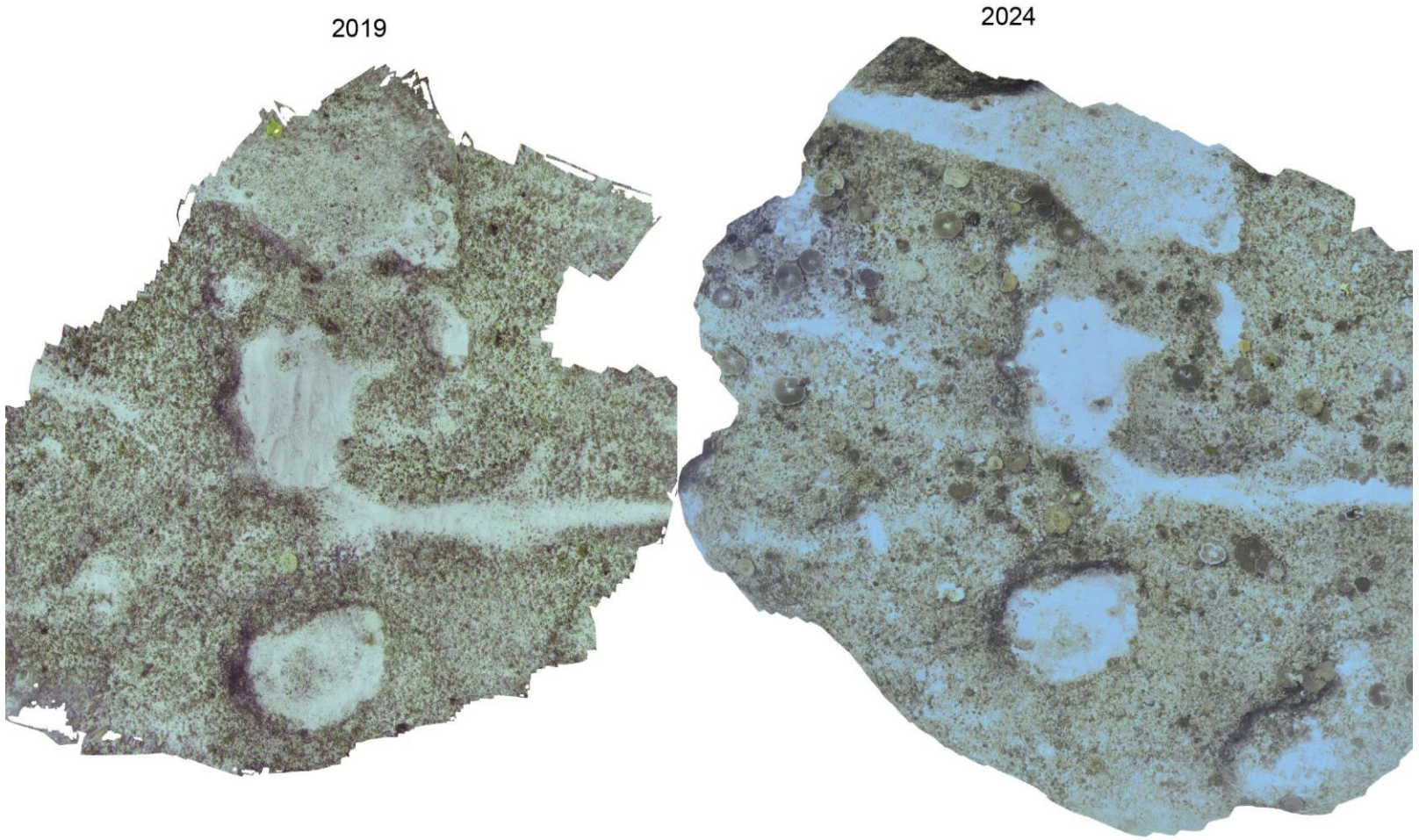



Figure 5.21 Temporal comparison of the orthomosaic at site AMOS2

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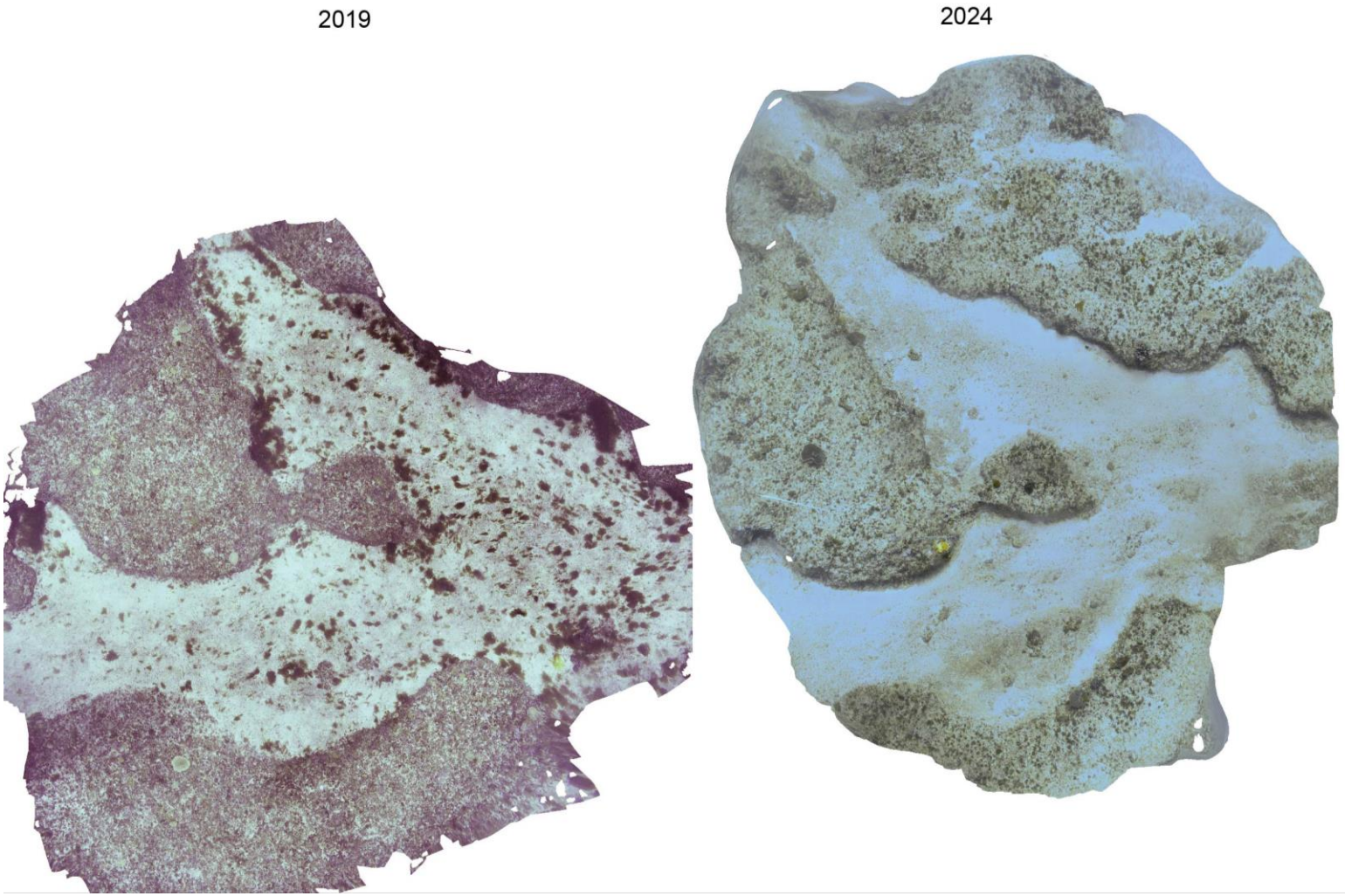



Figure 5.22 Temporal comparison of the orthomosaic at site CMOS1

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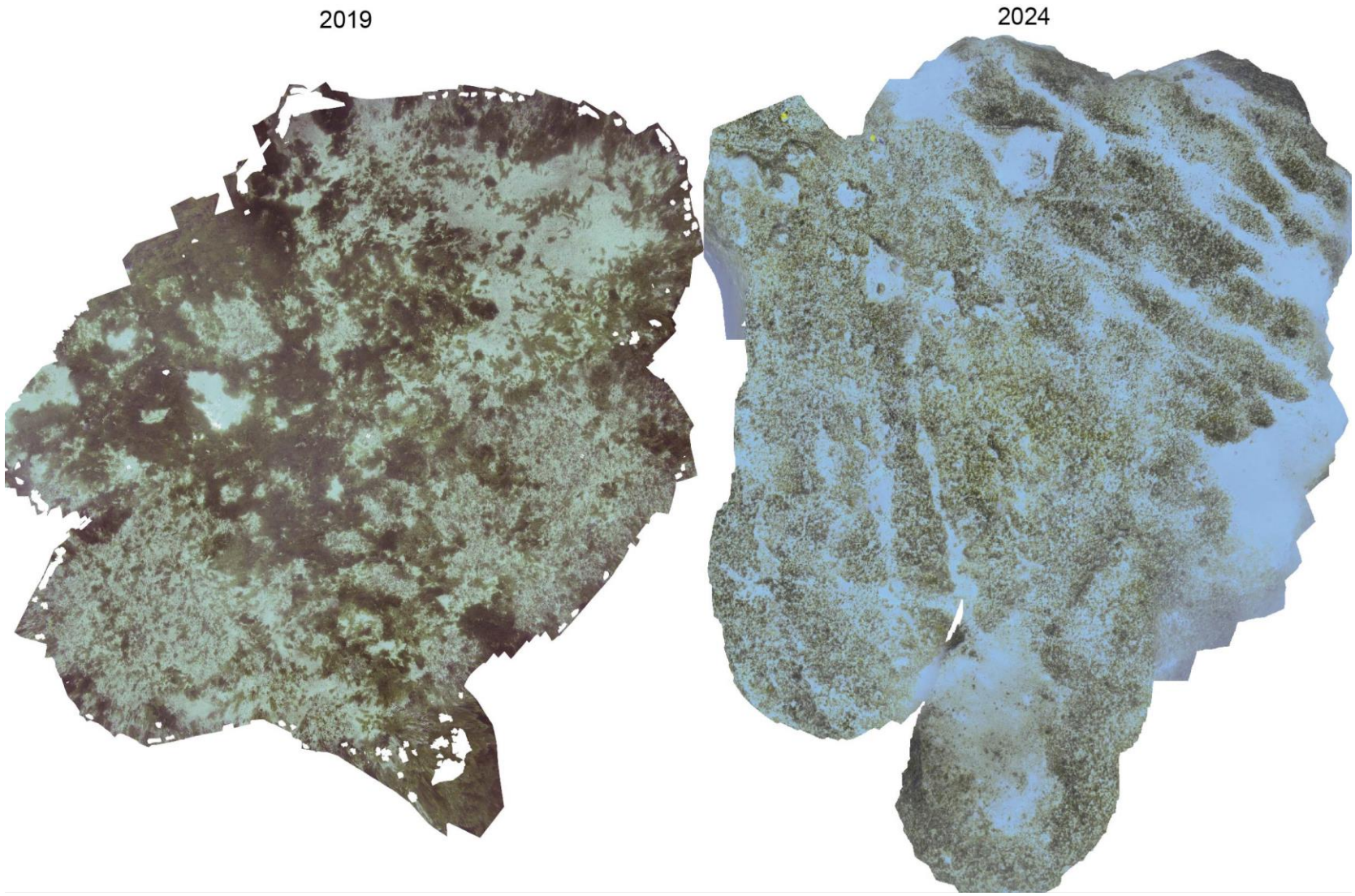



Figure 5.23 Temporal comparison of the orthomosaic at site CMOS2

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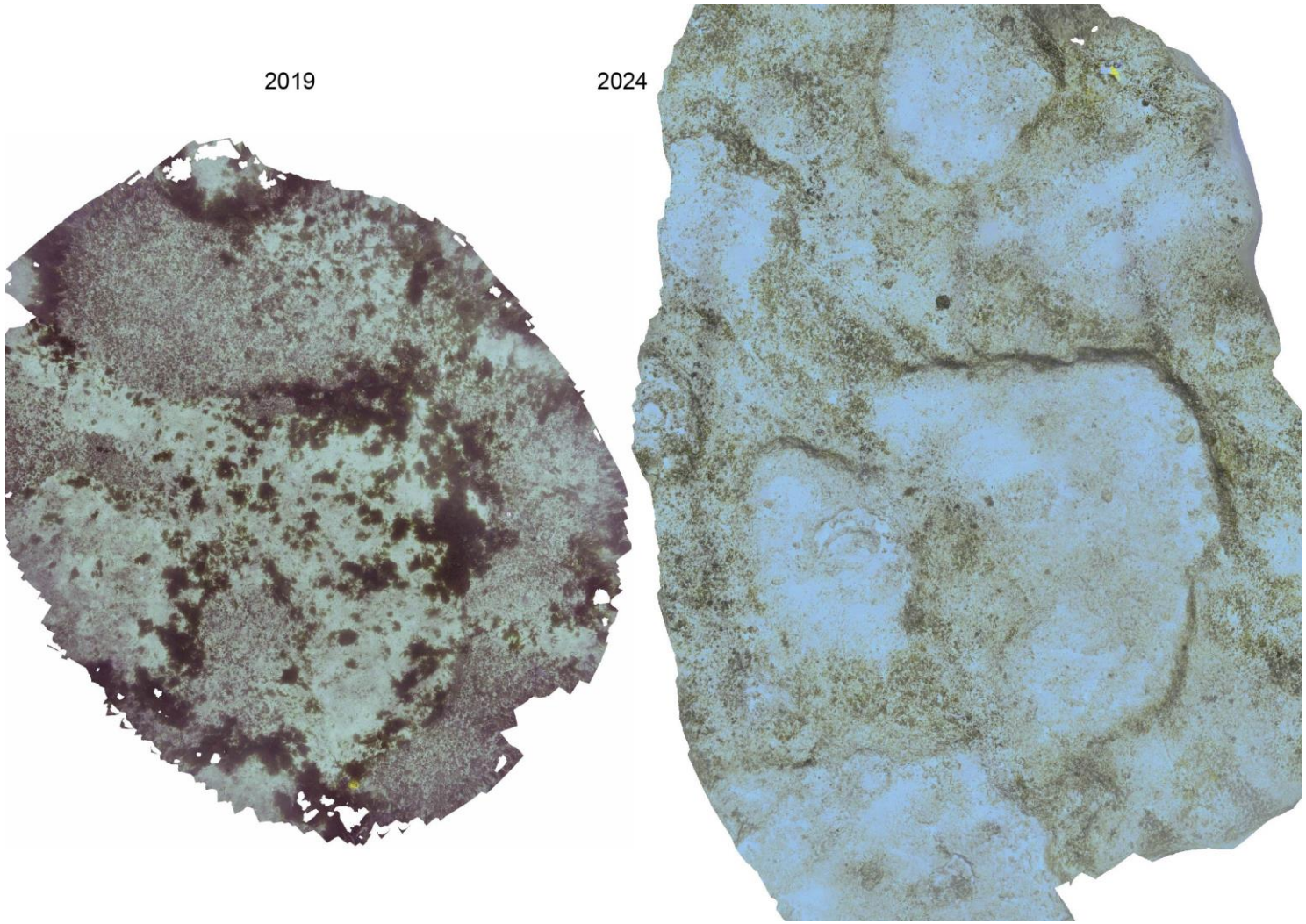



Figure 5.24 Temporal comparison of the orthomosaic at site EMOS1

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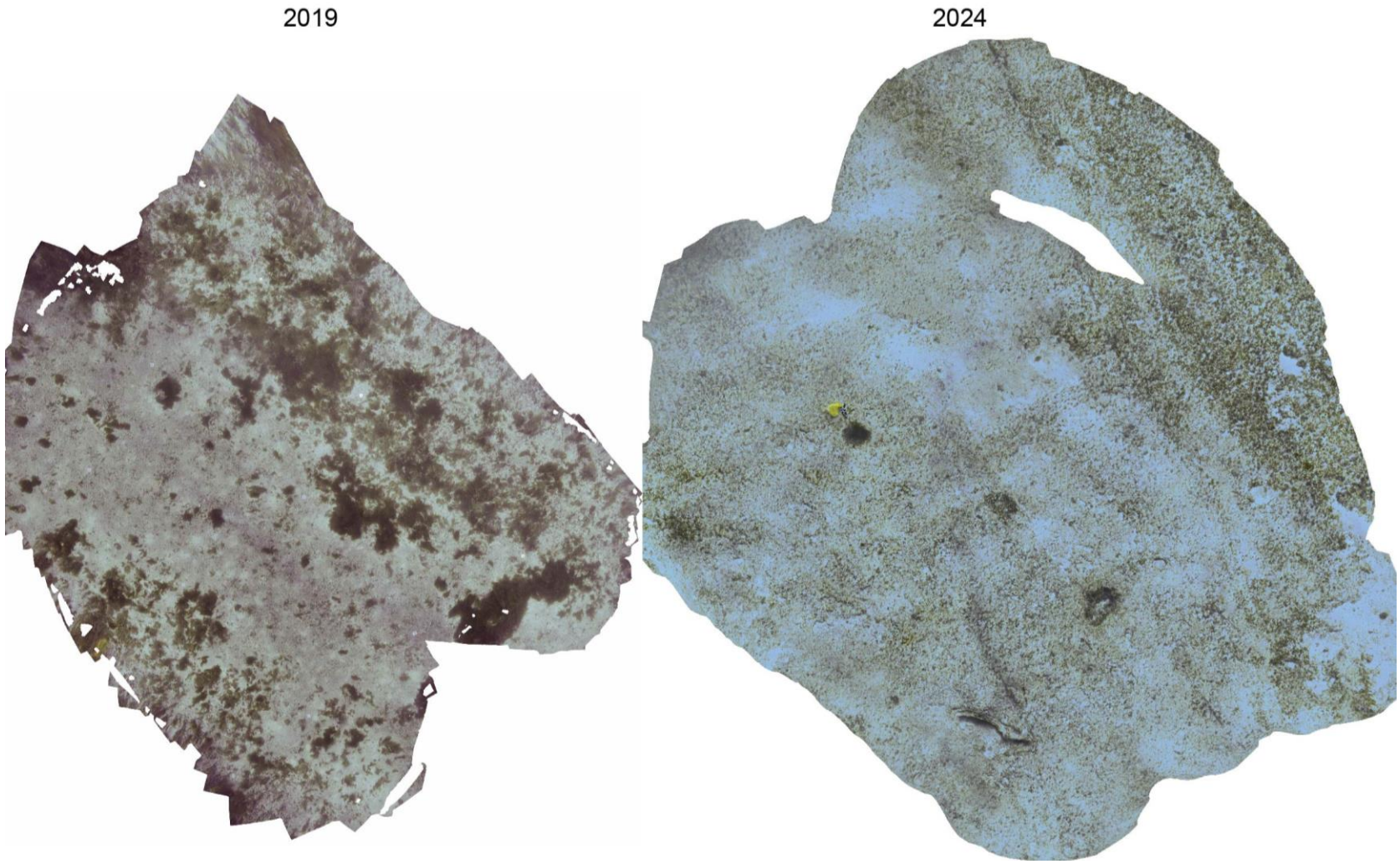



Figure 5.25 Temporal comparison of the orthomosaic at site EMOS2

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Figure 5.26 Mosaics of camera transects across the high-relief terrace

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## 5.3 Fish Communities

### 5.3.1 General Patterns

Remediation activities had the potential to indirectly affect fish community composition, biomass, abundance, richness, and diversity. The following synopsis of BRUV data includes temporal comparisons for all events, with specific tabulated detail from after remediation (events 3, 5 and 6). Comparisons among treatments before and after remediation are used to investigate potential remediation impacts or improvements in fish communities.

There were 278 fish and elasmobranch taxa recorded across the entire monitoring campaign with a total of 17,632 fish enumerated at the point of MaxN for each species. This comprised 10,525 fish in the "before" period (events 1, 2 and 3) and 7,107 fish in the after period (events 5 and 6). Of the 278 taxa observed, the most abundant (sum of MaxN observations) and prevalent (sum of presence) taxa are listed in Table 5.7.

The five most abundant taxa (Table 5.7) before remediation included *Apogon doederleini*, *Chromis nitida, Ptereleotris microlepis, Pomacentrus australis,* and *Apogon* spp. After remediation, the top 10 most abundant species were largely very similar, but with the inclusion of *Siganus fuscescens and Gymnocranius audleyi* in place of several other taxa including *Apogon doederleini* which was extremely abundant before remediation but not very prevalent. Typically, the majority of abundant species were schooling fish species, for example *Ptereleotris microlepis* is a free-swimming dart-goby that formed frequent large schools throughout the monitoring campaign. Small damselfish species. *Pomacentrus australis* and *Chromis nitida* were common and abundant amongst Douglas and Habberfield Shoal with each species respectively observed at 114 and 97 deployments. Small tropical reef associated species were much more common and abundant than those often targeted by recreational fisherman, but highly prevalent species significant to recreational fishers included the iodine bream (*G. audleyi*), Venus tuskfish (*Choerodon vensutus*), and red throated emperor (*Lethrinus miniatus*).

Elasmobranchs (sharks and rays) were observed often, with observations at 14/24 locations before remediation and 10/16 after remediation activities occurred. Species of interest included *Galeocerdo cuvier* (tiger sharks), *Carcharhinus leucas* (bull shark) and *Nebrius ferrugineus* (tawny nurse sharks).

Table 5.7 Top 10 most abundant and prevalent fish species observed before and after remediation

| Rank Abundance | Total Abundance | Rank Prevalence | Prevalence |
|---|---|---|---|
| Before Remediation | | | |
| *Apogon doederleini* | 2120 | *Pomacentrus australis* | 0.94 |
| *Chromis nitida* | 1233 | *Choerodon venustus* | 0.92 |
| *Ptereleotris microlepis* | 1217 | *Pseudolabrus guentheri* | 0.82 |
| *Pomacentrus australis* | 1187 | *Halichoeres nebulosus* | 0.82 |
| *Apogon spp.* | 536 | *Labroides dimidiatus* | 0.79 |
| *Siganus canaliculatus* | 325 | *Coris pictoides* | 0.78 |
| *Pterocaesio chrysozona* | 312 | *Chromis nitida* | 0.76 |
| *Pseudolabrus guentheri* | 226 | *Ptereleotris microlepis* | 0.57 |
| *Leptojulis cyanopleura* | 221 | *Thalassoma lunare* | 0.54 |
| *Halichoeres nebulosus* | 201 | *Lethrinus miniatus* | 0.51 |

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| Rank Abundance | Total Abundance | Rank Prevalence | Prevalence |
|---|---|---|---|
| After Remediation | | | |
| *Ptereleotris microlepis* | 1293 | *Pomacentrus australis* | 0.96 |
| *Chromis nitida* | 1077 | *Labroides dimidiatus* | 0.94 |
| *Pomacentrus australis* | 802 | *Choerodon venustus* | 0.92 |
| *Apogon spp.* | 620 | *Pseudolabrus guentheri* | 0.92 |
| *Pterocaesio chrysozona* | 460 | *Parapercis xanthozona* | 0.90 |
| *Pseudolabrus guentheri* | 246 | *Halichoeres nebulosus* | 0.90 |
| *Siganus fuscescens* | 148 | *Chromis nitida* | 0.83 |
| *Leptojulis cyanopleura* | 145 | *Coris pictoides* | 0.79 |
| *Gymnocranius audleyi* | 142 | *Chaetodontoplus meredithi* | 0.75 |
| *Pomacentrus coelestis* | 139 | *Choerodon schoenleinii* | 0.75 |

Small wrasses including *Pseudolabrus guentheri, Leptojulis cyanopleura, Coris pictoides,* and *Halichoeres nebulosus* were highly abundant and prevalent and commonly associated with macroalgal canopies.

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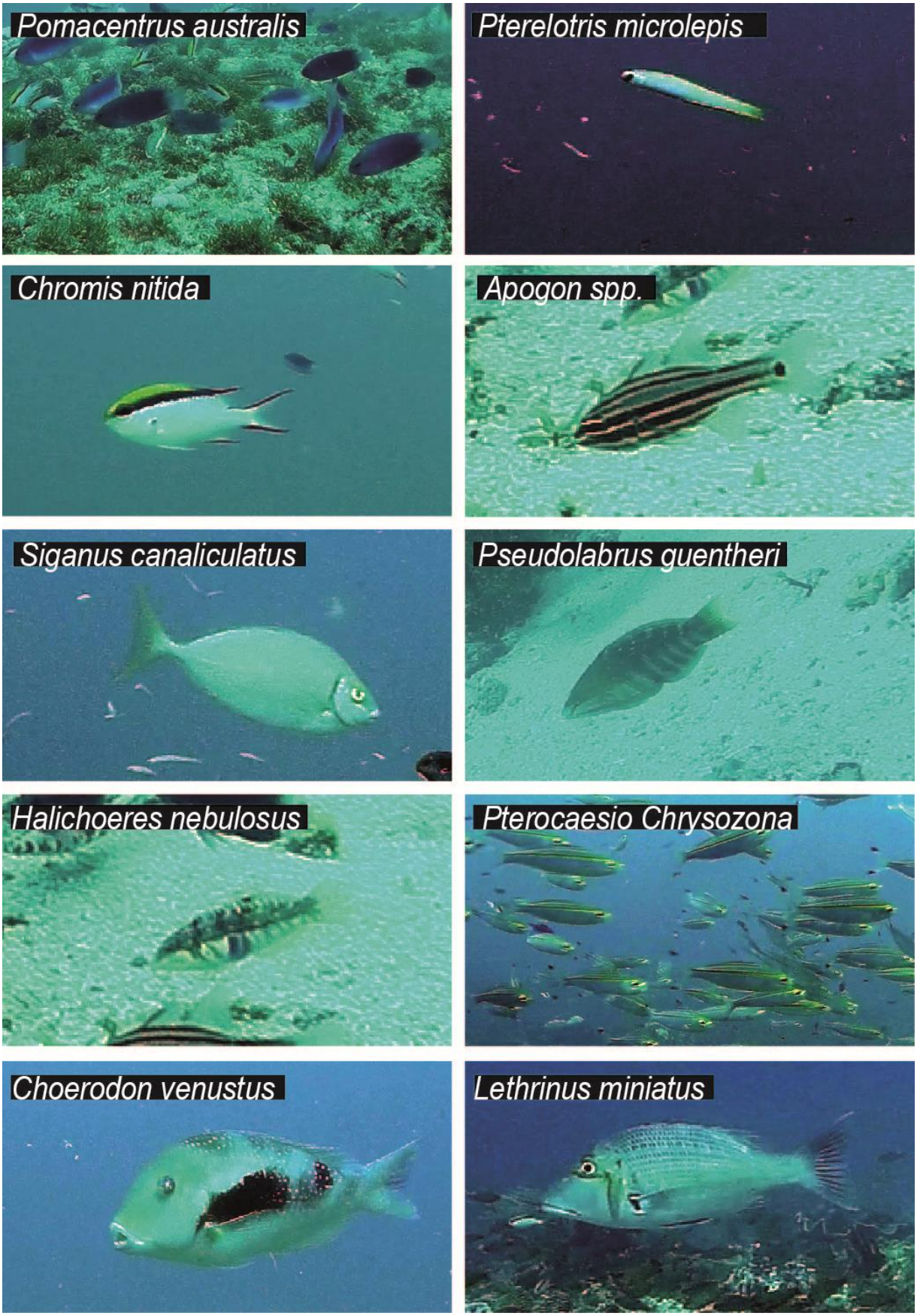



Figure 5.27 Sample BRUV video captures of the most abundant taxa

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### 5.3.2 Univariate Patterns

**Biomass**

B20 biomass (the biomass of all fish greater than 20 cm in length) was used to assess changes in the biomass of larger and recreationally significant fishes before and after remediation. B20 biomass was also investigated visually for several taxa that significantly influenced changes in community through time (section 5.3.3) and were candidates for bioaccumulation based on metal burden (*G. audleyi and C. venustus*). The B20 biomass of fish populations at Douglas and Habberfield Shoal was highly variable through time and was not consistent with any sign of impact or benefit associated with remediation activities. Total biomass of fish and elasmobranchs at each location between events 3 and 6 is listed in Table 5.8 and Table 5.9.

Total B20 biomass and the B20 biomass estimates of *G. audleyi, C. venustus,* acanthurids, lethrinids, and elasmobranchs were highly variable through time at different locations (Figure 5.28), and treatments (Figure 5.29). Temporal changes in the biomass of these indicators were inconsistent with any remediation impacts or benefits (Table 5.10). There were no significant interaction terms between treatment and before/after for any of the biomass indicators assessed. For many taxonomic sub-groups, the data were too sparse for meaningful comparison, and BRUV abundance data captured temporal patterns better due to the inclusion of all sizes of fish.

Table 5.8 Total B20 biomass (>20cm) of fish (kg) in locations between events 3 and 6

| Location | Event 3 | | Event 5 | | Event 6 | |
|---|---|---|---|---|---|---|
| | Fish | Elasmobranch | Fish | Elasmobranch | Fish | Elasmobranch |
| mA | 17 | 7 | 18 | 0 | 20 | 4 |
| mB | 68 | 0 | 158 | 0 | 44 | 56 |
| mC | 16 | 5 | 29 | 0 | 14 | 0 |
| mD | 19 | 6 | 39 | 9 | 18 | 0 |
| mE | 18 | 5 | 13 | 0 | 19 | 60 |
| mG | 27 | 11 | 78 | 72 | 51 | 320 |
| mH | 73 | 3 | 3 | 4 | 27 | 4 |
| mI | 44 | 14 | 16 | 675 | 3 | 9 |

Table 5.9 Total B20 biomass of fish (kg) Before and After Remediation per location

| Location | Before | | After | |
|---|---|---|---|---|
| | Fish | Elasmobranch | Fish | Elasmobranch |
| mA | 57 | 291 | 40 | 4 |
| mB | 223 | 0 | 202 | 56 |
| mC | 61 | 186 | 43 | 0 |
| mD | 133 | 145 | 57 | 9 |
| mE | 86 | 332 | 31 | 60 |
| mG | 72 | 11 | 129 | 392 |

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| Location | Before | | After | |
|---|---|---|---|---|
| | Fish | Elasmobranch | Fish | Elasmobranch |
| mH | 154 | 357 | 29 | 7 |
| mI | 60 | 20 | 18 | 684 |

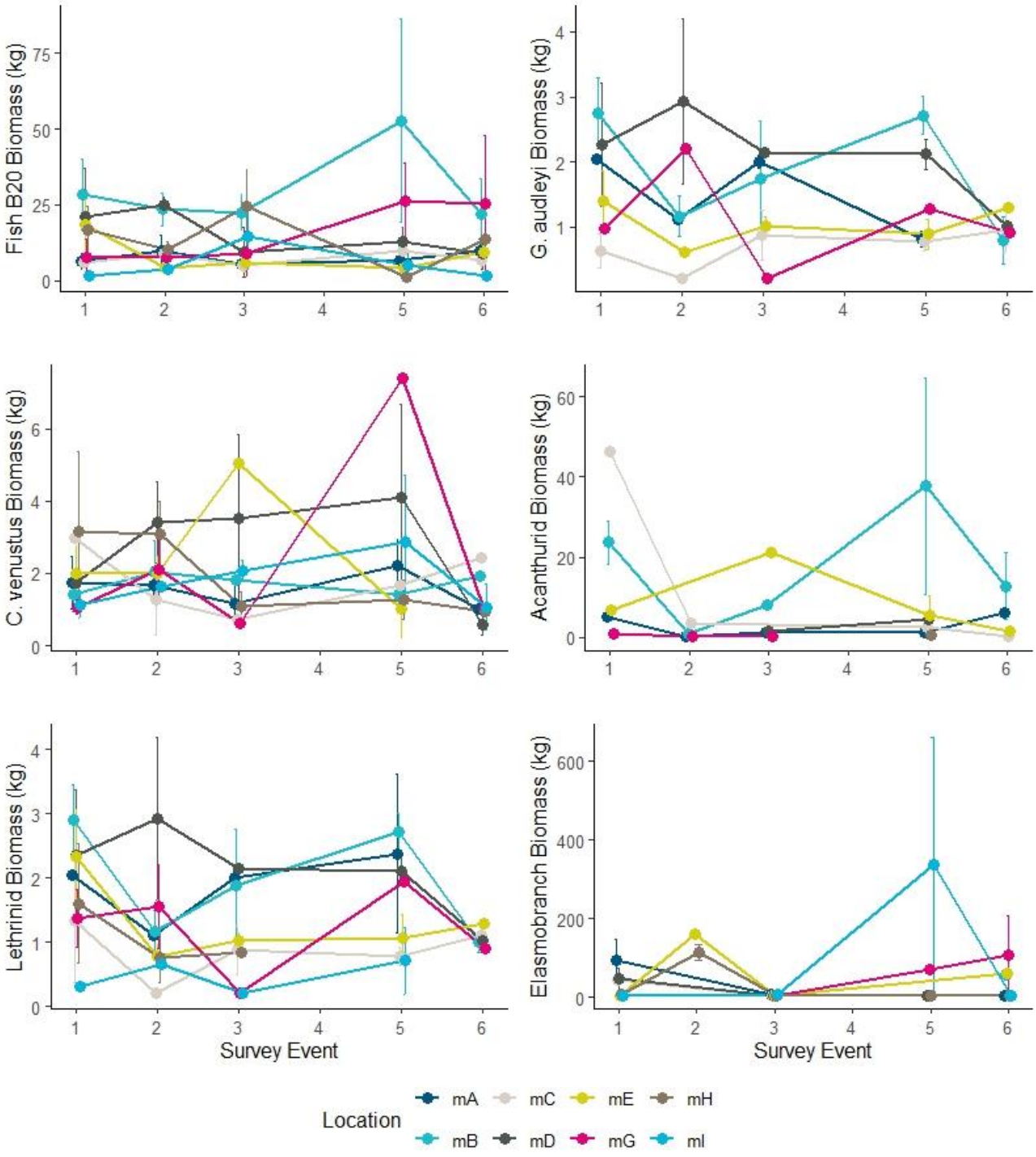



Figure 5.28 Mean (± SE) B20 biomass for all fish, *G. audleyi, C. venustus,* acanthurids, lethrinids, and elasmobranchs in survey events by location

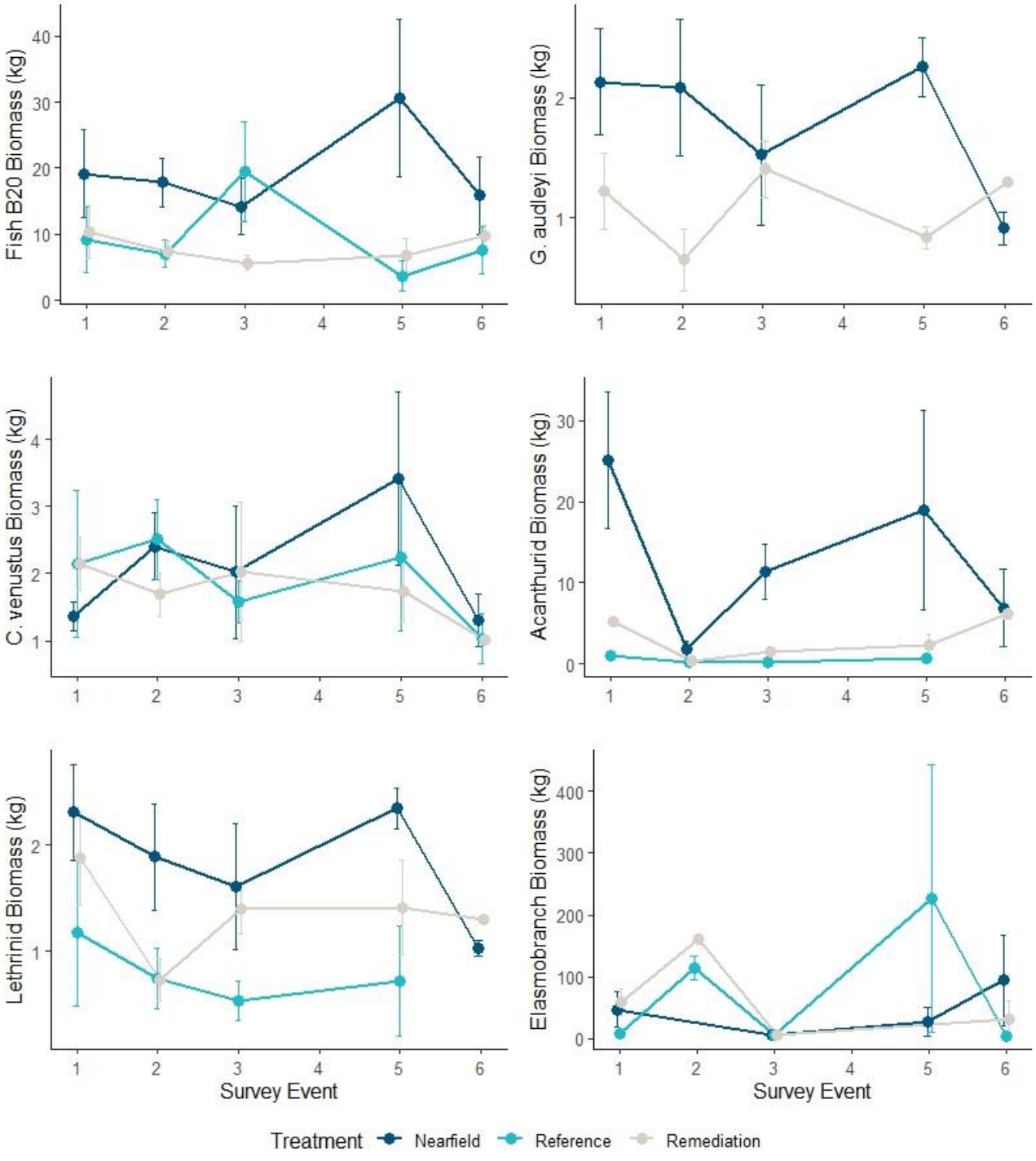



Figure 5.29 Mean (± SE) B20 biomass for all fish, *G. audleyi, C. venustus,* acanthurids, lethrinids, and elasmobranchs in survey events by treatments

Table 5.10 Summary analysis of deviance table for generalized linear models of fish biomass diversity metrics. Significance codes: 0 = ***, 0.001 =**, 0.01 = *, 0.05 = blank

| Response | Parameter | Chi Sq | df | P>Chi | |
|---|---|---|---|---|---|
| B20 Biomass (Location) | | | | | |
| | Location | 0.01 | 2 | 0.91 | |
| | Before / After | 36.44 | 1 | 5.96e-06 | *** |
| | Location*Before / After | 12.57 | 2 | 0.08 | |
| B20 Biomass (Treatment) | | | | | |
| | Treatment | 0.11 | 2 | 0.73 | |
| | Before / After | 31.36 | 1 | 2.30e-05 | *** |
| | Treatment *Before / After | 5.26 | 2 | 0.07 | . |
| *G. audleyi* Biomass (Treatment) | | | | | |
| | Treatment | 0.01 | 2 | 0.91 | |
| | Before / After | 36.44 | 1 | 5.96e-06 | *** |
| | Treatment *Before / After | 12.57 | 2 | 0.08 | |
| *C. venustus* Biomass (Treatment) | | | | | |
| | Treatment | 0.51 | 2 | 0.78 | |
| | Before / After | 0.02 | 1 | 0.88 | |
| | Treatment *Before / After | 1.7 | 2 | 0.42 | |
| Richness (Treatment) | | | | | |
| | Treatment | 31.43 | 2 | 2.07e-08 | *** |
| | Before / After | 12.86 | 1 | 0.001 | ** |
| | Treatment *Before / After | 2.53 | 2 | 0.28 | |
| Abundance (Treatment) | | | | | |
| | Treatment | 10.05 | 2 | 0.002 | ** |
| | Before / After | 2.27 | | 0.32 | |
| | Treatment *Before / After | 2.49 | 2 | 0.29 | |
| Simpsons Diversity (Treatment) | | | | | |
| | Treatment | 0.49 | 2 | 0.49 | |
| | Before / After | 0.38 | 1 | 0.83 | |
| | Treatment *Before / After | 2.01 | 2 | 0.36 | |

(Refer Annex B for detailed statistical outputs from these analyses)

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Like the biomass estimates, there was very little evidence that remediation activities affected abundance, richness or diversity metrics positively or negatively (Figure 5.30, Table 5.10). There were significant differences among treatments for abundance and richness, and there was a significant difference for the before and after comparison for richness, but this was consistent among treatments. None of the interaction terms in the BACI were significant, indicating that the remediation did not impact or benefit these metrics.

For richness, the remediation treatment was typically less rich than the other two treatments, but all three increased over the duration of the monitoring program, with significantly higher richness after the remediation period than before. This suggests that increasing richness was a widespread phenomenon, unaffected by the activities at Douglas Shoal. The highest richness estimate occurred in the nearfield treatment during event 3 (Figure 5.30). This appeared to be partially driven by an increase in herbivore richness, particularly at location mB (Figure 5.31).

Fish abundance had a humped appearance through time with the greatest abundance typically occurring in event 3, except for the nearfield treatment where the highest mean abundance was during event 6. A single school of *Apogon doederleini* substantially created a huge peak in abundance (Table 5.7) during event 3 resulting in an observed graphical spike, which also acted to reduce Simpson's diversity concurrently (Figure 5.30).

Differences in Simpson's diversity were not significant for any of the main effects and there was no observable impact of remediation. The only notable change is the reduction in diversity associated with the pulse in *Apogon doederleini* already mentioned.

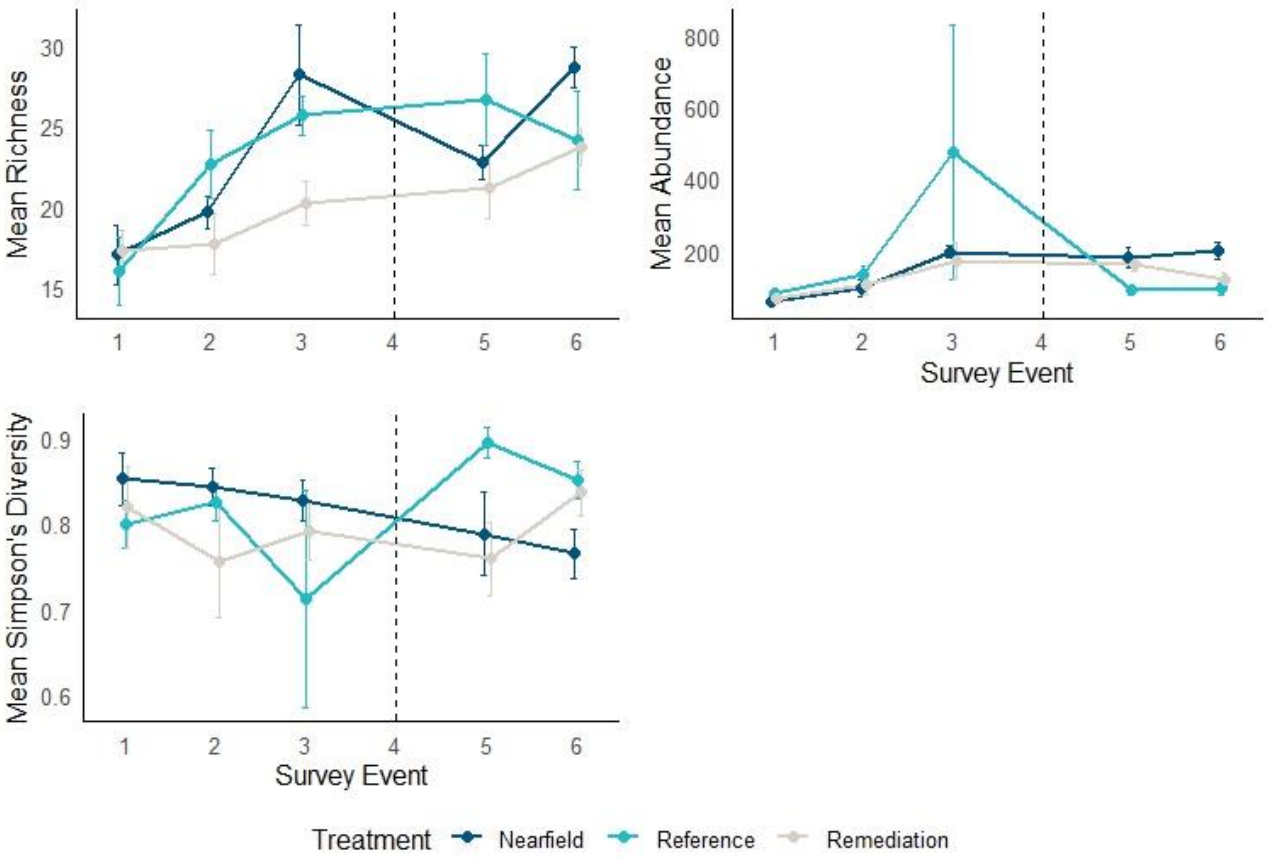



Figure 5.30 Mean (± SE) richness, abundance and Simpsons' Diversity for all fish in survey events by treatment

Changes in herbivore abundance and richness were also assessed, given the potential impacts on *Sargassum,* and seasonal changes in macroalgae and turfing algae described in section 5.1. While significant changes in herbivore abundance and richness occurred among treatments and before and after remediation (Table 5.11), there were no significant interaction terms in the BACI, indicating that the remediation activities did not impact or benefit herbivore abundance or richness.

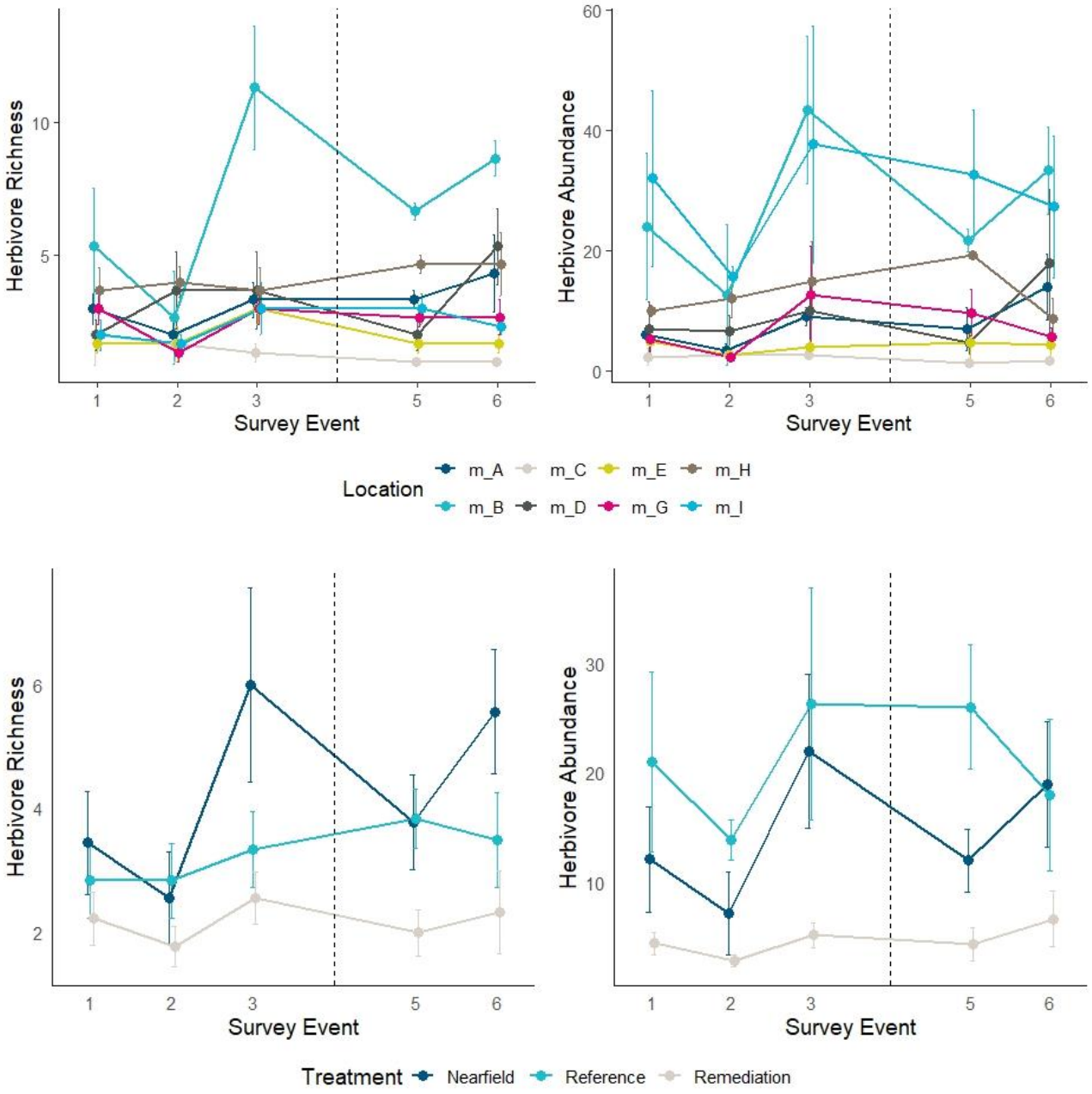



Figure 5.31 Mean Herbivore (± SE) abundance and richness between survey events by location (above) and treatment (below)

Table 5.11 Summary analysis of deviance table for generalized linear models of herbivore richness and abundance. Significance codes: 0 = ***, 0.001 =**, 0.01 = *, 0.05 = blank

| Response | Parameter | Chi Sq | df | P>Chi | |
|---|---|---|---|---|---|
| Herbivore Richness (Treatment) | | | | | |
| | Treatment | 29.20 | 2 | 5.96e-06 | *** |
| | Before / After | 9.95 | 1 | 0.001 | ** |
| | Treatment*Before / After | 2.65 | 2 | 0.26 | |
| Herbivore Richness (Treatment) | | | | | |
| | Treatment | 58.09 | 2 | 0.7 | ** |
| | Before / After | 7.24 | 1 | 2.43e-13 | *** |
| | Treatment *Before / After | 0.61 | 2 | 0.73 | . |

(Refer Annex B for detailed statistical outputs from these analyses)

### 5.3.3 Multivariate Analyses

Multivariate analyses were conducted to determine if communities of fish (rather than individual taxa) showed any sign of impact, change, or benefit with respect to remediation activities. These analyses illustrated that the direction of change in fish communities between the survey events was largely consistent among locations and very similar in pattern to the epibenthic cover multivariate analysis (section 5.1.3).

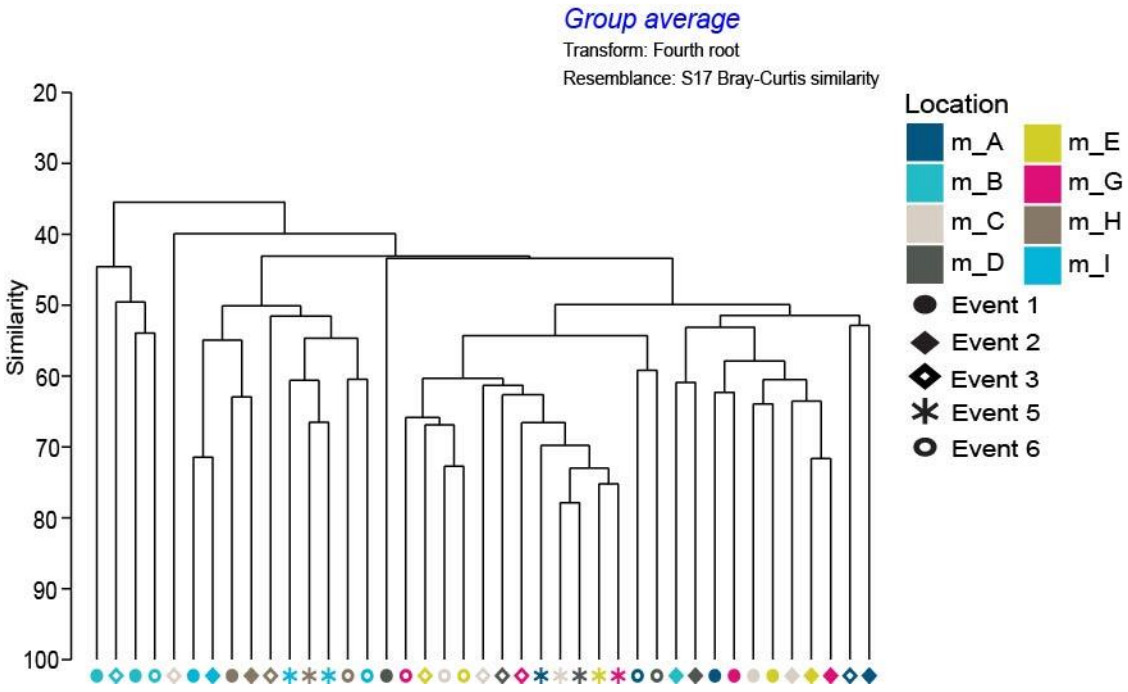



Figure 5.32 Dendrogram of hierarchical clustering of fish assemblage data, averaged within each location for both survey events

Overall, locations tended to cluster into one of three broad groupings in cluster analysis and n-MDS ordination (Figure 5.32 and Figure 5.33). These groupings were comprised of:

1. Haberfield Shoal (reference locations)
2. Douglas Shoal locations mA, mC, mD, mE, and mG
3. Douglas Shoal location mB.

Location mB appeared to have a low similarity to other fish communities (located at the far right in Figure 5.32) but through time it followed similar directional changes in community spaces as other locations. This was also true for Habberfield Shoal locations (located at the far left in Figure 5.32), which moved to the far upper part of the plot by event 6.

Interestingly, the arrangement in multivariate graphs for fish communities was extremely similar to that for the epibenthic communities (Figure 5.4, Figure 5.32). In both cases Habberfield Shoal sites clustered at the far left, mB clustered at the far right, and the remaining Douglas Shoal locations formed a cluster in the middle of the plot. This is almost certainly due to the habitat requirements of the dominant fish taxa observed in each location, for example, the low levels of macroalgae, high plating *Acropora* cover and turf algae (Figure 5.4) coincided with more abundant parrotfish, groupers, and butterfly fish at mB (Figure 5.34) using these features as sheltering and foraging habitat. On the left-hand side of the plot, goatfish (Mullidae), rabbitfish (Siganidae), emperors (Lethrinidae) and nemipterids were highly abundant at Habberfield Shoal, and likely associating with the more extensive sandy macroalgal environments.

The shade plot further illustrated similarities between dominant species in the community contributing to the highest similarity among locations and over time (Figure 5.35). Some taxa such as *Apogon* spp., *A. doederleini, Siganus canaliculatus*, *Leptojulis cyanopleura,* and *Pterocaesio chrysozona* were highly variable through space and time, while taxa including *Pomacentrus australis*, *Chromis nitida, Pseudolabrus guentheri,* and *Halichoeres nebulosus* were much more evenly distributed.

SIMPER analysis on the full data set (non-averaged data) shows that the two most influential taxa affecting changes among time periods were typically driven by small tropical reef associated fish rather than large herbivores or species of interest to commercial fishers. Before and after remediation, *Pomacentrus australis*, *Chromis nitida* and *Ptereleotris microlepis* were the primary species that contributed highest to similarity observed among the similarity between events (Table 5.12 and Figure 5.32).

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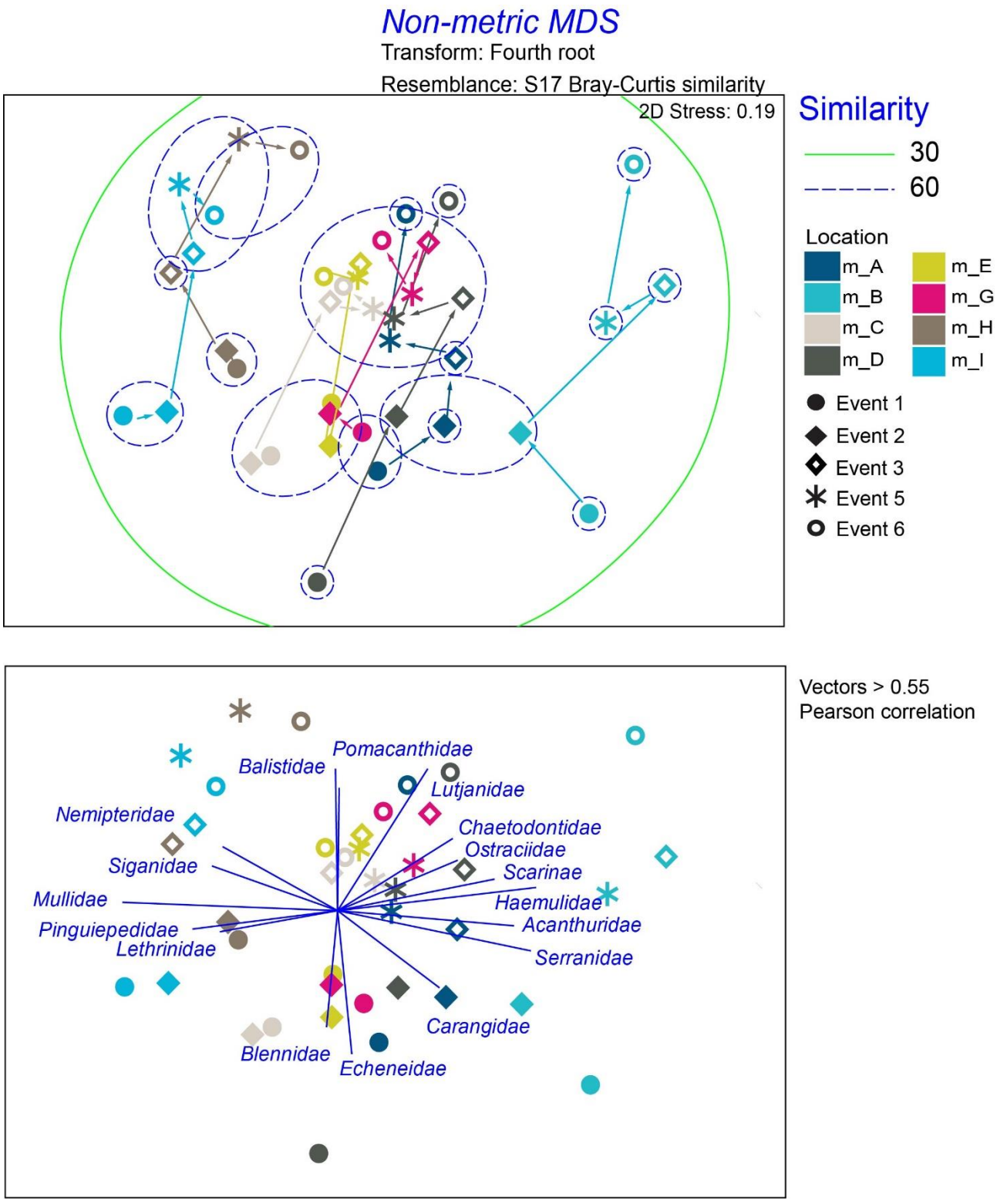



Figure 5.33 Two-dimensional n-MDS ordination of the location averaged fish data for two survey times. Data are denoted by location with temporal trajectories also shown

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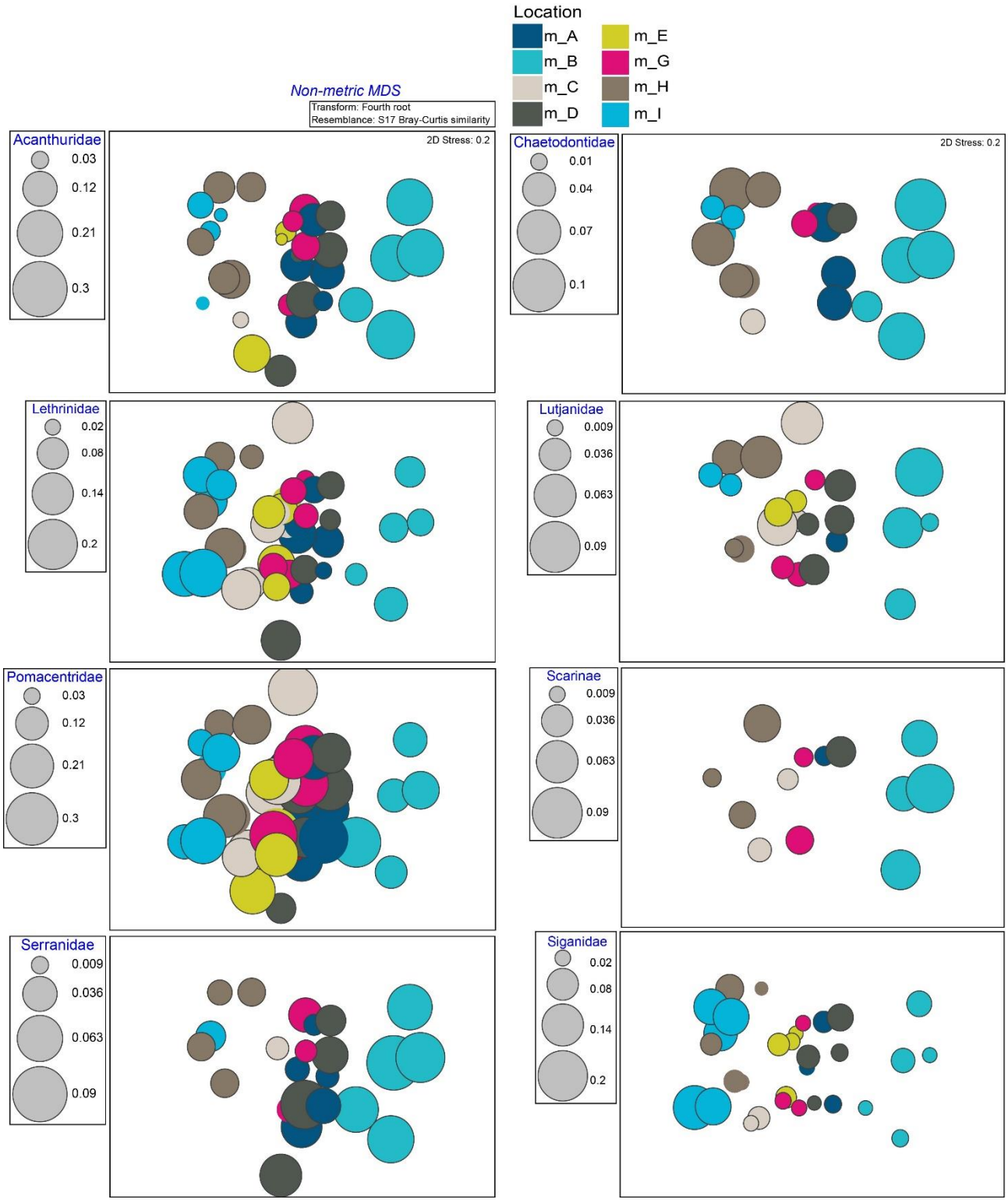



Figure 5.34 Bubble plots showing relative abundances of surgeon fish (*Acanthuridae*), butterflyfish (*Chaetodontidae*), emperors (*Lethrinidae*), snappers (*Lutjanidae*), damselfish (*Pomacentridae*), parrotfish (*Scarinae*), groupers (*Serranidae)*, and rabbitfish (*Siganidae*)

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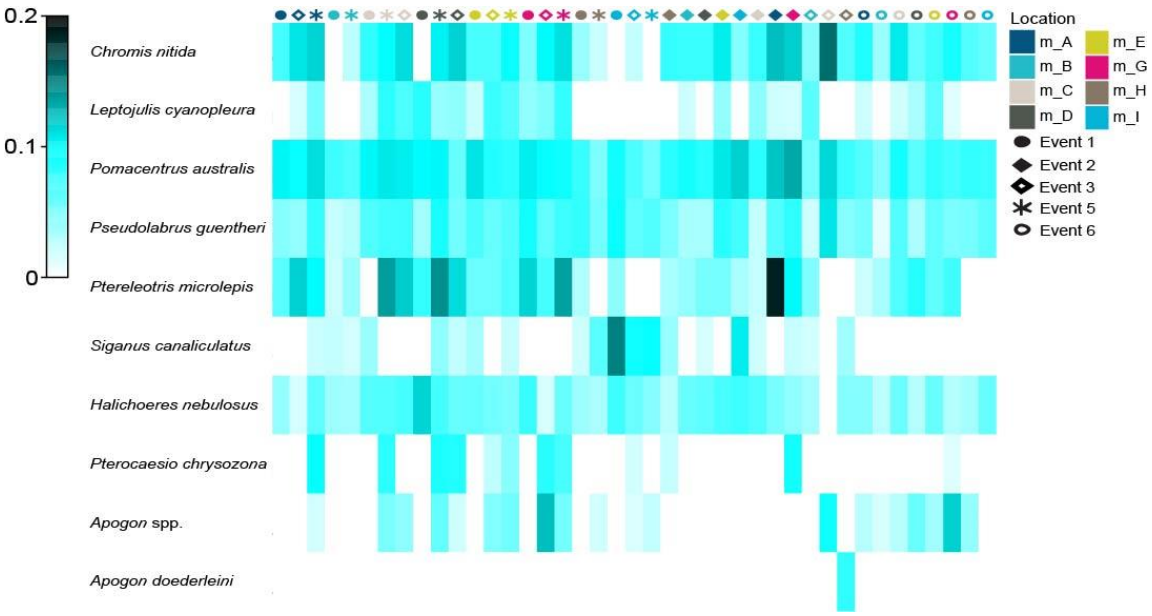



Figure 5.35 Shade plot showing fourth root transformed abundance (data averaged within location for each survey time) of the ten most abundant fish species overall

Table 5.12 Bray Curtis similarity index between survey events within each location, and main contributing to differences between survey events in sequence from SIMPER

| Event x Site | Contrasting Event x Site | Bray-Curtis Similarity | Highest contributing Fish Spp. |
|---|---|---|---|
| 1, mA | 2, mA | 51.43 | *Pomacentrus australis* (7%), *Pteroleotris microlepis* (6%) |
| 1, mB | 2, mB | 46.12 | *Pomacentrus australis* (6%), *Choerodon venustus* (5%) |
| 1, mC | 2, mC | 56.97 | *Pomacentrus australis* (6%), *Chromis nitida* (6%) |
| 1, mD | 2, mD | 43.47 | *Pomacentrus australis* (7%), *Halichoeres nebulosus* (6%) |
| 1, mE | 2, mE | 62.41 | *Pomacentrus australis* (6%), Chromis nitida (6%) |
| 1, mG | 2, mG | 63.36 | *Pomacentrus australis* (7%), *Pteroleotris microlepis* (7%) |
| 1, mH | 2, mH | 62.93 | *Pomacentrus australis* (5%), *Pseudolabrus guentheri* (5%) |
| 1, mI | 2, mI | 71.43 | *Siganus canaliculatus* (7%), *Pomacentrus australis* (7%) |
| 2, mA | 3, mA | 53.56 | *Pteroleotris microlepis* (7%),*Chromis nitida* (6%) |
| 2, mB | 3, mB | 51.32 | *Pomacentrus australis* (5%), *Halichoeres nebulosus* (4%) |
| 2, mC | 3, mC | 48.34 | *Pomacentrus australis* (6%), *Chromis nitida* (6%) |

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| Event x Site | Contrasting Event x Site | Bray-Curtis Similarity | Highest contributing Fish Spp. |
|---|---|---|---|
| 2, mD | 3, mD | 51.58 | *Chromis nitida* (6%), *Ptereleotris microlepis* (5%) |
| 2, mE | 3, mE | 50.05 | *Pomacentrus australis* (6%), *Chromis nitida* (6%) |
| 2, mG | 3, mG | 60.19 | *Pomacentrus australis* (6%), *Chromis nitida* (6%) |
| 2, mH | 3, mH | 53.52 | *Pomacentrus australis* (4%), *Chromis nitida* (4%) |
| 2, mI | 3, mI | 50.05 | *Siganus canaliculatus* (6%), *Pomacentrus australis* (6%) |
| 3, mA | 5, mA | 57.49 | *Chromis nitida* (6%), *Pomacentrus australis* (6%) |
| 3, mB | 5, mB | 47.34 | *Pomacentrus australis* (4%), *Gymnocranius audleyi* (4%) |
| 3, mC | 5, mC | 73.51 | *Ptereleotris microlepis* (7%), *Pomacentrus australis* (7%) |
| 3, mD | 5, mD | 67.88 | *Ptereleotris microlepis* (6%), *Chromis nitida* (6%) |
| 3, mE | 5, mE | 71.13 | *Pomacentrus australis* (5%), *Chromis nitida* (5%) |
| 3, mG | 5, mG | 70.05 | *Chromis nitida* (5%), *Ptereleotris microlepis* (5%) |
| 3, mH | 5, mH | 53.46 | *Pomacentrus australis* (4%), *Pseudolabrus guentheri* (4%) |
| 3, mI | 5, mI | 62.91 | *Siganus canaliculatus* (5%), *Pseudolabrus guentheri* (5%) |
| 5, mA | 6, mA | 51.53 | *Chromis nitida* (6%), *Pomacentrus australis* (6%) |
| 5, mB | 6, mB | 53.91 | *Gymnocranius audleyi* (4%), *Pomacentrus australis* (4%) |
| 5, mC | 6, mC | 64.77 | *Chromis nitida* (6%), *Pomacentrus australis* (6%) |
| 5, mD | 6, mD | 52.10 | *Chromis nitida* (4%), *Pomacentrus australis* (4%) |
| 5, mE | 6, mE | 66.53 | *Chromis nitida* (5%), *Pomacentrus australis* (5%) |
| 5, mG | 6, mG | 61.35 | *Ptereleotris microlepis* (5%), *Chromis nitida* (5%) |
| 5, mH | 6, mH | 54.03 | *Pseudolabrus guentheri* (4%), *Pomacentrus australis* (4%) |
| 5, mI | 6, mI | 58.41 | *Lethrinus miniatus* (5%), *Pomacentrus australis* (5%) |

PERMANOVA analyses (Table 5.4) show that fish communities differed significantly before and after remediation overall, among treatments, and among locations nested within treatments. However, there was no significant interaction term between treatments and before / after. This suggests that communities at Douglas Shoal remediation and nearfield treatments changed in a similar way to communities at Habberfield Shoal, such that there was no impact or benefit of remediation observed.

The combined univariate and multivariate analyses suggest that remediation has not affected the biomass of all fish or specific taxonomic groups, nor has it affected the diversity, abundance or richness

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of fishes or elasmobranchs. Changes in fish community space at locations through time are very similar to the patterns observed in epibenthic cover and likely the result of various fish taxa associating more with different habitats through space and time.

Table 5.13 PERMANOVA results for fish communities

| Source | df | SS | MS | Pseudo-F | **P (perm)** | Unique Perms |
|---|---|---|---|---|---|---|
| Before/After | 1 | 19429 | 19429 | 9.6789 | **0.003** | 999 |
| Treatment | 2 | 13193 | 6596.6 | 1.9592 | **0.044** | 816 |
| Location(Treat) | 6 | 24068 | 4011.4 | 2.8681 | **0.001** | 994 |
| B.A*Treat | 2 | 3997 | 1998.5 | 0.99255 | 0.487 | 998 |
| B.A*Loc(Treat) | 5 | 10144 | 2028.8 | 1.4506 | **0.003** | 992 |
| Residual | 101 | 1.41E+05 | 1398.6 | | | |
| Total | 117 | 2.31E+05 | | | | |

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## 5.4 Biotic Contaminant Concentrations

TBT, copper and zinc were found in all three forms of biota sampled for metal burden (fish, macroalgae and ascidians). However, temporal changes in the concentrations of these parameters were highly variable across locations and likely associated with spatial variability, lab variability, natural breakdown, and changes due to remediation. Tabulated results for contamination are listed in Annex C and photographs of the biota sampled are provided in Annex A. Detailed outputs from statistical analyses of biota contamination are provided in Annex B.

### 5.4.1 Organotins

TBT was detected in various biota samples at low rates and concentrations prior to remediation before going completely undetected in the post-remediation period. TBT was below the LOR in all tissue samples from algae and ascidians in 2019. However, it was present in four macroalgae samples from mA, one macroalgae sample from mD, and from two ascidian samples in mA during 2020. The highest TBT concentration across the entire dataset came from a macroalgae sample (37 ng/g). Concentrations ranged from 1.2 – 37 ng/g, which were below the most conservative human health guideline for consumption of 240 ng/g (WHO 1999). No TBT was found in any algae or ascidian samples in events 5 or 6 (after remediation). Temporal changes in TBT (and other contaminants) are shown in Figure 5.36 to Figure 5.38. Due to the lack of detections, statistical inference on concentration changes before and after remediation were not made for TBT or other organotins.

For fish tissue, there were four samples in 2019 where TBT concentrations exceeded the 1 ng/g LOR. These included two *Choerodon venustus* and two *Gymnocranius audleyi* (iodine bream). Two TBT-positive fish were collected from location mA, one from location mB, and one was from mC. All concentrations were below the most conservative 240 ng/g WHO (1999) guideline. In 2020, two TBT-positive *C. venustus* were collected from location mA and both concentrations (1.5 and 1.2 ng/g) were also below the 240 ng/g WHO (1999) guideline. In events 5 and 6 (2023 and 2023), no TBT was found in any of the fish tissue samples. Species with a history of TBT contamination in their tissues (*C. venustus* and *G. audleyi*) were well-represented by sampling efforts in events 5 and 6 (Table 5.14 and Table 5.15).

While TBT was not detected after remediation, the reverse was true for mono-butyl-tin (MBT) which was found in one algae sample before remediation (mA in 2020), then found in 17 ascidian samples after remediation (10 samples in 2023 and 7 samples in 2024). In the post-remediation period, all MBT samples were found at locations mA, mB, and mD, with one sample also found at mH at Habberfield Shoal. There was no discernible pattern in Di-butyl-tin (DBT), which was found in one ascidian and algae sample at mA in 2020, and in one ascidian sample at mA in 2024.

These results suggest that TBT in fish, algae and ascidians was sporadically detected at Douglas Shoal prior to remediation and has not been encountered since. The higher proportion of MBT in ascidian samples after remediation (compared to before), is likely the result of TBT decomposition in the sediment, and subsequent re-mobilisation into the water column during remediation where it was ingested by filter-feeding ascidians.

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Table 5.14 Length and Weight of Fish Samples, Survey 5 (Photographs provided in Appendix A). No TBT was present in any fish samples after remediation

| Sample Name | Date | Scientific Name | Common Name | Length (mm) | Weight (g) |
|---|---|---|---|---|---|
| A1-FIS-1123 | 04/11/2023 | *Choerodon venustus* | Venus tuskfish | 370 | 2100 |
| A2-FIS-1123 | 04/11/2023 | *Gymnocranius audleyi* | iodine bream | 210 | 53 |
| A3-FIS-1123 | 04/11/2023 | *Choerodon venustus* | Venus tuskfish | 390 | 2300 |
| A4-FIS-1123 | 04/11/2023 | *Cephalopholis boenak* | brown-barred rockcod | 340 | 1400 |
| A5-FIS-1123 | 04/11/2023 | *Lethrinus miniatus* | red throat emperor | 360 | 1800 |
| B1-FIS-1123 | 05/11/2023 | *Gymnocranius audleyi* | iodine bream | 390 | 900 |
| B2-FIS-1123 | 05/11/2023 | *Choerodon venustus* | Venus tuskfish | 385 | 2200 |
| B3-FIS-1123 | 05/11/2023 | *Gymnocranius audleyi* | iodine bream | 300 | 1100 |
| B4-FIS-1123 | 05/11/2023 | *Choerodon venustus* | Venus tuskfish | 370 | 1800 |
| B5-FIS-1123 | 05/11/2023 | *Gymnocranius audleyi* | iodine bream | 280 | 900 |
| C1-FIS-1123 | 05/11/2023 | *Epinephelus fasciatus* | red-barred rockcod | 250 | 800 |
| C2-FIS-1123 | 05/11/2023 | *Epinephelus quoyanus* | longfin rockcod | 320 | 1100 |
| C3-FIS-1123 | 05/11/2023 | *Epinephelus quoyanus* | longfin rockcod | 280 | 820 |
| C4-FIS-1123 | 05/11/2023 | *Lethrinus miniatus* | red throat emperor | 320 | 1100 |
| C5-FIS-1123 | 05/11/2023 | *Choerodon venustus* | Venus tuskfish | 370 | 2200 |
| D1-FIS-1123 | 03/11/2023 | *Choerodon venustus* | Venus tuskfish | 390 | 1090 |
| D2-FIS-1123 | 03/11/2023 | *Gymnocranius audleyi* | iodine bream | 325 | 590 |
| D3-FIS-1123 | 03/11/2023 | *Gymnocranius audleyi* | iodine bream | 270 | 365 |
| D4-FIS-1123 | 03/11/2023 | *Choerodon venustus* | Venus tuskfish | 410 | 1240 |
| D5-FIS-1123 | 03/11/2023 | *Lutjanus adetii* | hussar | 330 | 670 |
| E1-FIS-1123 | 03/11/2023 | *Lethrinus miniatus* | red throat emperor | 385 | 945 |
| E2-FIS-1123 | 03/11/2023 | *Choerodon venustus* | Venus tuskfish | 360 | 840 |
| E3-FIS-1123 | 03/11/2023 | *Choerodon venustus* | Venus tuskfish | 420 | 1260 |
| E4-FIS-1123 | 05/11/2023 | *Gymnocranius audleyi* | iodine bream | 330 | 580 |
| E5-FIS-1123 | 05/11/2023 | *Epinephelus quoyanus* | longfin rockcod | 360 | 890 |
| G1-FIS-1223 | 04/12/2023 | *Gymnocranius audleyi* | iodine bream | 295 | 500 |
| G2-FIS-1223 | 04/12/2023 | *Gymnocranius audleyi* | iodine bream | 320 | 500 |
| G3-FIS-1223 | 04/12/2023 | *Epinephelus quoyanus* | longfin rockcod | 370 | 1000 |
| G4-FIS-1223 | 04/12/2023 | *Choerodon venustus* | Venus tuskfish | 380 | 1000 |
| G5-FIS-1223 | 04/12/2023 | *Lutjanus adetii* | hussar | 340 | 625 |
| I1-FIS-1123 | 04/11/2023 | *Lethrinus miniatus* | red throat emperor | 200 | 85 |

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| Sample Name | Date | Scientific Name | Common Name | Length (mm) | Weight (g) |
|---|---|---|---|---|---|
| I2-FIS-1123 | 04/11/2023 | *Lethrinus miniatus* | red throat emperor | 440 | 610 |
| I3-FIS-1123 | 04/11/2023 | *Epinephelus quoyanus* | longfin rockcod | 340 | 690 |
| I4-FIS-1123 | 04/11/2023 | *Lethrinus miniatus* | red throat emperor | 400 | 2300 |
| I5-FIS-1123 | 04/11/2023 | *Epinephelus quoyanus* | longfin rockcod | 255 | 300 |
| H1-FIS-1123 | 04/11/2023 | *Lethrinus miniatus* | red throat emperor | 300 | 1100 |
| H2-FIS-1123 | 04/11/2023 | *Lethrinus miniatus* | red throat emperor | 380 | 1900 |
| H3-FIS-1123 | 04/11/2023 | *Lutjanus adetii* | Hussar | 350 | 1620 |
| H4-FIS-1123 | 04/11/2023 | *Plectropomus leopardus* | common coral trout | 710 | 10000 |
| H5-FIS-1123 | 04/11/2023 | *Pentapodus paradiseus* | Paradise Threadfin bream | 270 | 300 |

Table 5.15 Length and Weight of Fish Samples, Survey 6 (Photographs provided in Appendix A). No TBT was present in any fish samples after remediation

| Sample Name | Date | Scientific Name | Common Name | Length (mm) | Weight (g) |
|---|---|---|---|---|---|
| A1-FIS-0524 | 12/05/2024 | *Lutjanus adetii* | hussar | 330 | 670 |
| A2-FIS-0524 | 12/05/2024 | *Lethrinus miniatus* | red throat emperor | 420 | 1100 |
| A3-FIS-0524 | 12/05/2024 | *Gymnocranius audleyi* | iodine bream | 300 | 445 |
| A4-FIS-0524 | 12/05/2024 | *Epinephelus quoyanus* | longfin rockcod | 340 | 600 |
| A5-FIS-0524 | 12/05/2024 | *Lethrinus miniatus* | red throat emperor | 380 | 970 |
| B1-FIS-0524 | 12/05/2024 | *Gymnocranius audleyi* | iodine bream | 270 | 340 |
| B2-FIS-0524 | 12/05/2024 | *Plectropomus leopardus* | common coral trout | 640 | 4200 |
| B3-FIS-0524 | 12/05/2024 | *Gymnocranius audleyi* | iodine bream | 300 | 275 |
| B4-FIS-0524 | 12/05/2024 | *Plectropomus leopardus* | common coral trout | 500 | 3800 |
| B5-FIS-0524 | 12/05/2024 | *Lethrinus miniatus* | red throat emperor | 460 | 3800 |
| C1-FIS-0524 | 12/05/2024 | *Choerodon venustus* | Venus tuskfish | 350 | 840 |
| C2-FIS-0524 | 13/05/2024 | *Lethrinus lentjan* | redspot emperor | 300 | 385 |
| C3-FIS-0524 | 13/05/2024 | *Lethrinus miniatus* | red throat emperor | 420 | 1100 |
| C4-FIS-0524 | 13/05/2024 | *Lethrinus miniatus* | red throat emperor | 340 | 550 |
| C5-FIS-0524 | 13/05/2024 | *Epinephelus quoyanus* | longfin rockcod | 300 | 470 |
| D1-FIS-0524 | 12/05/2024 | *Choerodon venustus* | Venus tuskfish | 330 | 650 |

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| Sample Name | Date | Scientific Name | Common Name | Length (mm) | Weight (g) |
|---|---|---|---|---|---|
| D2-FIS-0524 | 12/05/2024 | *Lethrinus lentjan* | redspot emperor | 480 | 1850 |
| D3-FIS-0524 | 13/05/2024 | *Lethrinus miniatus* | red throat emperor | 330 | 1200 |
| D4-FIS-0524 | 13/05/2024 | *Choerodon venustus* | Venus tuskfish | 420 | 1100 |
| D5-FIS-0524 | 13/05/2024 | *Choerodon venustus* | Venus tuskfish | 340 | 770 |
| E1-FIS-0524 | 12/05/2024 | *Choerodon venustus* | Venus tuskfish | 350 | 600 |
| E2-FIS-0524 | 12/05/2024 | *Epinephelus quoyanus* | longfin rockcod | 370 | 680 |
| E3-FIS-0524 | 12/05/2024 | *Gymnocranius audleyi* | iodine bream | 310 | 320 |
| E4-FIS-0524 | 12/05/2024 | *Choerodon venustus* | Venus tuskfish | 340 | 675 |
| E5-FIS-0524 | 12/05/2024 | *Echeneis naucrates* | remora | 620 | 800 |
| G1-FIS-0524 | 12/05/2024 | *Gymnocranius audleyi* | iodine bream | 340 | 560 |
| G2-FIS-0524 | 12/05/2024 | *Lethrinus miniatus* | red throat emperor | 450 | 1260 |
| G3-FIS-0524 | 12/05/2024 | *Gymnocranius audleyi* | iodine bream | 360 | 600 |
| G4-FIS-0524 | 12/05/2024 | *Lethrinus miniatus* | red throat emperor | 410 | 1100 |
| G5-FIS-0524 | 12/05/2024 | *Lutjanus adetii* | hussar | 360 | 660 |
| I1-FIS-0524 | 13/05/2024 | *Choerodon venustus* | Venus tuskfish | 290 | 440 |
| I2-FIS-0524 | 13/05/2024 | *Choerodon venustus* | Venus tuskfish | 370 | 960 |
| I3-FIS-0524 | 13/05/2024 | *Choerodon venustus* | Venus tuskfish | 320 | 550 |
| I4-FIS-0524 | 13/05/2024 | *Choerodon venustus* | Venus tuskfish | 310 | 700 |
| I5-FIS-0524 | 13/05/2024 | *Epinephelus quoyanus* | longfin rockcod | 280 | 350 |
| H1-FIS-0524 | 13/05/2024 | *Lethrinus miniatus* | red throat emperor | 390 | 700 |
| H2-FIS-0524 | 13/05/2024 | *Choerodon venustus* | Venus tuskfish | 290 | 430 |
| H3-FIS-0524 | 13/05/2024 | *Lethrinus miniatus* | red throat emperor | 480 | 1560 |
| H4-FIS-0524 | 13/05/2024 | *Lethrinus miniatus* | red throat emperor | 410 | 1200 |
| H5-FIS-0524 | 13/05/2024 | *Lethrinus miniatus* | red throat emperor | 420 | 1100 |

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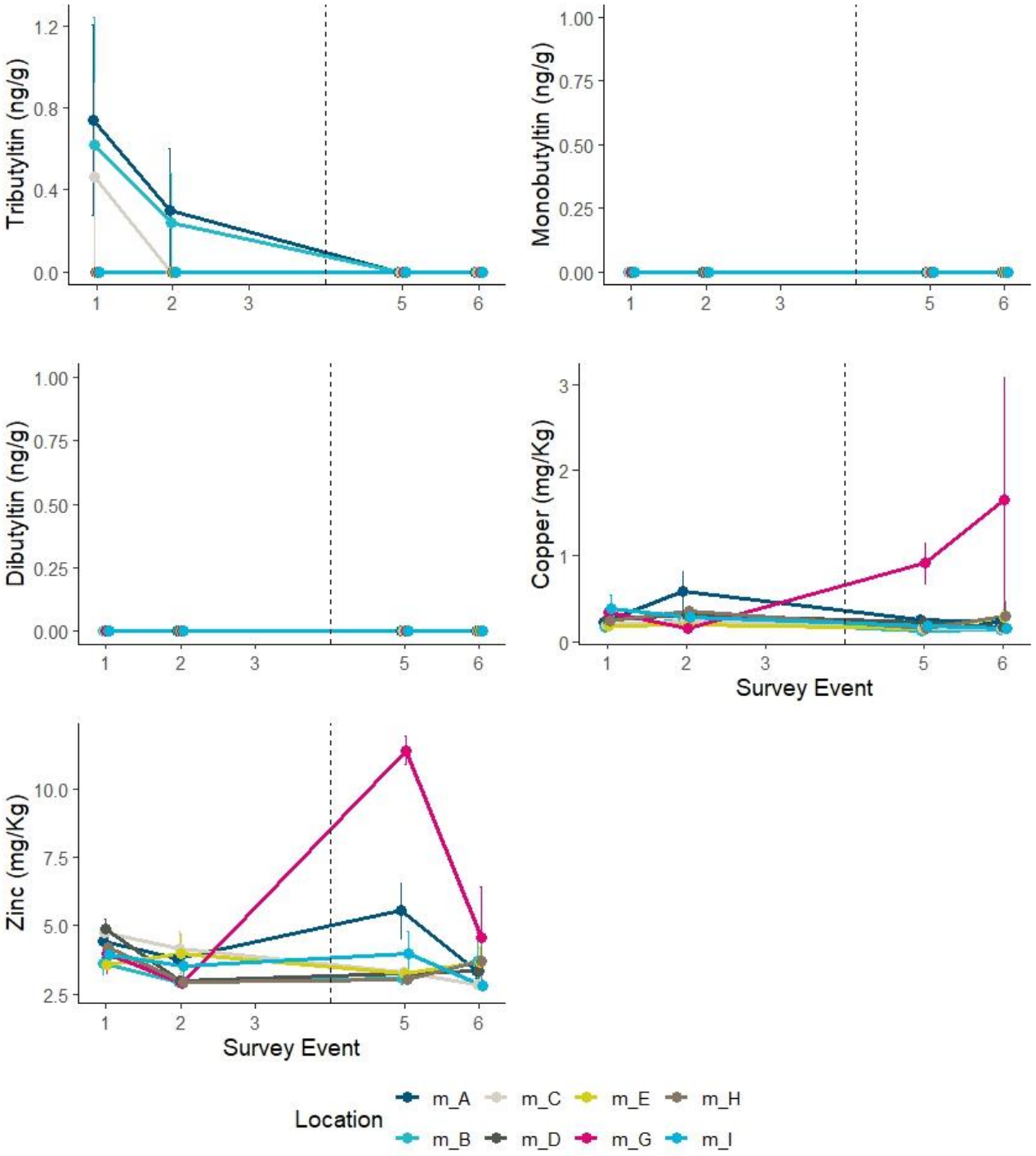



Figure 5.36 Mean (SE±) tributyltin (TBT), monobutyltin (MBT), dibutyltin (DBT), zinc and copper concentrations in fish tissue samples

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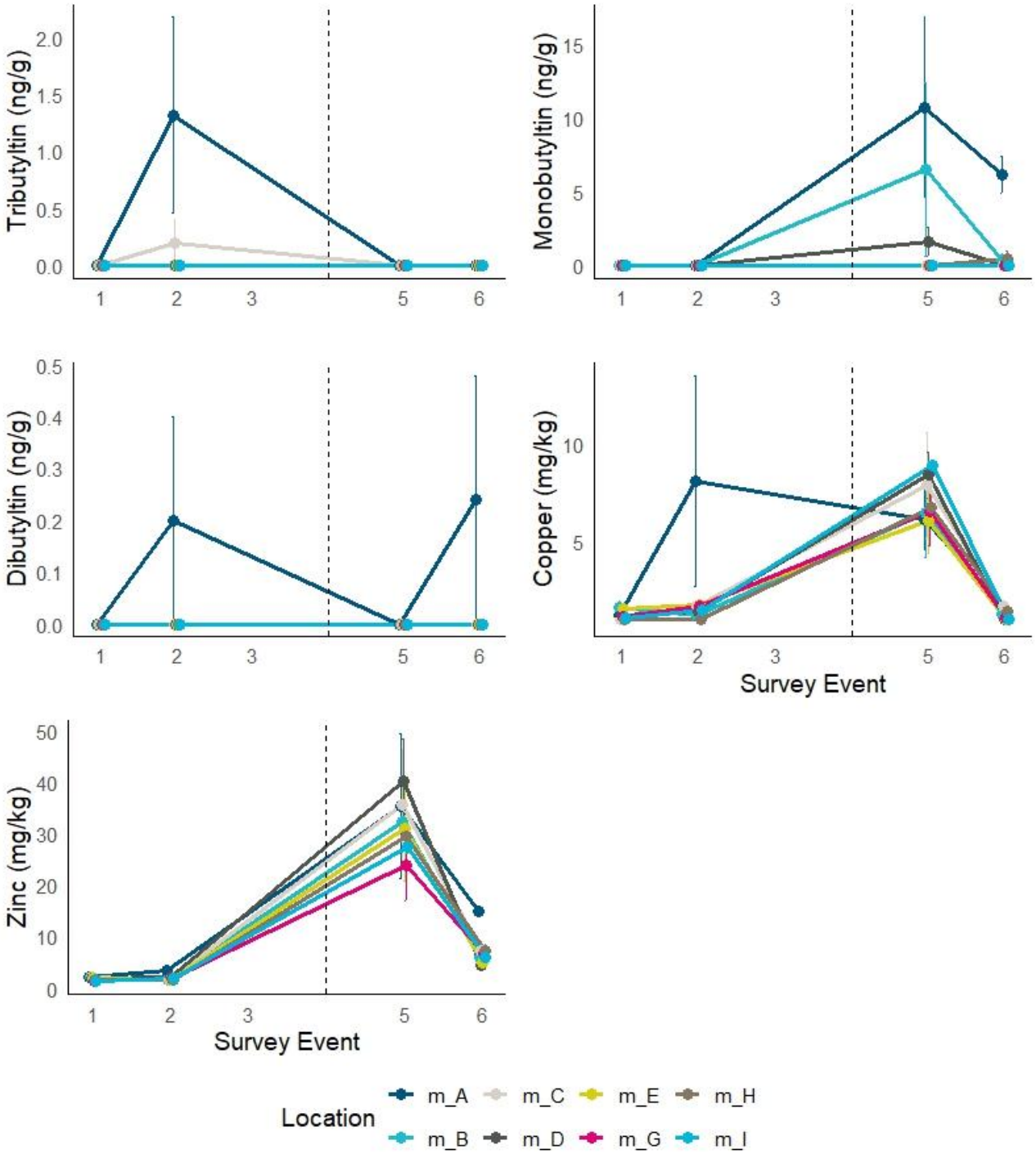



Figure 5.37 Mean (SE±) tributyltin (TBT), monobutyltin (MBT), dibutyltin (DBT), zinc and copper concentration in ascidian tissue samples

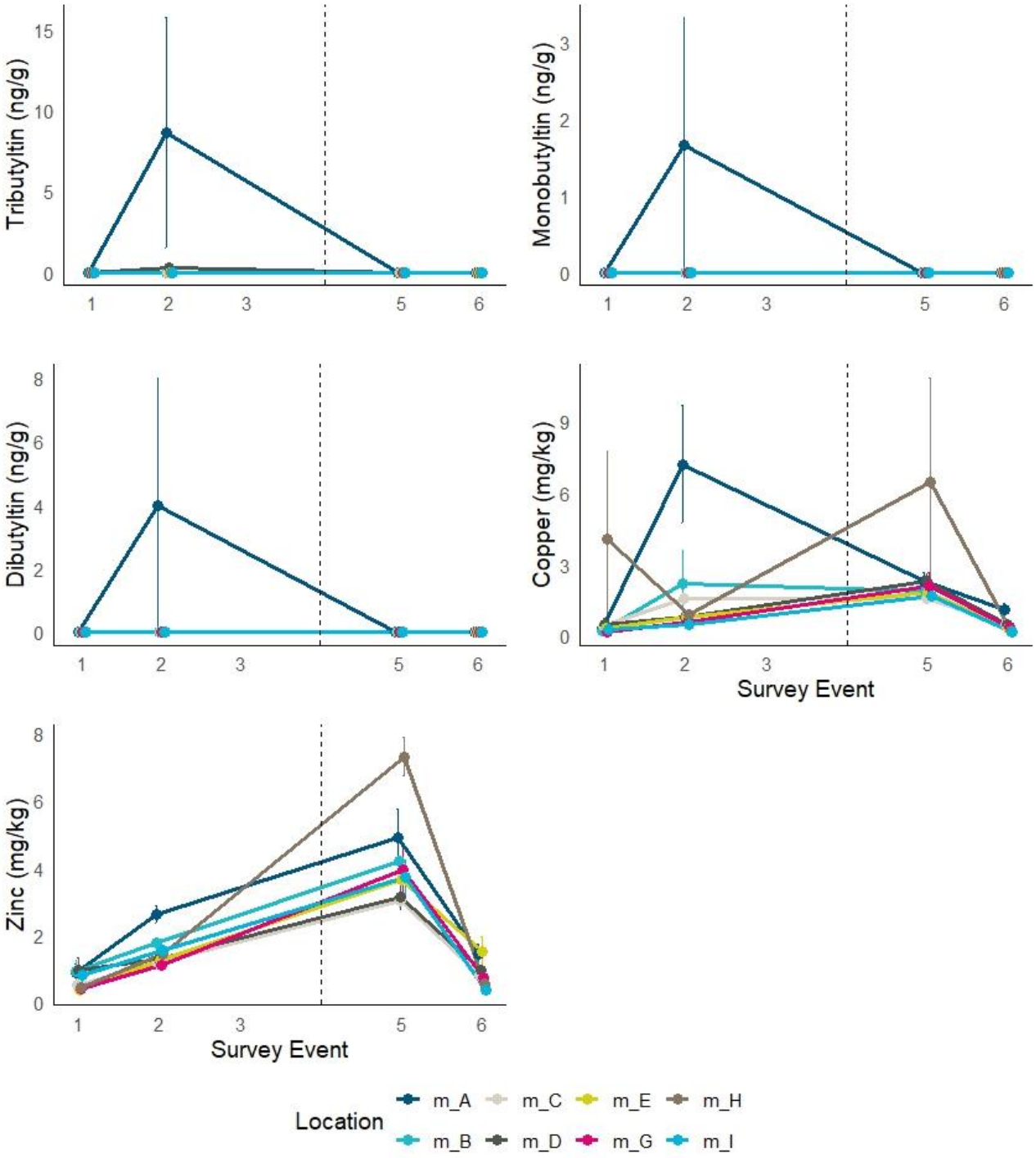



Figure 5.38 Mean (SE±) tributyltin (TBT), monobutyltin (MBT), dibutyltin (DBT), zinc and copper concentration in algae thallus samples

### 5.4.2 Copper and Zinc

Changes in tissue concentration of copper and zinc through time were determined quantitatively and suggested that temporal changes were due to a mixture of laboratory variation and remediation effects. Tissue concentrations for zinc and copper in all biota samples across the monitoring program were less than the most conservative ANZFA (2002) concentration guidelines of 160 and 80 mg/kg, respectively.

#### Fish Tissue

In fish tissue, the concentration of copper increased at location mA between 2019 and 2020 before falling after remediation (Figure 5.36). Most locations followed a similar pattern with a slight rise between events 1 and 2, followed by a reduction in event 5 and in some cases event 6 as well. Locations differed significantly, and there was a significant interaction between location and before/after (Table 5.16). Pairwise tests for locations between before and after remediation periods (Annex C) showed that copper concentrations increased in fish tissue after remediation at location mG, while concentrations fell at locations mC, mB, and mI. This suggested that remediation resulted in a slight increase in copper tissue concentration at one nearfield location (mG) compared to falling or unchanging concentrations elsewhere at Douglas Shoal and at Habberfield Shoal.

Similarly for zinc in fish tissue, there were also significant differences among locations and for the interaction between location and before/after (Table 5.16). Pairwise tests for locations between before and after remediation periods showed that zinc concentrations were higher in fish tissue after remediation at location mG, and lower at mC. This suggested that remediation resulted in an increase in zinc tissue concentration at one nearfield site (mG), and a reduction in zinc tissue concentration at remediation site mC, compared to unchanging concentrations elsewhere at Douglas Shoal and at Habberfield Shoal.

At the treatment level, there was a significant interaction between treatment and before / after for both copper and zinc (Figure 5.41, Table 5.17), where copper and zinc concentrations were elevated in the nearfield treatment after remediation works unlike the remediation and reference treatments.

Differences in the concentration of copper and zinc in fish tissue suggest that the remediation may have slightly reduced their concentrations in some locations directly remediated, and increased tissue concentration of copper and zinc at mG, which contributed to an overall nearfield treatment effect. In the absence of other data, this increase at mG could be questioned as spatial, sampling, or laboratory variation; however, a second line of evidence exists as concentrations of copper were also slightly elevated in the sediment at mG after remediation (section 5.6.1).

#### Ascidian Tissue

Concentrations of copper in ascidian tissue were consistent among locations through time apart from at mA in event 2 (Figure 5.37), where concentrations were higher; largely due to a single individual with a 30 mg/kg concentration. However, the overall effect of before and after was not significant, and while the interaction term between before and after versus location had low-level statistical significance, none of the pairwise at locations between before and after remediation (Annex C) were significant. The large increase in ascidian copper concentration in event 5 occurred at all locations, including Habberfield Shoal and is consistent with differences in laboratory processing or a widespread increase in copper concentration beyond the scale of the remediation project. The former explanation is considered more likely as there was no evidence of remediation plume impacts reaching the scale of Habberfield Shoal (section 3.2).

Zinc concentrations in ascidian tissue through time followed a similar pattern to that of copper, but there was a strong before /after main effect (Table 5.16) and no differences among locations or interactions. Like copper, the large increase in zinc concentration occurred in event 5 occurred across all locations, including Habberfield Shoal and is consistent with differences in laboratory processing.

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At the treatment level, there were low-level significant interactions between treatment and before/ after for both copper and zinc (Figure 5.41, Table 5.17), but none of the pairwise changes indicated any form of remediation impact or benefit in metal burden with respect to the reference treatment.

**Algal Tissue**

Concentrations of copper in algal tissue did not vary significantly overall between the before and after periods, and while there were significant differences among locations and for the interaction between periods and locations, pairwise comparisons within locations between before and after remediation were not significant (Figure 5.38, Table 5.16, Annex C). Similarly for zinc in algal tissue, there was a significant overall effect of before and after periods, and there was a significant interaction between periods and locations, but pairwise comparisons within each location between before and after periods were again not significant in any comparison. The same was true at the treatment level, where there were low-level significant interactions between treatment and before/ after for both metals (Figure 5.41, Table 5.17), but none of the pairwise changes indicated any form of remediation impact or benefit in metal burden.

This suggests that changes in algal tissue copper were without an obvious trend and that changes in zinc concentration were consistent with differences in laboratory processing over time.

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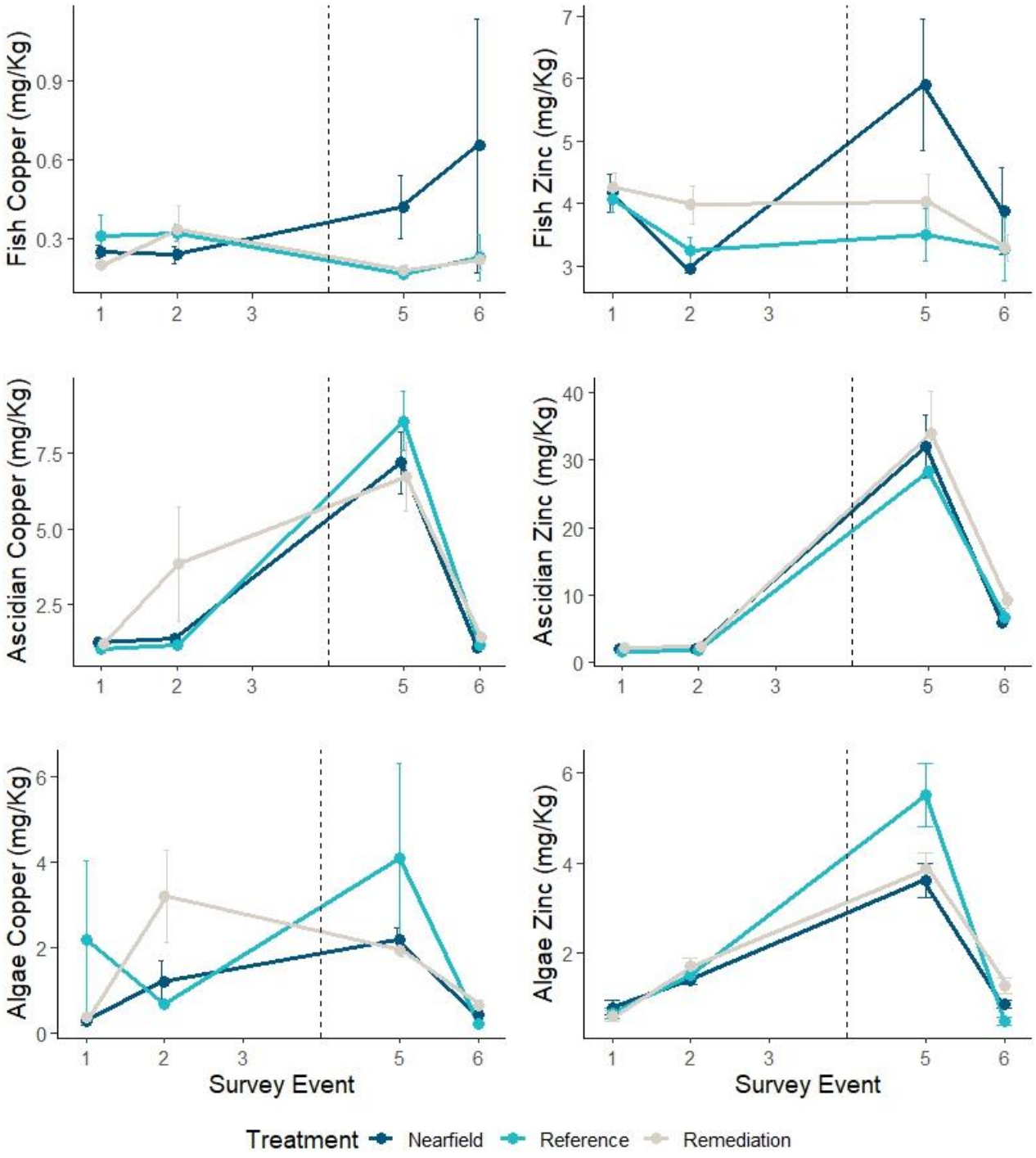



Figure 5.39 Treatment mean (SE±) zinc and copper tissue concentrations in fish (above), ascidians (middle), and algae (below)

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Table 5.16 Summary analysis of deviance table for location-level generalized linear models of biotic contamination. Significance codes: 0 = ***, 0.001 =**, 0.01 = *, 0.05 = blank

| Response | Parameter | Chi Sq | df | P>Chi | |
|---|---|---|---|---|---|
| **Fish Copper** | | | | | |
| | Location | 70.59 | 7 | 1.21e-12 | *** |
| | Before / After | 3.81 | 1 | 0.05 | . |
| | Location *Before / After | 57.14 | 7 | 5.60e-10 | *** |
| **Fish Zinc** | | | | | |
| | Location | 26.11 | 7 | 4.82e-4 | *** |
| | Before / After | 0.001 | 1 | 0.97 | |
| | Location *Before / After | 39.23 | 7 | 1.77e-06 | *** |
| **Ascidian Copper** | | | | | |
| | Location | 14.78 | 7 | 0.04 | * |
| | Before / After | 1.11 | 1 | 0.29 | |
| | Location *Before / After | 15.45 | 7 | 0.03 | * |
| **Ascidian Zinc** | | | | | |
| | Location | 10.50 | 7 | 0.16 | |
| | Before / After | 14.45 | 1 | 1.44e-4 | *** |
| | Location *Before / After | 0.63 | 7 | 1 | |
| **Algae Copper** | | | | | |
| | Location | 78.31 | 7 | 3.05e-14 | *** |
| | Before / After | 0.06 | 1 | 0.80 | |
| | Location *Before / After | 16.91 | 7 | 0.02 | * |
| **Algae Zinc** | | | | | |
| | Location | 64.19 | 7 | 2.19e-11 | *** |
| | Before / After | 1.06 | 1 | 0.30 | |
| | Location *Before / After | 31.28 | 7 | 5.53e-05 | *** |

(Refer to Annex B for detailed statistical analysis outputs).

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Table 5.17 Summary analysis of deviance table for treatment-level generalized linear models of biotic contamination. Significance codes: 0 = ***, 0.001 =**, 0.01 = *, 0.05 = blank

| Response | Parameter | Chi Sq | df | P>Chi | |
|---|---|---|---|---|---|
| **Fish Copper** | | | | | |
| | Treatment | 12.64 | 2 | 1.80e-3 | ** |
| | Before / After | 0.02 | 1 | 0.87 | |
| | Treatment *Before / After | 23.11 | 2 | 9.58e-06 | *** |
| **Fish Zinc** | | | | | |
| | Treatment | 4.62 | 2 | 0.10 | . |
| | Before / After | 0.15 | 1 | 0.70 | |
| | Treatment *Before / After | 13.83 | 2 | 9.95e-4 | *** |
| **Ascidian Copper** | | | | | |
| | Treatment | 5.88 | 2 | 0.05 | . |
| | Before / After | 0.97 | 1 | 0.33 | |
| | Treatment *Before / After | 7.11 | 2 | 0.03 | * |
| **Ascidian Zinc** | | | | | |
| | Treatment | 4.11 | 2 | 0.13 | |
| | Before / After | 14.93 | 1 | 1.12e-4 | *** |
| | Treatment *Before / After | 0.23 | 2 | 0.89 | |
| **Algae Copper** | | | | | |
| | Treatment | 13.11 | 2 | 3.52e-07 | ** |
| | Before / After | 0.00 | 1 | 0.96 | |
| | Treatment *Before / After | 6.84 | 2 | 0.03 | * |
| **Algae Zinc** | | | | | |
| | Treatment | 14.41 | 2 | 7.43e-4 | *** |
| | Before / After | 1.24 | 1 | 0.27 | |
| | Treatment *Before / After | 8.27 | 2 | 0.02 | * |

(Refer to Annex B for detailed statistical analysis outputs).

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## 5.5 Water Quality

Five water quality samples were collected at each location for laboratory analysis at a depth of 1 m above the seafloor at each of the eight monitoring locations.

Key findings of water quality analyses are as follows (noting copies of detailed laboratory testing results are provided at Annex D):

- Most parameters were below the laboratory limit of reporting (LOR) in water samples (Table 5.18).
- Total suspended solids (TSS) were below the LOR in all samples.
- Most metals/metalloids had concentrations less than the LOR, the exceptions being quality control duplicates from Douglas Shoal and two samples from Habberfield Shoal:
  - Lead was above the ANZG (2018) 99% DGV of 2.2 µg/L at Douglas Shoal site B3-WQ-0624 (3.5 µg/L) and in its corresponding duplicate B3-WQ-0624A (3.5 µg/L). This was likely introduced via the sampling bucket used to combine multiple water grabs.
  - Copper was detected in three sites from Douglas Shoal (1-3 µg/L) where a bucket was used to combine multiple water samples, and most likely represents equipment contamination.
  - Copper was detected at one site at Haberfield Shoal (7 µg/L) which also contained TBT (4 µg/L). It is likely that this site was contaminated by the sampler or the laboratory, as there is no known history of TBT contamination at Habberfield Shoal.
  - Zinc was detected above LOR at 8 µg/L from one site at Habberfield Shoal. This most likely was due to sun-cream introduced by the sampler.
- There was no evidence to suggest that remediation activities have altered the water quality 1 m above the benthos outside of the direct remediation period.

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Table 5.18 Concentrations of Dissolved Contaminants during Event 6

| Site | TSS | Metals/Metalloids | | | | | | | | | | | | TBT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mercury | Aluminium | Antimony | Arsenic | Barium | Cadmium | Chromium | Copper | Iron | Lead | Nickel | Zinc | |
| Units | mg/L | mg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | ngSn/L |
| A1-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.6 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| A2-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.5 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| A3-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.7 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| A3-WQ-0624A | <5 | <0.00004 | <5 | <0.5 | 1.2 | 4 | <0.2 | <0.5 | 1 | <5 | <0.2 | <0.5 | <5 | <2 |
| A4-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.6 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| B1-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.3 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| B2-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.6 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| B3-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.6 | 4 | <0.2 | <0.5 | 1 | <5 | 3.5 | <0.5 | <5 | <2 |
| B3-WQ-0624A | <5 | <0.00004 | <5 | <0.5 | 1.5 | 4 | <0.2 | <0.5 | 1 | <5 | 3.3 | <0.5 | <5 | <2 |
| B4-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.5 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| B5-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.5 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| C1-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.5 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| C2-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.2 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| C3-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.6 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| C3-WQ-0624A | <5 | <0.00004 | <5 | <0.5 | 1.4 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| C4-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.3 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| C5-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.2 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| D1-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.3 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| D2-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.1 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| D3-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.2 | 4 | <0.2 | <0.5 | 3 | <5 | <0.2 | <0.5 | <5 | <2 |
| D3-WQ-0624A | <5 | <0.00004 | <5 | <0.5 | 1.2 | 4 | <0.2 | <0.5 | 3 | <5 | <0.2 | <0.5 | <5 | <2 |
| D4-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.2 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| D5-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.2 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| E1-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.2 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| E2-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.1 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| E3-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.2 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| E4-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.6 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| E5-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.7 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| G1-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.6 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| G2-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.2 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |

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| Site | TSS | Metals/Metalloids | | | | | | | | | | | | TBT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mercury | Aluminium | Antimony | Arsenic | Barium | Cadmium | Chromium | Copper | Iron | Lead | Nickel | Zinc | |
| Units | mg/L | mg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | ngSn/L |
| G3-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.1 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| G4-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.2 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| G5-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.2 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| H1-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.2 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| H2-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.6 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| H3-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.5 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | 8 | <2 |
| H4-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.5 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | >5 | <2 |
| H5-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.6 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| I1-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.6 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| I2-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.5 | 5 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| I3-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.7 | 6 | <0.2 | <0.5 | 7 | <5 | <0.2 | <0.5 | <5 | 4 |
| I4-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.6 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| I5-WQ-0624 | <5 | <0.00004 | <5 | <0.5 | 1.6 | 4 | <0.2 | <0.5 | <1 | <5 | <0.2 | <0.5 | <5 | <2 |
| **LOR** | ***5*** | ***0.00004*** | ***5*** | ***0.5*** | ***0.5*** | ***1*** | ***0.2*** | ***0.5*** | ***1*** | ***5*** | ***0.2*** | ***0.5*** | ***5*** | ***2*** |
| ANZG * | - | **0.0001** | - | - | - | - | **0.7** | **0.14** | **0.3** | - | **2.2** | **7** | **7** | **0.4** |
| ANZECC ** | - | - | - | **270** | **4.5** | **1000** | - | - | - | - | - | - | - | - |
| **Key:** | **Above ANZG guideline** | | | | | | | **Above ANZECC guideline** | | | | | | |

Notes:

Guideline values for Antimony and Arsenic are low reliability and should be used as an indicative interim working level.

* = default guideline values taken from the Australian and New Zealand guidelines for fresh and marine water quality (ANZG 2018)

** = guideline values taken from the ANZECC & ARMCANZ water quality guidelines (ANZECC 2000)

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### 5.5.2 Water Data Quality (QA/QC) Summary

- Relative percent differences (RPD) for arsenic QA/QC samples were acceptable and between 0 and 17%.
- The triplicate RSD for arsenic at both site mA and mB were over the acceptable range at 47.25% and 43.3% respectively.
- RPD's for all other contaminant duplicates were within acceptable thresholds.
- The trip blank (left open on deck for 10 minutes) showed contamination of aluminium, barium, zinc, and copper. The field blank (used to rinse equipment) showed contamination of lead and copper. The rinsate sample (milliQ water direct from the bottle) was uncontaminated.
- This contamination profile and presence contaminants in duplicate samples suggests that the vessel environment contained some metal contamination, and the bucket used to mix samples during duplication contained lead and copper. The uncontaminated rinsate blank confirms that contamination did not arise from the milliQ water.

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## 5.6 Sediment Quality

Sediment quality results are discussed in the context of:

- Temporal changes with respect to the remediation work
- How concentrations of contaminants compare to the ANZG (2018) sediment quality default guideline values (SQDGVs)
- Spatial patterns in contamination before and after remediation.

### 5.6.1 Temporal Changes

Temporal changes in sediment quality suggest that the action of the dredge vacuum removal was associated with reduced concentrations of TBT, copper and arsenic at some locations and an increase in chromium at location mA. Some changes were also observed at reference sites and are likely the result of laboratory variation rather than spatial change.

During the preliminary studies, the concentrations of contaminants were shown to be highest in location mA where the Shen Neng 1 first grounded on the shoal. This informed the remediation campaign, whereby the Gateway dredger did not operate in overflow mode while remediating location mA to minimise dispersal of contaminants. Temporal comparisons sought to determine whether remediation was associated with changes in contaminant concentrations within and adjacent to remediation locations compared to reference locations. Comparisons were drawn amongst AFP contaminants and those which were detected frequently enough to make meaningful comparisons.

TBT was the sediment constituent of greatest concern due to its persistence and toxicity relative to other contaminants. Temporal analyses show that there was no significant reduction in concentration in location mA between events 1 and 6, but significant reductions were observed at remediation locations mC and mE (Figure 5.40, Table 5.19, Table 5.20). During 2019 there were three detections of TBT at location mC and two at mE, while it was undetected in 2024. There was no evidence of increases in TBT in nearfield sites, suggesting that remediation did not remobilise any of the TBT into neighbouring locations. Observed reductions occurred in the remediation areas where the dredge worked extensively and removed the greatest amounts of material.

For the remaining metals, patterns were variable and likely associated with a mixture of potential positive remediation outcomes, some potential unintended remobilisation, and laboratory measurement variability. Copper concentrations were significantly lower at locations mA and mC after remediation, while slight, yet statistically significant, increases in copper concentration occurred at mE and the nearfield location mG. The change at mG was driven by more frequent detections at low concentrations and is consistent with a plume impact from overflow. It should be noted that the mean copper concentration at mG in 2024 was 1.29 mg/kg, which is well below the ANZG sediment quality default guideline value (SQDGV) of 65 mg/kg.

Concentrations of arsenic were lower after the remediation at locations mA, mB, and mD, suggesting a minor reduction in concentration associated with the works. The only significant change in chromium was an increase in concentration at location mA, which was not observed at any other locations. While this was statistically significant, the increase was not biologically significant and was well within the SQDGVs. Changes in manganese and vanadium included increases at reference locations, suggesting that laboratory measurement variation was driving temporal differences for these metals. There was also a significant reduction in zinc at location mC which was likely the result of remediation.

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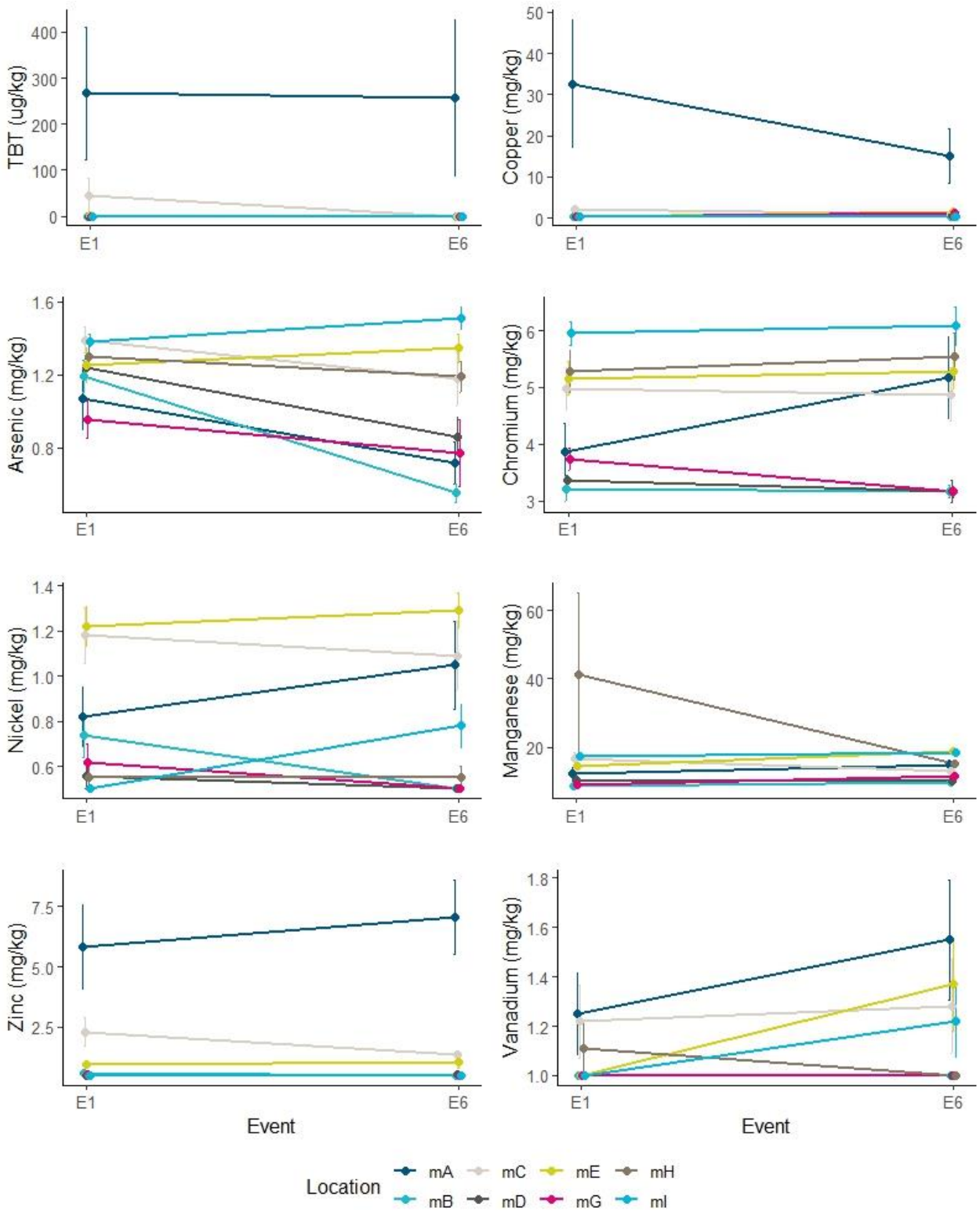



Figure 5.40 Mean (± SE) contaminant concentration between events by locations

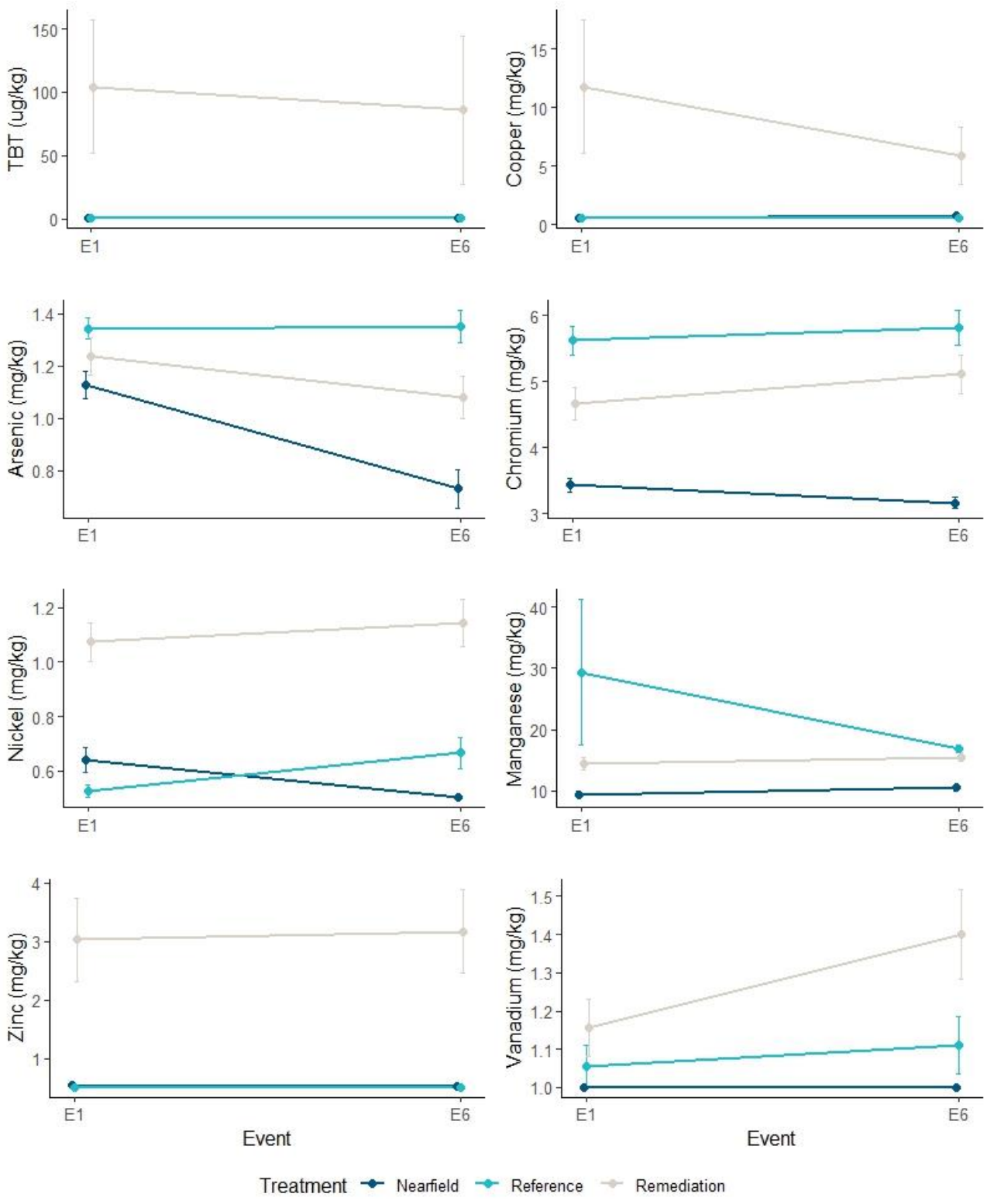



Figure 5.41 Mean (± SE) contaminant concentration between events by treatment

Table 5.19 Summary analysis of deviance table for generalized linear models of sediment contaminant concentrations at Locations. Significance codes: 0 = ***, 0.001 =**, 0.01 = *, 0.05 = blank

| Response | Parameter | Chi Sq | df | P>Chi | |
|---|---|---|---|---|---|
| **Tributyltin** | | | | | |
| | Event | 24.01 | 1 | **9.5e-07** | *** |
| | Location | 829.26 | 7 | **2.2e-16** | *** |
| | Location*Event | 111.9 | 7 | **2.2e-16** | *** |
| **Copper** | | | | | |
| | Event | 0.45 | 1 | 0.5 | |
| | Location | 532.87 | 7 | **2.2e-16** | *** |
| | Location*Event | 40.56 | 7 | **9.8e-07** | *** |
| **Arsenic** | | | | | |
| | Event | 16.72 | 1 | **4.3e-05** | *** |
| | Location | 72.82 | 7 | **3.9e-13** | *** |
| | Location*Event | 31.8 | 7 | **4.42e-05** | *** |
| **Chromium** | | | | | |
| | Event | 1.2 | 1 | 0.65 | |
| | Location | 187.29 | 7 | **2.2e-16** | *** |
| | Location*Event | 12.52 | 7 | 0.08 | |
| **Nickel** | | | | | |
| | Event | 0.02 | 1 | **0.9** | |
| | Location | 174.67 | 7 | **2.2e-16** | *** |
| | Location*Event | 24.42 | 7 | **0.001** | *** |
| **Manganese** | | | | | |
| | Event | 0.65 | 1 | **0.42** | |
| | Location | 106.47 | 7 | **2.2e-16** | *** |
| | Location*Event | 40.10 | 7 | **1.2e-06** | *** |
| **Zinc** | | | | | |
| | Event | 0.39 | 1 | 0.53 | |
| | Location | 601.97 | 7 | **2.2e-16** | *** |
| | Location*Event | 8.88 | 7 | 0.26 | |
| **Vanadium** | | | | | |
| | Event | 5.22 | 1 | **0.02** | * |
| | Location | 38.22 | 7 | **2.7e-06** | *** |
| | Location*Event | 13.08 | 7 | **0.07** | |

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Table 5.20 Independent contrast summary of contaminants of concern for interactions between events within locations (significant changes are shown in light pink)

| Location and event interactions | mA | mB | mC | mD | mE | mG | mH | mI |
|---|---|---|---|---|---|---|---|---|
| Tributyltin | 0.93 | 0.93 | **<0.0001** | 1 | **0.02** | 0.99 | 0.99 | 1 |
| Copper | **0.009** | 1 | **0.003** | 0.70 | **<0.0001** | **0.001** | 1 | 1 |
| Arsenic | **0.004** | **<0.0001** | 0.14 | **0.005** | 0.52 | 0.14 | 0.44 | 0.41 |
| Chromium | **0.002** | 0.87 | 0.83 | 0.55 | 0.81 | 0.08 | 0.61 | 0.82 |
| Nickel | 0.07 | 0.005 | 0.57 | 0.42 | 0.96 | 0.12 | 1 | **0.002** |
| Manganese | 0.28 | 0.61 | 0.15 | 0.91 | 0.11 | 0.14 | **<0.0001** | 0.72 |
| Zinc | 0.33 | 0.45 | **0.008** | 0.63 | 0.51 | 0.62 | 0.99 | 0.99 |
| Vanadium | **0.04** | 0.99 | 0.64 | 0.99 | **0.002** | 0.99 | 0.32 | 0.06 |

In summary, temporal changes in sediment contamination suggest that remediation reduced concentrations of TBT at remediation locations mC and mE, but not at mA. This was likely because less material was removed from mA compared to locations mC and mE (section 3). The remediation did appear to significantly reduce the concentration of copper in all remediation locations, but it also appears that some copper was introduced into site mG, which may have occurred during overflow. The concentration of zinc was significantly lower at mC after remediation and the remediation likely reduced the concentration of arsenic to a small degree at some locations. There was a slight increase in chromium concentration at location mA (within the range of variation observed at other locations), which may have been introduced from the steel alloy on the gully vacuum head employed in the narrower parts of mA.

### 5.6.2 Guideline Exceedances and Particle Sizing

Regarding compliance with the SQDGVs, the key findings of sediment quality analyses are as follows, noting that copies of the full laboratory testing reports are available in Annex D and photographs of the sediment samples are provided at Annex A.

- Particle size distribution (PSD) results suggest that average proportions of different sediment classes were similar between the two sampling events locations with the largest reduction in gravel occurring at mC (Figure 5.42). Gravel fractions were typically much lower at Haberfield Shoal than at Douglas Shoal, especially at location mI (Figure 5.42). Spatial changes in gravel and unconsolidated sediment are considered further in sections 5.1.4 and 5.7.

- Most metals/metalloids had concentrations less than ANZG (2018) SQDGVs. Antimony, cadmium, cobalt, silver, lead, and mercury were not detected in events 1 or 6; all were less than the LOR. Detected metals/metalloids with concentrations less than the SQDGV were arsenic, chromium, zinc and nickel (SQDGVs: 20, 80, 200, 21 mg/kg, respectively).
- Aluminium, iron, selenium, vanadium, barium, manganese, monobutyltin, dibutyltin, and diuron were detected but there are no SQDGV for these.
- Constituents with higher concentrations at Douglas Shoal compared to Haberfield Shoal included copper, zinc, TBT, and diuron:
  - copper – all locations excluding mA had concentrations less than the ANZG (2018) Guideline Value – High (GV-High) of 270mg/kg. The highest concentrations were recorded at Douglas Shoal location mA (max = 124 mg/kg in 2019 and 70.9 mg/kg in 2024).

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- zinc – all samples had concentrations less than SQDGV of 200 mg/kg. The highest concentrations were recorded at Douglas Shoal remediation location mA (max = 17.8 mg/kg in 2019 and 9.1 mg/kg in 2024).
- TBT - Douglas Shoal remediation treatment location mA had five samples above ANZG (2018) Guideline Value – High (GV-High) of 70 µg/kg dry weight in 2019 and two samples above the GV-High in 2024 without TOC normalisation. There were three samples between SQDGV and GV-High in both survey events. TBT was detected below the SQDGV in all triplicate samples, and undetected outside of location mA in 2024.
- Diuron (herbicide) – Diuron was detected three times at location mA in 2019 and twice in the same location in 2024. There is no SQDGV for diuron, and it was undetected in all other locations.

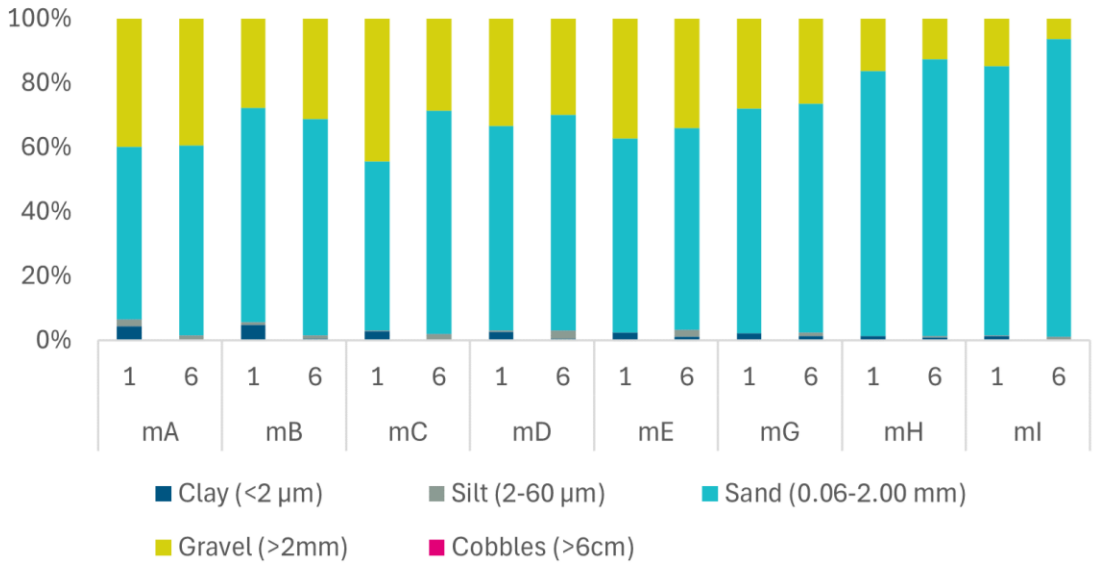
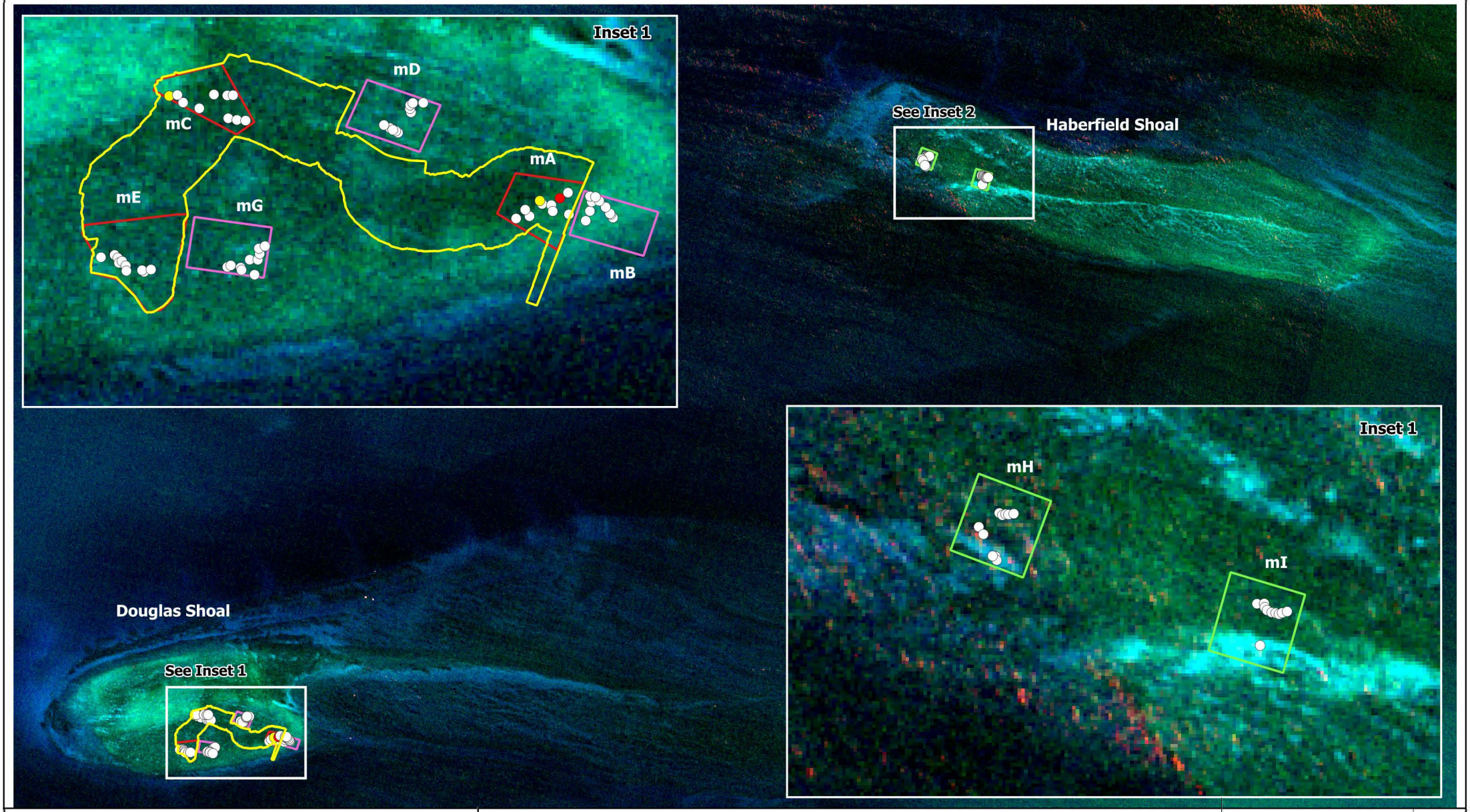



Figure 5.42 Average PSD distributions across monitoring locations.

### 5.6.3 Spatial Patterns in Sediment Contamination

The distribution of key APF contaminants show that the highest concentrations of organotins, copper, zinc and diuron were in mA, and some spatiotemporal changes are present for copper (Figure 5.43 to Figure 5.48). After the remediation the reduction in copper concentration at mC is apparent and an increase in copper concentration can be seen at nearfield location mG.

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LEGEND

Total Monobutyltin in Sediments (µgSn/kg)

- 0 - 1
- 1 - 21
- 21 - 30

**LEGEND**

- Ship footprint

Monitoring Locations

- Near-Field
- Regional Ref
- Remediation

Title:

# Total Monobutyltin After Remediation Activities in Sediment Samples

BMT endeavours to ensure that the information provided in this map is correct at the time of publication. BMT does not warrant, guarantee or make representations regarding the currency and accuracy of information contained in this map.

N

0 250 500 m

Approx. inset scale

0 1.5 3 km

Approx. scale

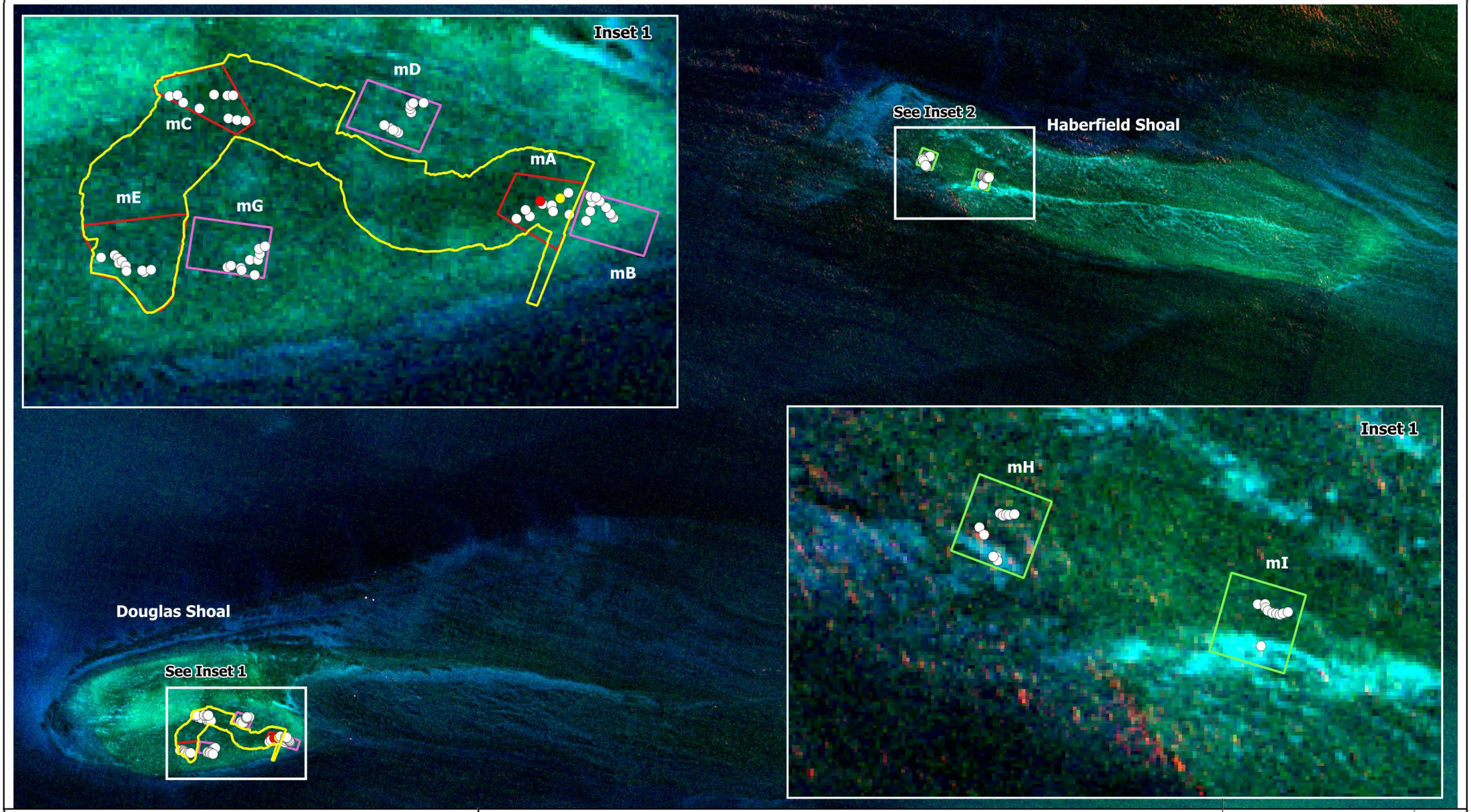
Figure: 5.43

Rev: A

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LEGEND

Total Dibutyltin in Sediments (µgSn/kg)
1% TOC Normalised

- 0 - 1
- 1 - 83
- 83 - 84

**LEGEND**

- Ship footprint

Monitoring Locations

- Near-Field
- Regional Ref
- Remediation

Title:

# Total Dibutyltin After Remediation Activities in Sediment Samples

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N

0 250 500 m
Approx. inset scale

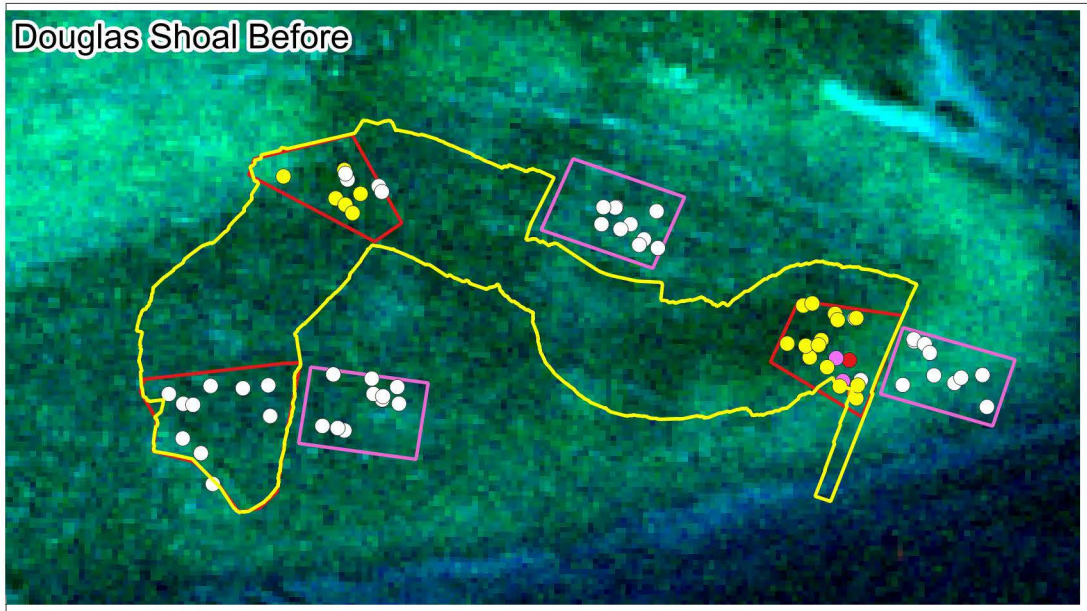
0 1.5 3 km
Approx. scale

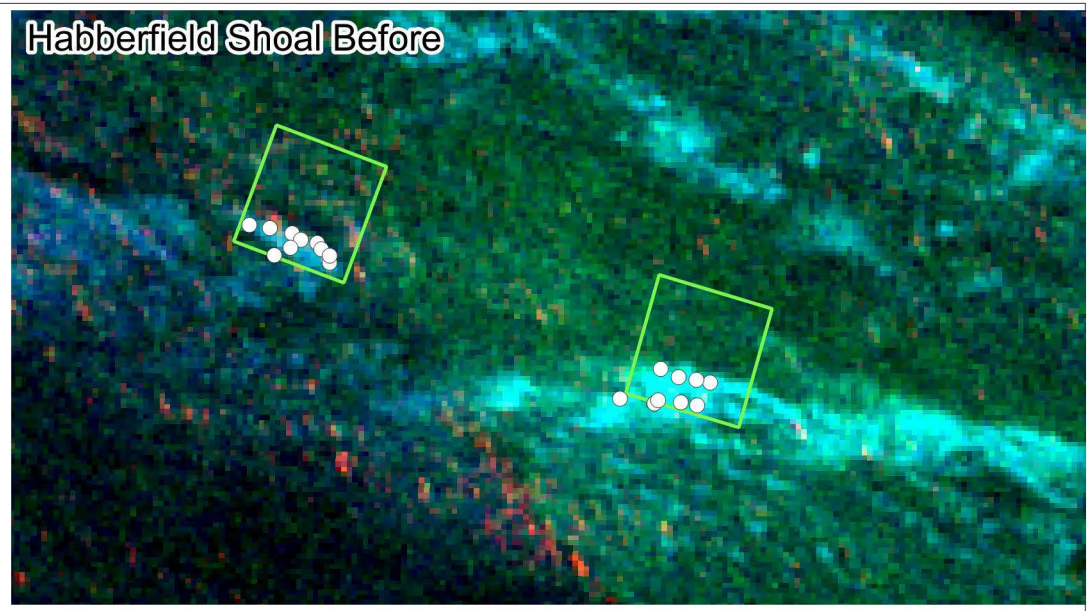
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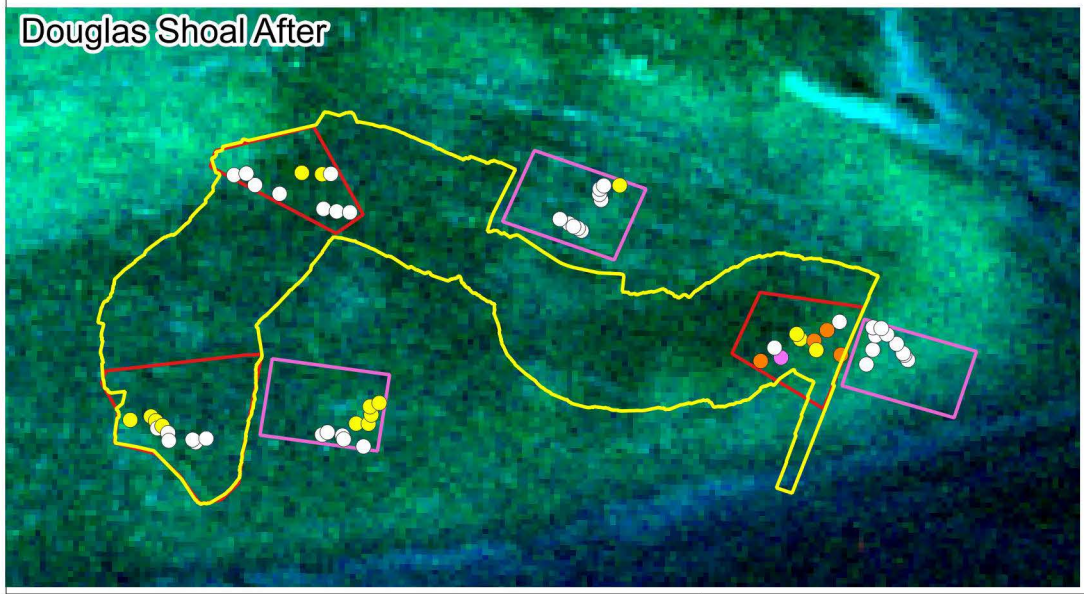
Rev: **A**

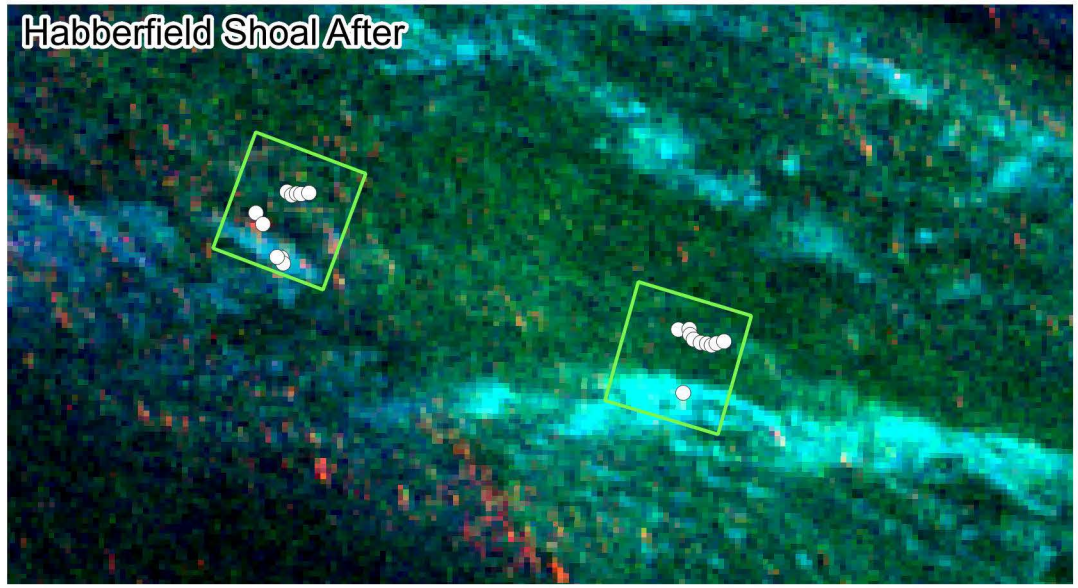
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**LEGEND**

Total Copper in Sediments (mg/kg)

- 0 - 1
- 1 - 10
- 10 - 40
- 40 - 65
- 65 - 124

**LEGEND**

- Ship footprint

Monitoring Locations

- Near-Field
- Regional Ref
- Remediation

Title:

# Total Copper Before and After Remediation Activities in Sediment Samples

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N

0 75 150 m

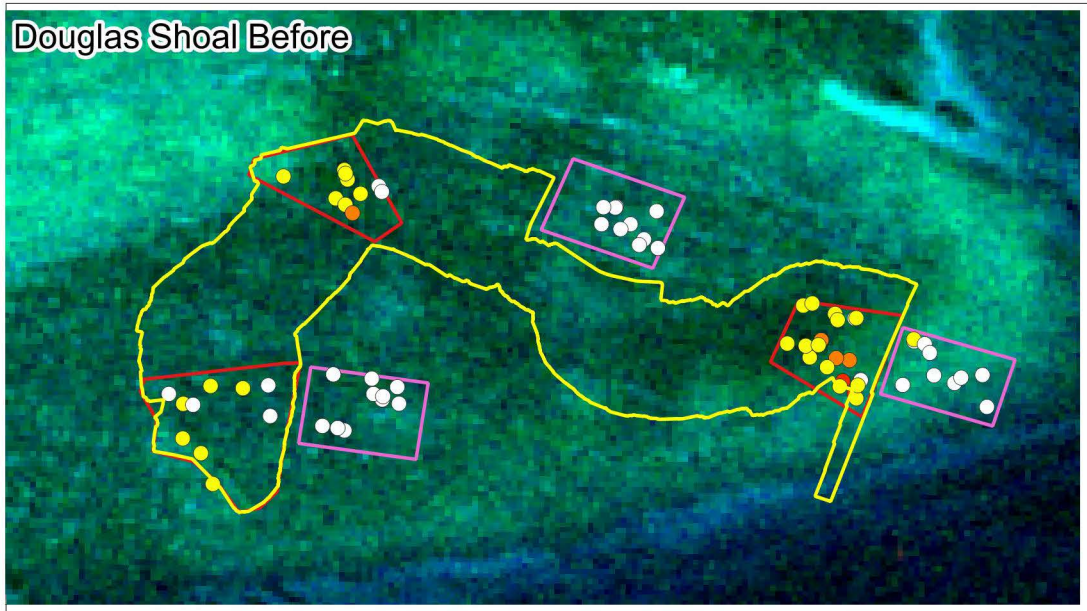
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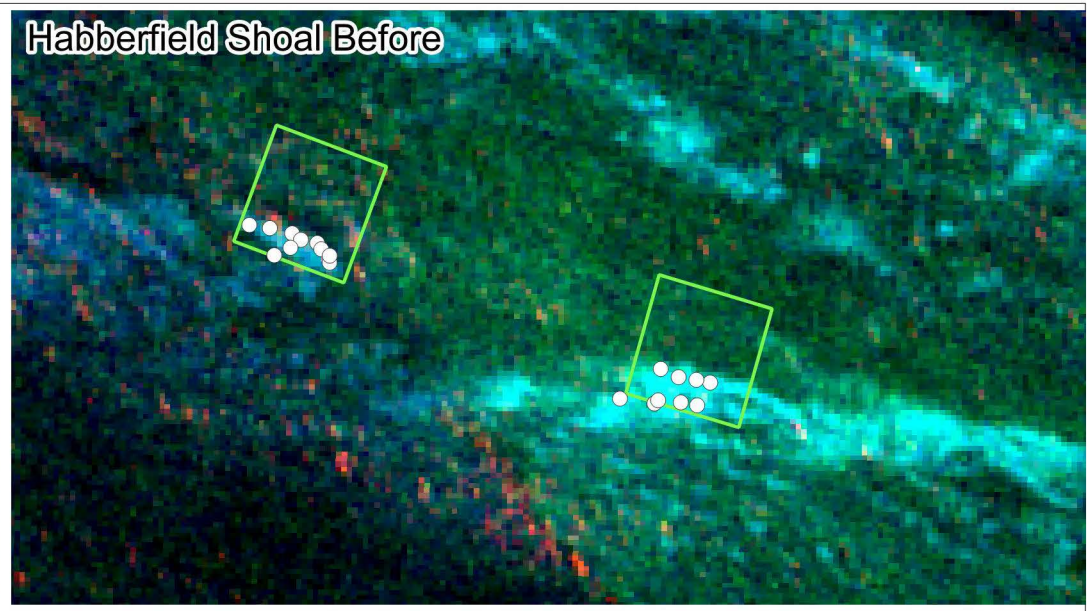
Rev: **A**

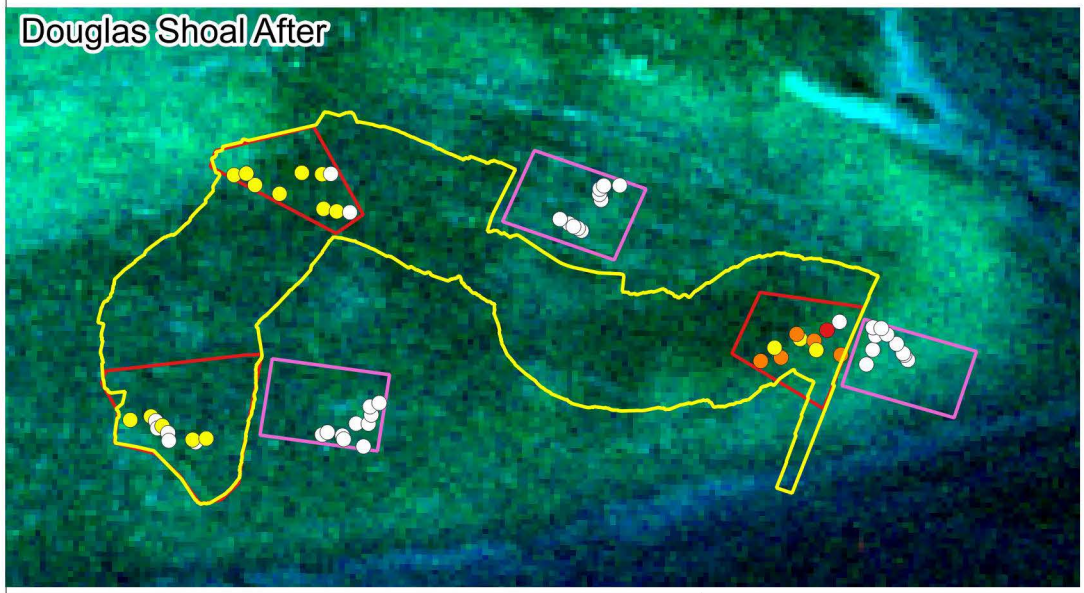
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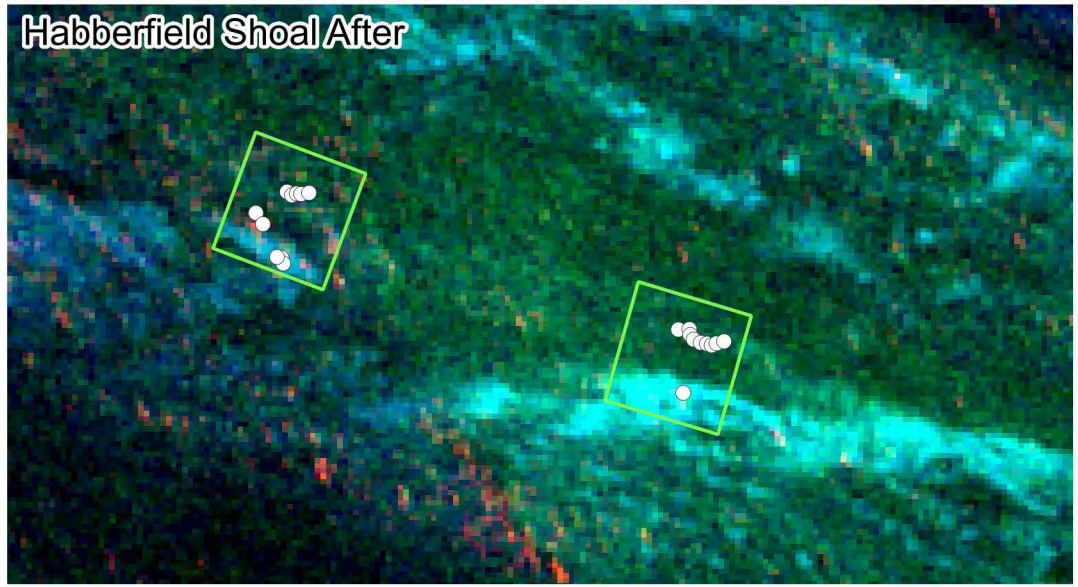
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Filepath: I:\B23282_I_JLB_Douglas Shoal Remediation Monitoring BT\QGIS\Sediment\ECO_QGIS_001_SedSamples _2024.qgz




**LEGEND**

Total Zinc in Sediments (mg/kg)

- 0 - 1
- 1 - 5
- 5 - 10
- 10 - 18

**LEGEND**

- Ship footprint

Monitoring Locations

- Near-Field
- Regional Ref
- Remediation

Title:

# Total Zinc Before and After Remediation Activities in Sediment Samples

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N

0 75 150 m

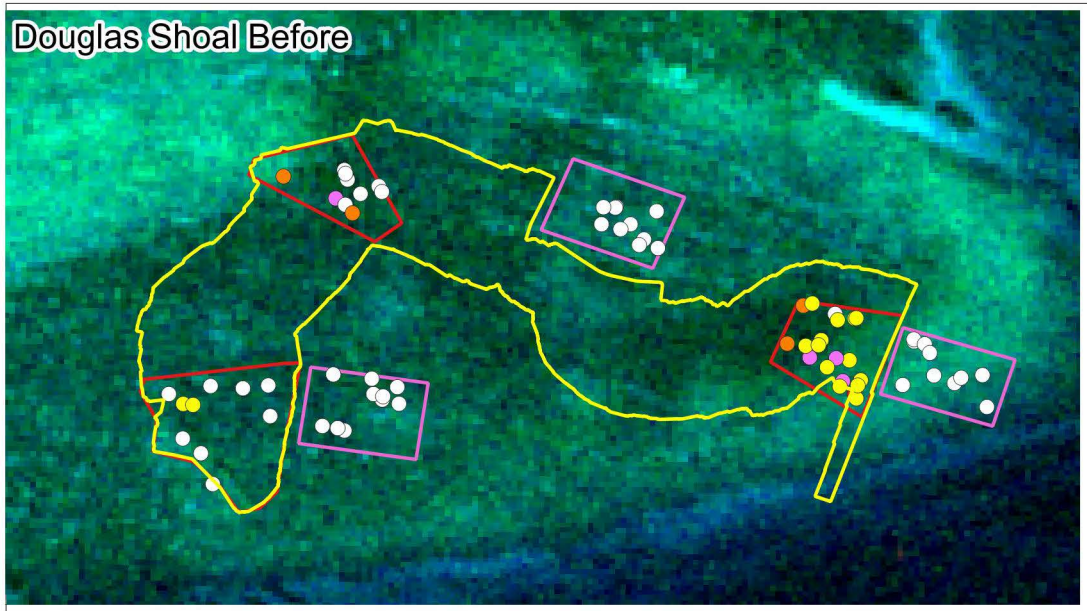
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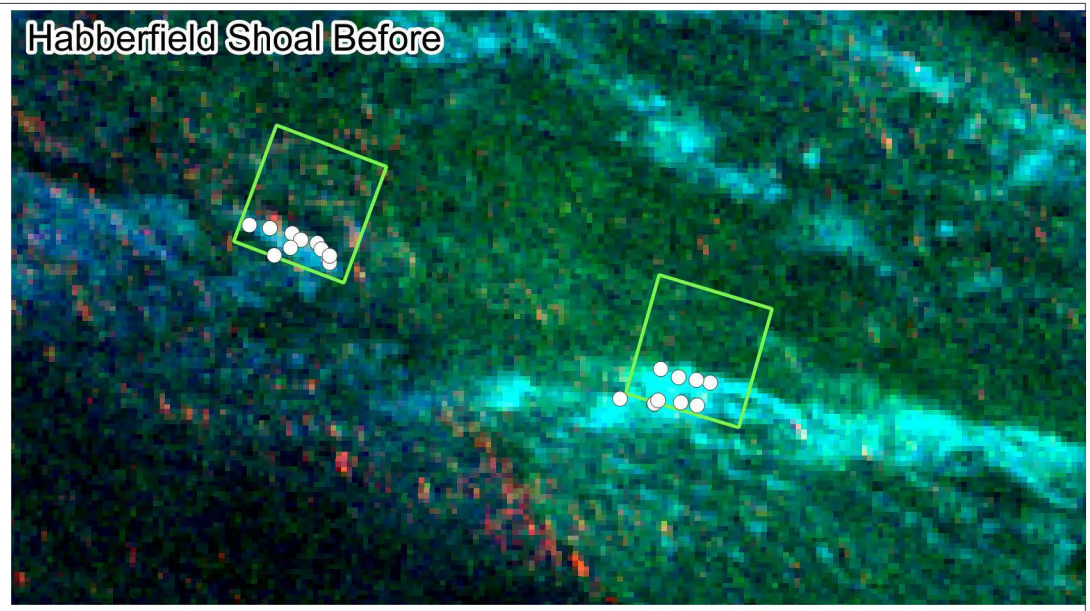
Rev: **A**

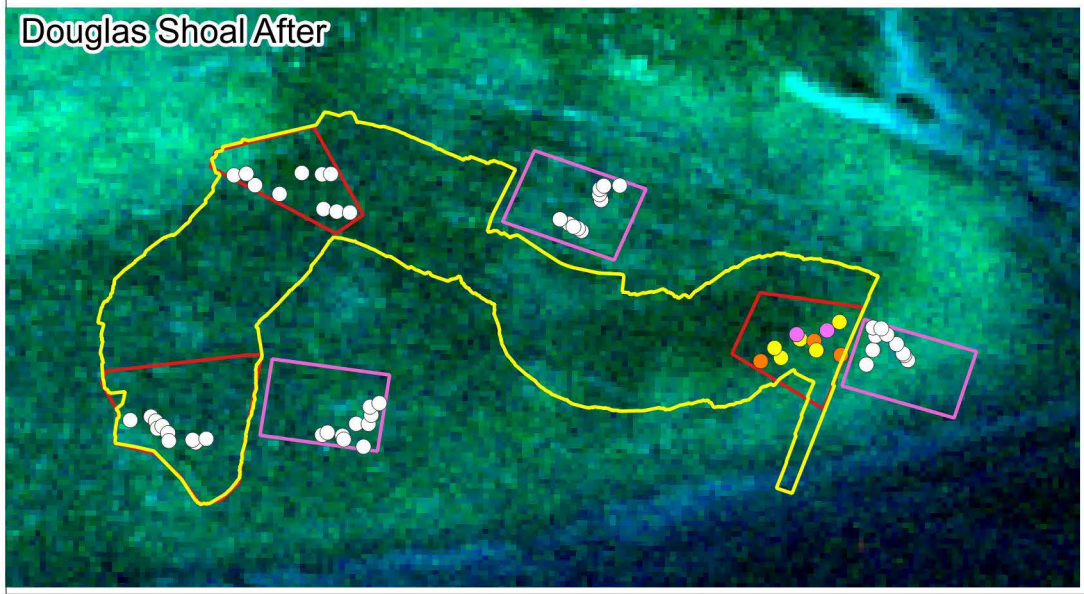
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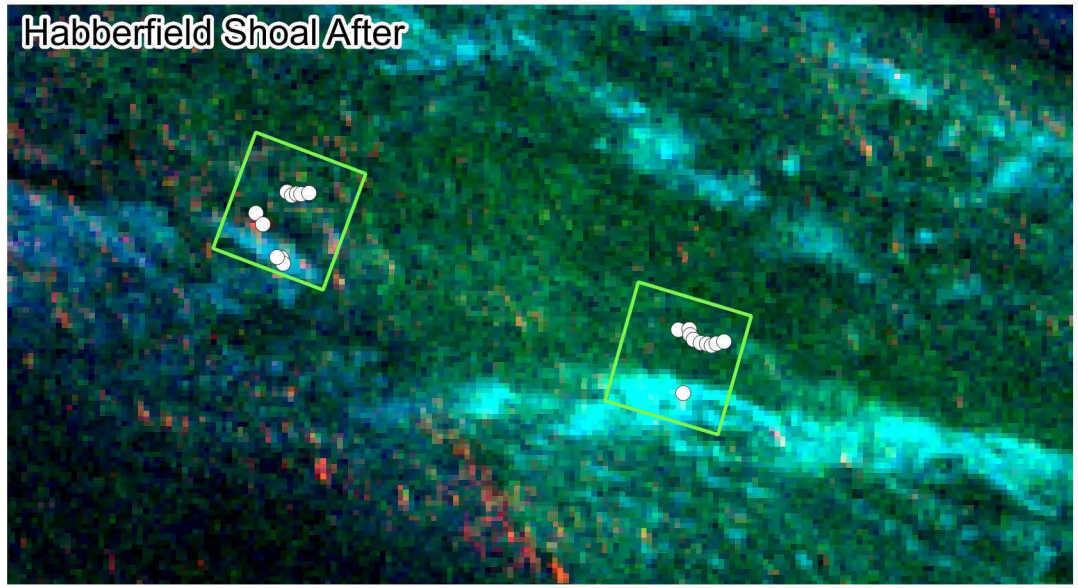
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**LEGEND**

Total Tributyltin in Sediments (µgSn/kg)

- 0 - 1
- 1 - 9
- 9 - 70
- 70 - 250
- 250 - 1490

**LEGEND**

- Ship footprint

Monitoring Locations

- Near-Field
- Regional Ref
- Remediation

Title:

# Total Tributyltin Before and After Remediation Activities in Sediment Samples

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N

0 75 150 m

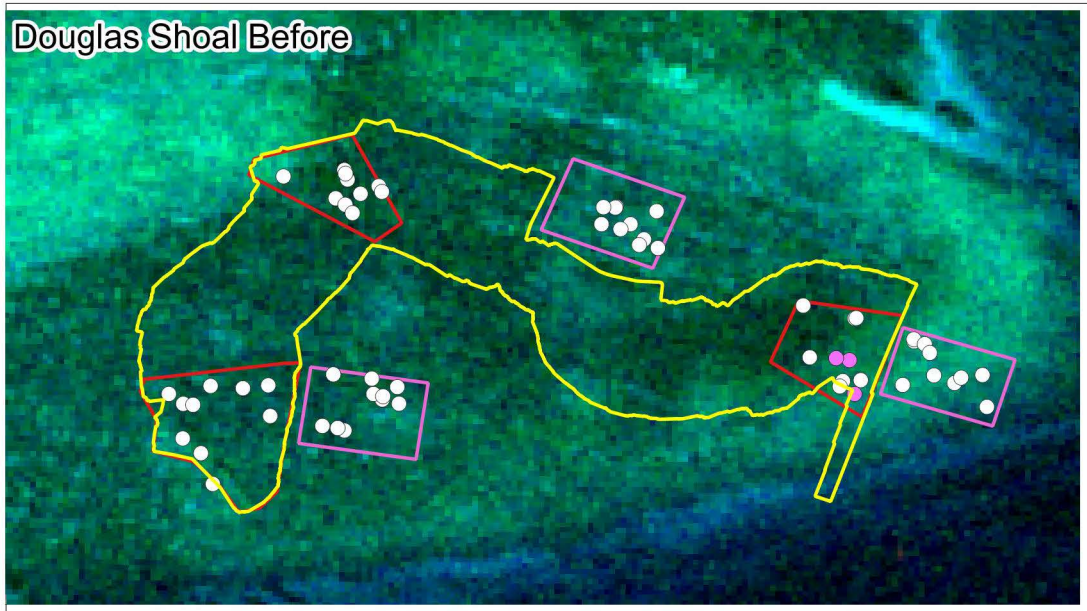
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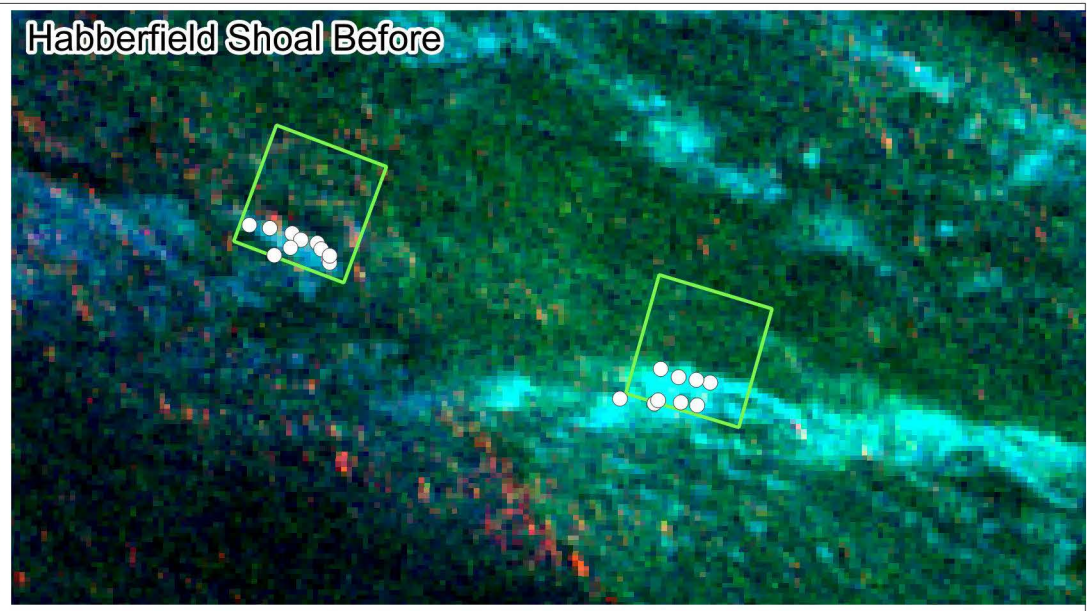
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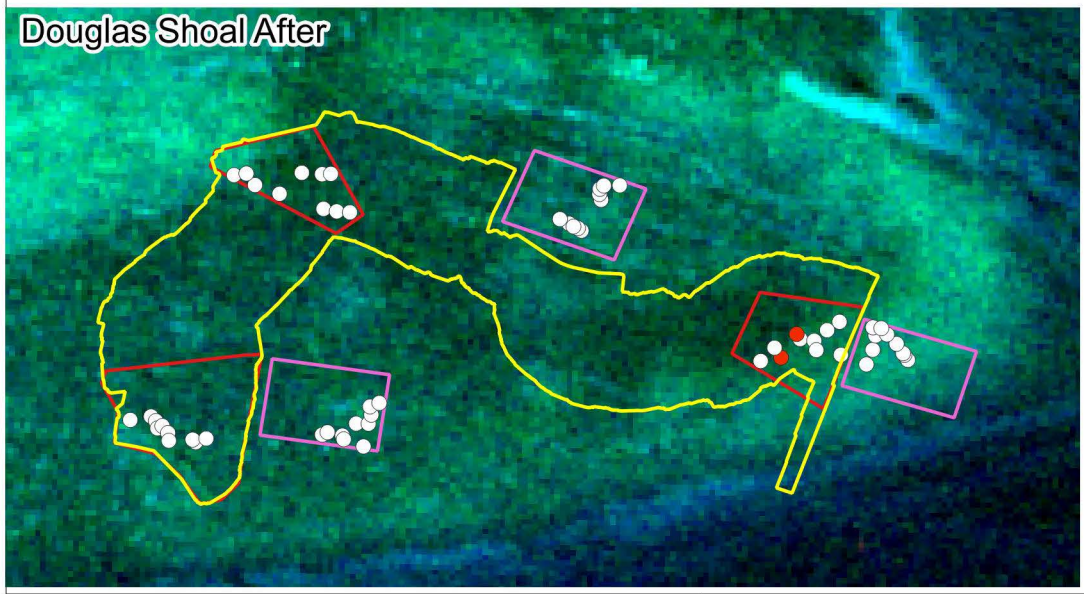
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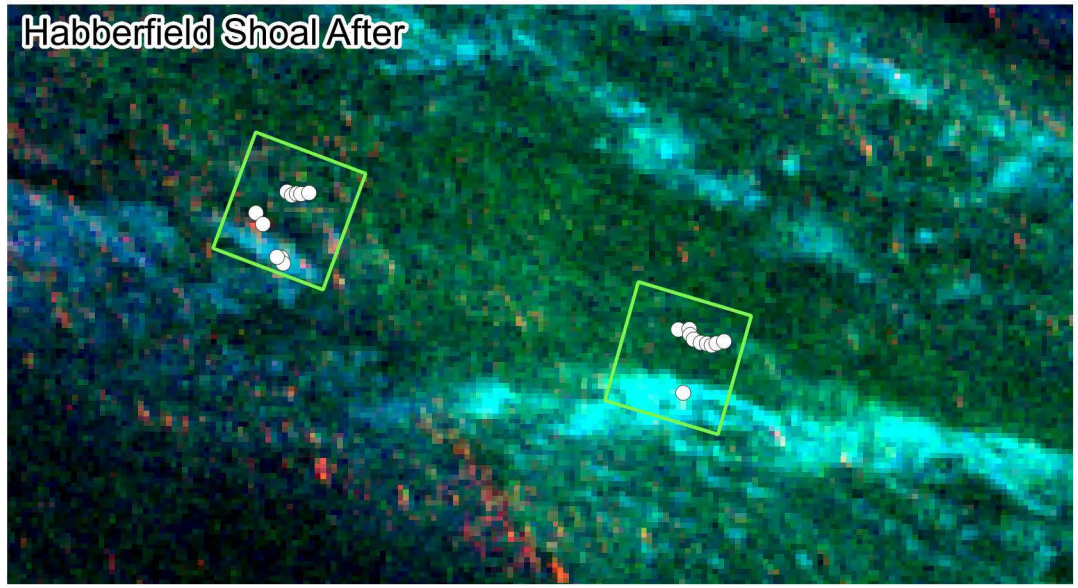
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Filepath: I:\B23282_I_JLB_Douglas Shoal Remediation Monitoring BT\QGIS\Sediment\ECO_QGIS_001_SedSamples _2024.qgz




**LEGEND**

Total Diuron in Samples (mg/kg)

- 0 - 0.0025
- 0.0025 - 0.005
- 0.005 - 0.15

**LEGEND**

- Ship footprint

Monitoring Locations

- Near-Field
- Regional Ref
- Remediation

Title:

# Total Diuron Before and After Remediation Activities in Sediment Samples

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N

0 75 150 m

Figure: **5.48**

Rev: **A**

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### 5.6.4 Sediment Data Quality (QA/QC) Summary

The following summarises the event 6 sediment quality data:

- QC samples were assessed using RPD for duplicates and relative standard deviation (RSD) for triplicates, with exceedances based on the following criteria:
  - Where mean concentrations are <5 times LOR, RPD should be <100%
  - Where mean concentrations are 5-10 times LOR, RPD should be <75%
  - Where mean concentrations are >10 times LOR – RPD should be <50%
  - RSD for triplicates should be <50%.
- For duplicate QC samples (homogenised in the field examining laboratory variation), there were RPD exceedances for:
  - Copper at site A11-SED-0624 (RPD 139%)
  - TBT at site A11-SED-0624 (RPD 174%)
  - Aluminium, Iron and TBT at site A13-SED-0624 (RPD 108%, 95%, and 118% respectively)
  - TBT at site A14-SED-0624 (RPD 189%)
  - Aluminium at site C13-SED-0624-1019 (RPD 54%)
  - Aluminium and Iron at site C14-SED-0624 (RPD 64% and 50% respectively)
  - Aluminium and Iron at site E13-SED-0624 (RPD 52% and 64% respectively)
  - Aluminium at site E14-SED-0624 (RPD 55%).
- For Triplicate QC samples (homogenised in the field examining laboratory variation), there were RPD exceedances for:
  - Copper and TBT at site A12-SED-0624 (RSD122% and 142% respectively)
  - Aluminium at site B12-SED-0624 (RSD 60%)
  - Aluminium at site D12-SED-0624 (RSD 57%).
- Laboratory QA/QC outlined:
  - There were no method blank value outliers
  - There were no laboratory control outliers
  - There were duplicate outliers in six cases, likely representing extreme sample heterogeneity:
    - Aluminium had an RPD of 60.3% in E4-SED-0624 (0-50% expected)
    - Aluminium had an RPD of 29.0% in A11-SED-0624 (0-20% expected)

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  - Iron had an RPD of 53.6% in E4-SED-0624 (0-50% expected)
  - Copper had an RPD of 154% in A1-SED-0624 (0-20% expected)
  - Barium had an RPD of 33.2% in G7-SED-0624 (0-20% expected)
  - Tributyltin had an RPD of 55.8% in A11-SED-0624 (0-20% expected)
- Matrix spikes were outside acceptability criteria for monobutyltin
- Recoveries of the TBT surrogate triproptylin were low in five cases at 13.2 - 29.6% (35 – 130%).

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## 5.7 Acoustic Assessment of Physical Habitat

Acoustic and remotely sensed data show that monitoring locations typically had similar baseline levels of rugosity and depth, with reference locations at Haberfield Shoal being slightly deeper than Douglas Shoal locations. Acoustic out-surveys were only conducted in the direct remediation areas (mA, mC, mE), therefore, temporal changes in depth and rugosity are not available for the remaining locations.

The 50 cm resolution bathymetry of Douglas Shoal (Figure 5.49) shows highly similar depths and vertical relief at locations at mC, mE, mD, and mG, with locations mA and mB being slightly deeper due to their position closer to the edge of the shoal. On Douglas Shoal, the location with the deepest bathymetry was mB, which also had the greatest depth range (Table 5.21). The Douglas Shoal location with the shallowest depth was mC, which was situated at the northern extremity of the ship grounding footprint, at the junction of the low- and high-relief terraces. Haberfield Shoal reference locations were deeper than the Douglas Shoal locations (Table 5.21). The average depth (LAT) of locations at Douglas Shoal was approximately 12 m, with mD being slightly deeper at 13 m. Both reference locations at Haberfield Shoal (mH and mI) were deeper than the Douglas Shoal locations.

Locations mA, mB and mC had the highest rugosity values, which increased at the 50 cm scale after the remediation works (Table 5.21). Rugosity increased by 2.7, 2.6 and 1.5% of the initial value in locations mA, mC, and mE, respectively. Rugosity calculations suggested that there was very little roughness across all remediation and nearfield locations which is important because rugosity is significantly correlated with coral cover (Fuad 2010) and, therefore, fish abundance and richness (Harborne *et al*. 2011). Increases in rugosity are probably the result of removing flat areas of sediment leaving behind sharper grooves and deeper potholes.

### Table 5.21 Rugosity and Depth of Locations

| Location | Rugosity 2019 | Rugosity 2023 | Mean depth 2019 (m LAT) | Mean depth 2023 (m LAT) | 2019 Greatest depth (m LAT) | 2023 Greatest depth (m LAT) | Maximum depth change (m) | Depth range (m) |
|---|---|---|---|---|---|---|---|---|
| mA | 1.012 | 1.027 | -12.45 | -12.54 | -14.79 | -15.23 | -0.45 | 3.7 |
| mB | 1.017 | | -12.84 | | -17.95 | | | 7.1 |
| mC | 1.014 | 1.026 | -12.56 | -12.67 | -13.94 | -14.09 | -0.15 | 4.3 |
| mD | 1.007 | | -13.24 | | -14.26 | | | 2.2 |
| mE | 1.008 | 1.015 | -12.70 | -12.80 | -13.83 | -14.09 | -0.26 | 2.5 |
| mG | 1.009 | | -12.91 | | -14.14 | | | 2.2 |
| mH | N/A | N/A | -18.4 | -18.4 | -20.1 | | | 3.8 |
| mI | N/A | N/A | -15.7 | -15.7 | -16.9 | | | 1.8 |

Remediation resulted in an overall deepening of each location by an average of approximately 10 cm (Table 5.21); however it should be noted that some apparent depth differences are the result of differences in survey methodology not elevation changes. Differences in bathymetry between the two acoustic surveys (Figure 5.50) show that a repeating pattern of red (bathymetric reduction) in track lines run during the 2023 out-survey. Acoustic Imaging suggested this was due to some movement in the sounder head in during the out-survey. Real changes in bathymetry greater than 50 cm are shown in pink in Figure 5.50, and sit almost exclusively within the dredge head footprint. The areas of greatest bathymetric change were found in locations mC and mE, with relatively small changes present in mA.

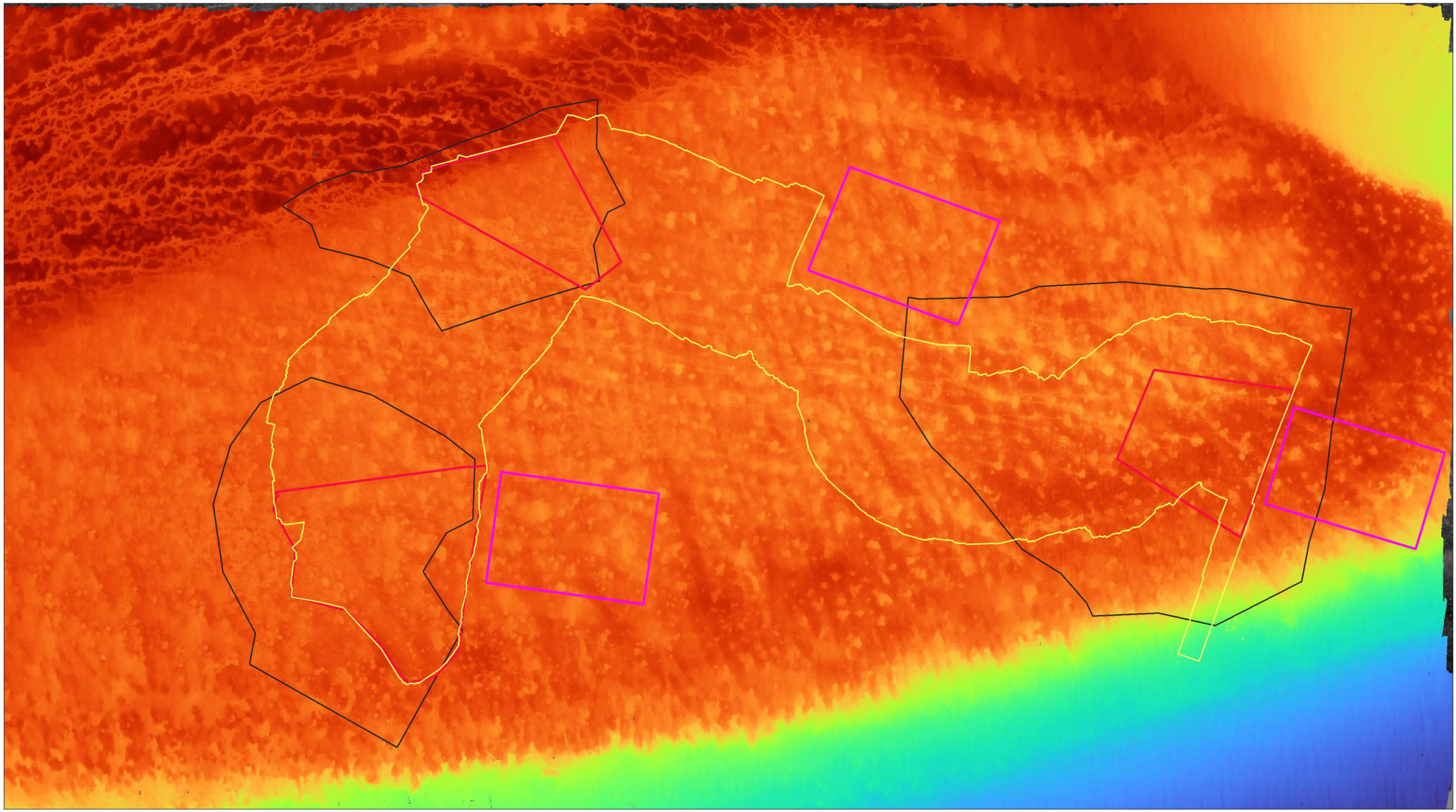
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Acoustic backscatter intensity measures of the power and scatter of the acoustic return to determine substrate type; bare coarse unconsolidated sediments returned a strong bright signal and biological coverings such as macroalgae absorbed and reduced the intensity of the return. Ideally temporal comparisons of backscatter datasets would have been collected using the same equipment and collection parameters, but in the absence of this, simple raster subtractions were performed to examine where substrates changed acoustically (Figure 5.51) and units of change are arbitrary raster values.

The backscatter difference plot showed the action of the dredger in increasing the backscatter return intensity in areas that had been vacuumed (Figure 5.51). While there were some inconsistencies with respect to the dredging footprint (greater intensities outside of the remediation footprint), for the most part, the difference in backscatter showed areas of brighter seafloor, likely resulting from the removal of macroalgae, other biota, and unconsolidated material in locations mC and mE, and the removal of unconsolidated material from sand channels in mA.

The acoustic data describe the key areas that were deepened between the two survey events, with the greatest elevation changes occurring unsurprisingly in areas where the most material was removed. Changes in backscatter show brighter, more reflective surfaces are more common in the direct restoration areas than neighbouring areas.

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**LEGEND**

EOMAP SSR Imagery 22-08-2018

Monitoring Locations

- Near-Field
- Regional Reference
- Remediation
- Swept Area Shen Neng 1

Advisan Bathymetry (m LAT)

-8.81115

-28.2367

2023 Survey Extents

Title:

# Hybrid DEM 2019 and 2023 (Advisian Data)

Figure: **5.49**

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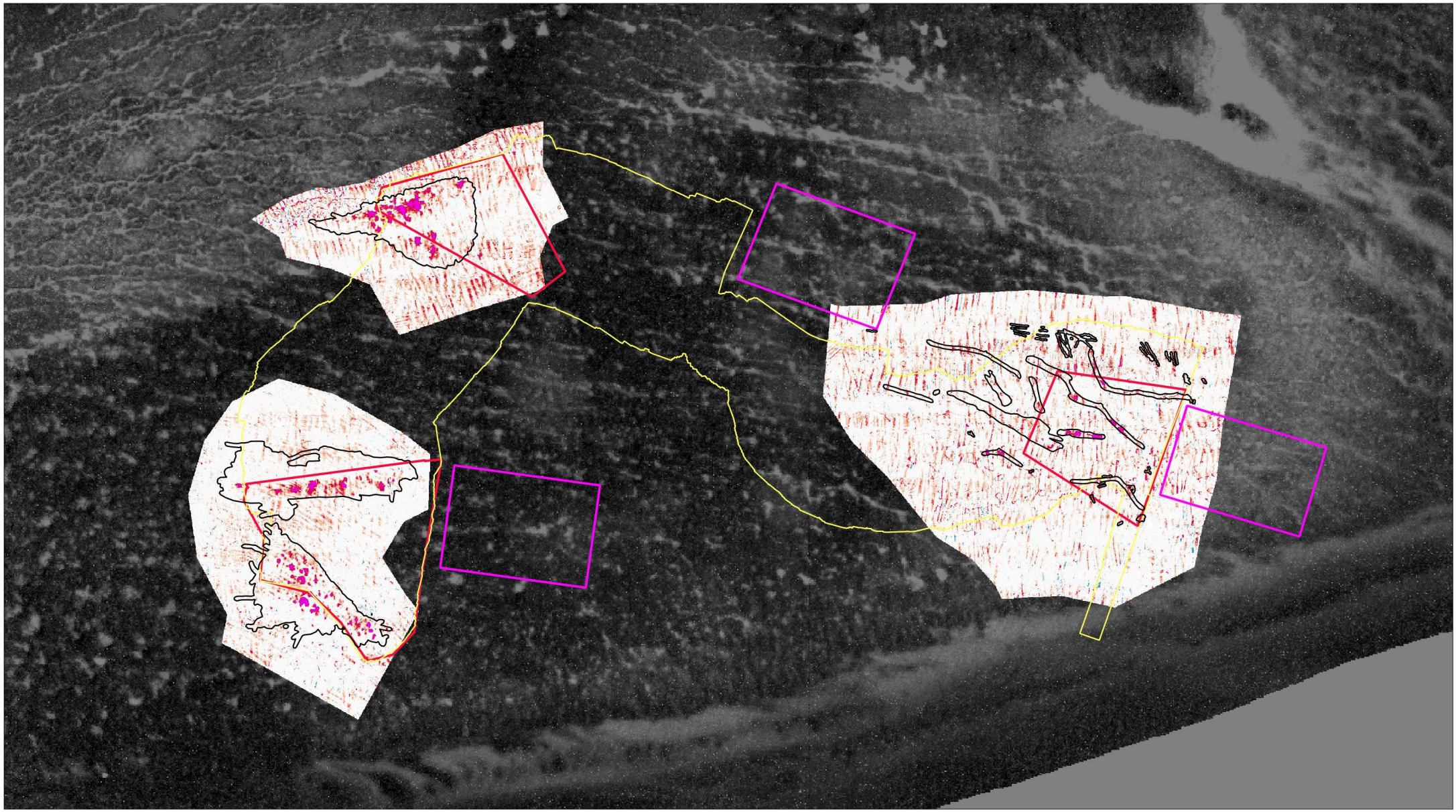
N

0 150 300 m

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**LEGEND**

EOMAP SSR Imagery 22-08-2018

Monitoring Locations

- Near-Field
- Regional Reference
- Remediation
- Swept Area Shen Neng 1

Bathymetric Difference (m)

Blue = accretion, Red = loss

0.5

-0.5

Gateway Dredger Track

Title:

# DEM Differences 2019 to 2023

Figure: **5.50**

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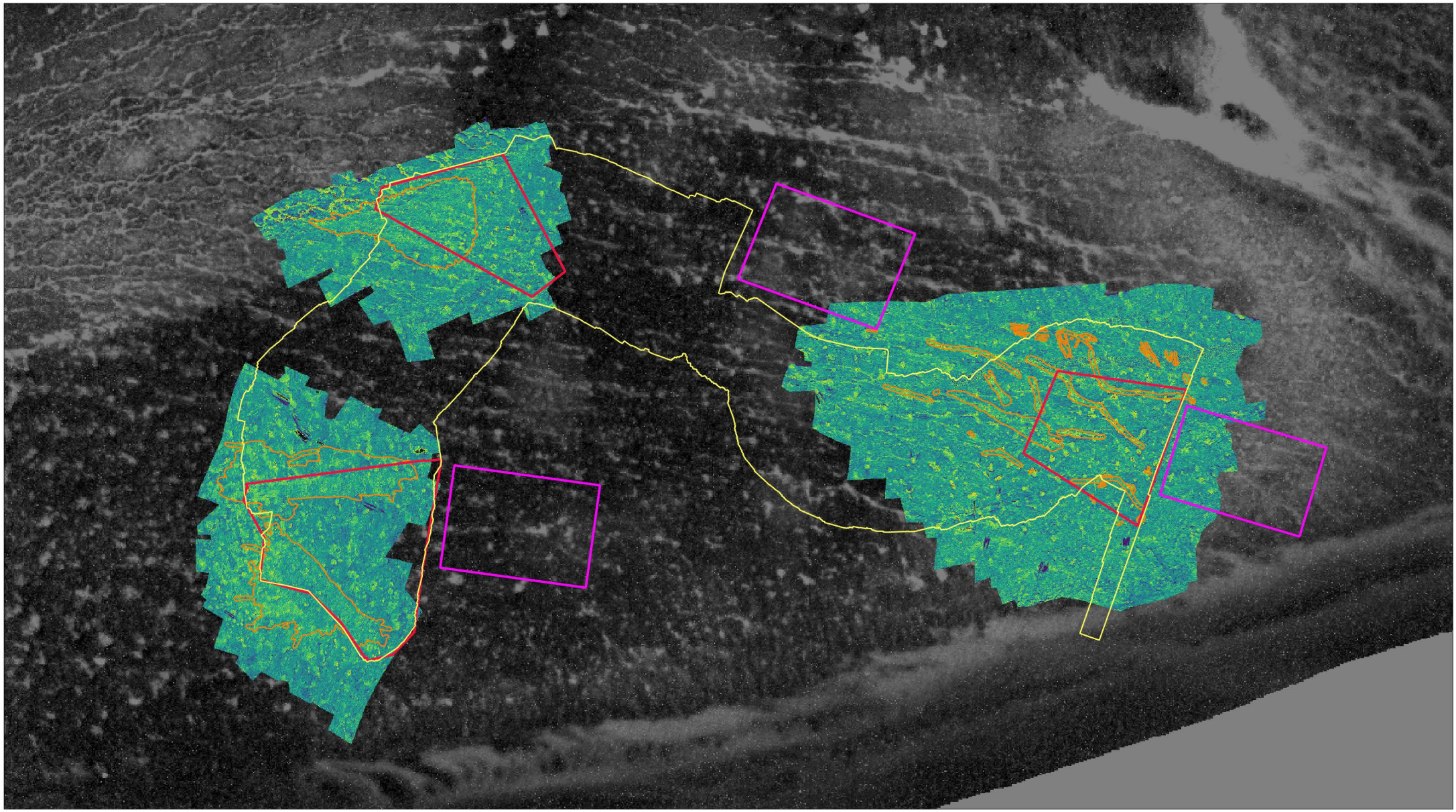
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**LEGEND**

EOMAP SSR Imagery 22-08-2018

Monitoring Locations

- Near-Field
- Regional Reference
- Remediation
- Swept Area Shen Neng 1

Backscatter Difference

Darker (blue) Brighter (yellow)

-1

-270

Gateway Dredger Track

Title:

# Backscatter Intensity Differences 2019 to 2023

Figure: **5.59**

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N

0 150 300 m

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Filepath: I:\B23282_I_JLB_Douglas Shoal Remediation Monitoring BT\QGIS\ECO_QGIS_008_Backscatter_Changes.qgz

## 5.8 Opportunistic Observations

While conducting environmental monitoring, opportunistic observations of interest were largely confined to sightings of tiger sharks, green sea turtles, sea snakes and dolphins (Table 5.22). Seabirds and other vessels/users observed were also recorded.

Before remediation, opportunistic observations were concerned entirely with marine fauna and occasional epibenthic observations. During remediation, the focus included some observations of the remediation operations and associated observations on the surface on the surface (e.g. seafoam).

Notable observations include:

### Before Remediation

- Tiger sharks and other elasmobranch species were frequently observed amongst Douglas Shoal with contact made on one occasion with monitoring equipment. Observations were made in close proximity with divers and in a 10 m range. Approaches were close but were not described as aggressive. BMT's shark management procedures, as per the project-specific safety plan, were implemented for all diving operations.
- Coral bleaching was observed commonly by diving personnel at both Douglas Shoal and Haberfield Shoal during Autumn 2020. This is in alignment with an anticipated coral bleaching event on the Great Barrier Reef following heat stress over the 2019/20 summer (GBRMPA 2020).
- In April 2020, green sea turtle hatchlings were attracted to the back of the vessel when moored for the night at North West Island. All exterior lighting was switched off to allow the hatchlings to disperse.

### During Remediation

- Based on visual observations of the planned overflow plume created by the remediation operation, the plume was noted to dissipate very quickly. No unusual animal behaviour was observed during the dredging from the surface monitoring vessel.
- The plume appeared from the water quality profiles to be confined to the upper 1-2 m of sea surface water. Observations were fleetingly observed as high as 12 NTU at approximately a 5m distance from the remediation vessel during overflow.
- Within the sea surface microlayer it was noted that planktonic algae and protein was integrated into seafoam. This was only seen in and surrounding the overflow plume from the dredger.
- During a stand-down period on the last day of overflow dredging, a pod of humpback whales was observed on the northern side of Douglas Shoal, including a mother and calf pair which remained still for 20 mins while breastfeeding.

### After Remediation

- There was strong visual evidence of remediation activities in the form of some unintended damage to communities adjacent to remediated areas. Removal of rubble directly adjacent to living corals, and large areas of bare pavement allowed initial recolonisation by turfing algae. Long linear grooves perpendicular to the original sand channels were evidence of where the dredge head removed parts of the consolidated high-relief terrace.
- Based on tow-camera visual observations, algae regrowth is occurring on the pavement substrate at sites mE, mC, and mA where remediation activity was concentrated.

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- Bleaching was observed across both Habberfield and Douglas Shoal, as a part of the mass bleaching event occurring across the northern and southern GBR in the summer of 2024.Plating *Acropora* spp. and *Montipora* spp. corals were the taxa most commonly affected by the bleaching.

- Large sharks were observed by divers in event 5, including a bull shark which remained at shield distance for 10 minutes before leaving the area. No sharks were observed by divers during any of the dives in event 6.

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## Table 5.22 Summary of opportunistic observation during field surveys

| Observation type | Before | | | | During | | After | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Baseline Survey 1 (2019) | | Baseline Survey 2 (2020) | | Baseline Survey 3 (2023) | Water Quality Monitoring (2023) | Post Remediation Survey -Survey 5 (2023) | | Post Remediation Survey 6 (2024) | |
| | Trip 1 (Oct) | Trip 2 (Nov) | Trip 1 (Apr) | Trip 2 (Apr-May) | Trip 1 (Mar) | Trip 1 (Sept) | Trip 1 (Nov) | Trip 2 (Dec) | Trip 1 | Trip 2 |
| **Marine Fauna** | | | | | | | | | | |
| Tiger shark (Galeocerdo cuvier) | Single surface observation at site mA | Multiple surface sightings of a large tiger shark at site mA | | 9 sightings, including 2 in water sightings | A tiger shark was observed 'bumping' the towed camera at site mH. | | | A tiger shark was observed 'bumping' the towed camera at site mC. | Large individual observed on BRUV camera, with bait removed at mE. | |
| Tawny nurse sharks (*Nebrius ferrugineus)* | | | | | 5 tawny nurse sharks observed during diver-based sampling (mA):a | | Individual observed at location mG on BRUV camera | | 2 sharks were observed on a tow camera deployment at DS.. | |
| Bull Shark (*Carcharhinus leucas)* | | | | | | | | A diver was circled by a bull shark at location mB. | Observation of individuals at Douglas Shoal on BRUV camera at location mB, mE and mG. | |
| Green sea turtle (*Chelonia mydas*) | Multiple sightings at DS, HB and NW Island | 3 sightings | Occasional sightings (all sites), hatchlings observed when moored at NW Island | 4 sightings (site mE) | Multiple sightings at Douglas Shoal and Haberfield Shoal, also NW Island | Occasional sightings around NW Island | Occasional sightings around NW Island | | | |
| Sea snake (assumed mostly Olive sea snake, *Aipysurus laevis*) | | 30+ sightings, at all locations | Occasional sightings (all sites) | 10+ (locations mA, mE, mC) | 8+ Sightings (all sites) | Occasional sightings (Douglas shoal) | 5 sightings at DS, 2 at HS | 8+ Sightings (all sites) | Occasional sightings (Douglas shoal) | 10 sightings (all sites) |
| Manta ray (*Mobula. alfredi*) | | 2 sightings | | | | | | | 1 sighting on BRUVs camera at DS | |
| Spinner dolphin (*Stenella longirostris*) | | | | | A pod was observed bow and wake riding between NW Island and DS on multiple days. | A pod was sighted in transit to NW Island. | | Pod of 6 bow-riding near DS | | |
| Dolphin (other) | | | | Pod of 6 | | | | | | |
| Humpback whales (*Megaptera novaeangliae*) | | | | | | Mother and calf pair was observed suckling. Multiple breaching individuals were present around Douglas Shoal. | | | | |
| Fish (other) | | | Small marlin seen breaching approximately 5 times at site mA | | Large schools of golden trevally (*Gnathanodon specious)* and turrum (*Carangoides fulvoguttatus*) were observed mid-water and on BRUVs and towed camera data. | | | | A small school of golden trevally (*Gnathanodon specious*) and turrum (*Carangoides fulvoguttatus)* were observed on a tow camera deployment at DS. | |
| **Seabirds** | | | | | | | | | | |
| Noddy Terns (*Anous minutus*) | Common | Common | Common | Common | Common | Common | Common | Common | Common | Common |
| Wedge tailed shearwater (*Puffinus pacificus*) | - | Common | Common | Common | Common | Common | Common | Common | Common | Common, 1000+ birds rafting on water in lee of NW island |
| Greater crested terns (*Thalasseus bergii*) | | | | | Common | | | | | |

| Observation type | Before | | | | During | | After | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Baseline Survey 1 (2019) | | Baseline Survey 2 (2020) | | Baseline Survey 3 (2023) | Water Quality Monitoring (2023) | Post Remediation Survey -Survey 5 (2023) | | Post Remediation Survey 6 (2024) | |
| | Trip 1 (Oct) | Trip 2 (Nov) | Trip 1 (Apr) | Trip 2 (Apr-May) | Trip 1 (Mar) | Trip 1 (Sept) | Trip 1 (Nov) | Trip 2 (Dec) | Trip 1 | Trip 2 |
| Brown booby birds (*Sula leucogaster*) | | | | | Common | | | | | |
| Other | | | | | | | | | | |
| *Trichodesmium* (“sea sawdust” – cyanobacteria) | Visible at both Douglas Shoal and Haberfield Shoal | Very thick at both Douglas Shoal and Haberfield Shoal | | | | Planktonic algae and protein was integrated into seafoam. This was only seen in and surrounding the overflow plume from the Boskalis dredger. | | | | |
| Other vessel/user | Single vessel – small, privately-owned recreational fishing vessel | Vessel chartered by Advisian was performing ADCP servicing at Douglas Shoal | First 4 days coincided with Easter weekend. There were five recreational trailer boats<br>fishing at Douglas Shoal each of these days. No vessels observed at Haberfield Shoal. | | 1-2 recreational vessels sighted fishing at Douglas Shoal each day, and one vessel fishing at Haberfield Shoal | Both the GBRMPA performing ADCP and Boskalis dredge Vessels were present. 1-2 anchored boats were present at NW island for people camping recreationally. | | | Multiple anchored boats at NW Island where present for people recreationally camping. | 1-2 recreational vessels sighted fishing at Douglas Shoal each day |

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# 6 Conclusions

## 6.1 Epibenthic Cover

Turfing algae and macroalgae dominated epibenthic cover at Douglas and Haberfield Shoals, where both shoals experienced seasonal and stochastic fluctuations in total cover and community composition. The widespread loss of *Dictyopteris* sp. after the first event (before remediation) occurred amongst a backdrop of seasonal macroalgal proliferation in the spring and autumnal decline, typified elsewhere on the GBR (Vuki and Price 1994, Diaz-Pulido and McCook 2005). Visual comparisons between mosaics in event 1 (spring 2019) and event 6 (2024) illustrate the loss *Dictyopteris*, the general reduction in macroalgae overall, and changes introduced by the remediation.

At the scale of monitoring locations, the reduced seasonal recovery of *Sargassum* at Douglas Shoal was the most significant indicator of potential impact associated with the remediation works and was potentially the result of plume impacts. Spatially explicit changes in *Sargassum* did not show clear areas of loss, and the evidence of impact was due to primarily to a large increase in cover at reference locations compared to static or falling cover at Douglas Shoal. *Sargassum*, like many organisms, is sensitive to copper which can inhibit photosynthesis reducing carbohydrate production (Zou et al., 2014). Reproductive or recruitment peaks typically occur in summer (Kendrick and Walker, 1994), coinciding with acute water quality impacts from remediation, which could explain the disproportional cover after remediation. While there were few detections of copper in plume monitoring, there was some evidence of slightly higher copper concentrations in nearfield sediment samples after remediation. This suggests that copper may have been mobilised by the overflow during remediation. Alternatively, *Sargassum* cover may not have increased at Douglas Shoal to the same degree that it proliferated at Habberfield Shoal for other reasons unrelated to remediation. However, exercising conservatism, it is plausible *Sargassum* cover after remediation was retarded by the remediation activities.

Although a relative reduction in *Sargassum* cover at Douglas Shoal may have been the result of remediation works, this change in biota is not usually associated with a reduction in habitat quality, considering that hard coral cover is a key health metric. This is because hard coral cover was preserved at the remediation locations and macroalgae such as *Sargassum* competes with hard coral (Hughes et al., 2007, Mumby and Steneck 2008) and readily colonises substrates not occupied by corals.

While there was some evidence of potential plume effects reducing the cover of *Sargassum,* other algal indicators and the cover of hard coral did not show evidence of impact at the locational scale. The cover of hard coral, particularly acroporids, improved at Douglas Shoal relative to the reference loctaions, over a period that included two mass-bleaching events. The remediation appeared to be highly successful in negating impacts to living corals from the perspectives of location-based monitoring, sub-locational cover mapping, and from orthoimagery. At the sub-locational scale, some loss of hard coral and *Acropora* was visible within areas mC and mE, where the remediation effort was focussed. These impacts were confined to the heavy vacuum areas and were insufficient to affect the whole-of-location averages for hard coral and *Acropora*, which improved in the remediation treatment.

In 2020, coral bleaching appeared to disproportionally affect the proportion of corals bleached in the remediation treatment, particularly at location mA, where concentrations of AFP were highest. Sediment contaminated with TBT from groundings elsewhere on the GBR has been shown to exhibit a range of coral impacts including mortality and bleaching (Smith *et al*. 2003). However, differences in bleaching were far less pronounced among locations in 2024, and the relatively large increase in hard coral cover at location mA in event 5 after remediation was suggested that the disproportionate levels of bleaching

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observed in 2020 did not likely result in subsequent mortality afterwards. These data would suggest that the presence of AFPs can increase the rate of bleaching but not necessarily the rate of mortality at concentrations observed at Douglas Shoal.

Other spatially explicit differences in cover were visually obvious and consistent with the changes expected from vacuum removal of unconsolidated material during remediation. These included the loss of gravel from the work areas, reduction in macroalgae and coral cover in the work area, and subsequent colonisation of pavement areas by turfing algae. Changes in gravel cover were significant at the locational scale as well as being visually apparent in spatially explicit mapping. Time-series satellite data showed the brilliant white of the bare calcium carbonate pavement become exposed, then within weeks of exposure it became coated in darker epibiota, presumably turfing algae and cyanobacteria. The increase in turfing algae measured between the last two events was the largest transition witnessed, and the change was most prominent in the remediation treatment, due to the colonisation of bare surfaces after remediation. Spatially explicit benthic mapping showed that the remediation successfully removed most of the gravel, that colonisation of the exposed pavement was underway, and that reductions in habitat forming epibiota were limited to the direct remediation areas.

## 6.2 3D modelling

Orthomosaics provided useful visual comparisons before and after remediation, as summaries of graphical changes between events and opportunities to sanity-check the univariate and multivariate cover results. Mosaics depicted remediation impacts that varied from complete removal of prior substrate and biota to a very little evidence of physical impact and a proliferation of plating corals. Close-up comparisons between orthomosaics showed that many plate corals had increased in size between the two events and there were numerous other corals that were inconsistent between the two events, representing mortality and recruitment.

Based on supplied dredge tracks, the narrower gully-head on the dredger was used in the pothole shown at site AMOS1 (Figure 5.19). Although the pre-remediation AMOS1 mosaic does not cover this area, the 2024 mosaic showed numerous living corals surrounding the pothole where material was extracted. This suggests that the gully dredger used to remove sediment from the potholes and narrow grooves in mA could do this without causing major damage to the surrounding reef spurs.

Similarly, living corals were visible on the peripheral spurs of the channel in CMOS1 in 2024, which was located inside the area covered by dredge vacuuming footprint. This area was worked by the larger dredge head and the amount of unconsolidated sediment within the channel was noticeably reduced in 2024, showing more extensive pavement with early algal colonisation. This was another example of how the dredge head was able to remove material with very little collateral damage to the sides of the reef spurs. However, some unintended damage to the reef spurs was observed outside of the dedicated mosaic sites, during towed camera imagery where some scars from direct remediation contact (i.e. dredge bucket scars) were visible along parts of the high-relief terrace in mC (Figure 5.26). Overall, it appeared that the dredge head was able to be placed very precisely upon the seafloor, with limited extents of unintended damage occurring to the surrounding reef during remediation.

## 6.3 Fish Communities

Changes in the biomass, abundance, and richness of fish communities were unrelated to remediation activities, but changes in fish community composition displayed a remarkably similar pattern to that of the epibenthic community. For all locations, the fish communities and epibenthic communities occupied the same left-right position on nMDS plots and moved in similar directions (up and down) between autumn and spring events. This suggested that the fish communities were strongly associated with epibiotic cover and seasonal changes in macroalgal cover, or that seasonal changes were manifested similarly among the two communities, without implying causality in either direction. It was clear that the

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serranid cods, surgeon fish, haemulids and parrotfish (Scarinae) were more abundant in locations with large plating *Acropora* and turfing algal substrates (mB, mA), as these provide foraging and sheltering habitats for these taxa. Conversely, rabbitfish, nemipterids, goatfish, sand perches and emperors were more abundant at Habberfield Shoal, where large sand patches and dense macroalgae were available to support these taxa commonly found associating with these habitats.

The steady increase in fish richness throughout the monitoring period occurred in all three treatments, indicating this rise was associated with more widespread changes beyond that of the remediation activities at Douglas Shoal. It is conceivable that the overall reduction in macroalgae was associated with an increase in herbivore abundance and richness, and there is some evidence that herbivore richness increased at all treatments after remediation, although only the nearfield treatment was statistically significant. It is possible that the reduced recovery of *Sargassum* at Douglas Shoal was produced by the combination of plume impacts during reproduction and increased herbivore grazing.

The campaign in the present monitoring program differs from most typical BRUV investigations, which are designed to understand the impact of fishing or reserves on the biomass of target species. Importantly, the remediation activities did not impact B20 biomass, nor the biomass of target species sought by fishers.

## 6.4 Biotic Contaminant Concentrations

The assessment of biotic contamination showed that AFP contaminants were present in fish, macroalgae and ascidians, but at concentrations well below safe consumption guidelines. For ascidians and algae, the highest concentrations of contaminants were typically found in location mA, which was consistent with the highest concentrations of sediment contamination shown in this study and in Neale and Boylson (2019). These data suggest that contamination has entered the food chain, particularly in sessile taxa near the initial grounding site. The patterns of organotin contamination are consistent with degradation and release of during remediation.

Across the entire monitoring program, TBT was found in 3.3% of fish sampled from Douglas Shoal, and from only two taxa (*Choerodon venustus* and two *Gymnocranius audleyi*). Bioaccumulation of TBT may be occurring in these species which feed primarily on benthic invertebrates; this would allow direct access to contamination within the surrounding sediment matrix as well as any contaminated tissue. Interestingly, *Lethrinus miniatus* was also collected in reasonable quantities, but no TBT contamination was detected. This may be the result of differences in home ranges or bioaccumulation pathways. While specific information is lacking for the above species, tagging work on *Lethrinus nebulosus* suggests they have home ranges exceeding 8 $km^2$ (Pillans *et al*., 2014) and species of *Choerodon* have substantially smaller home ranges, sometimes in the order of hundreds of metres (Kawabata *et al*., 2008; Fairclough *et al*., 2011). Site attachment for these species may partially explain the differences in TBT accumulation in musculature. Interestingly, no *G. audleyi* above 20 cm in length were recorded from Habberfield Shoal on BRUV samples, while they were highly abundant at Douglas Shoal. None of the other organotins were found in fish musculature which was consistent with a reduction in contamination due to remediation and/or temporal degradation.

The pattern of organotin contamination in ascidians was best explained by a degradation into lower butylated forms and subsequent release during dredge overflow. TBT was not detected in ascidians after remediation, but mono-butyl-tin (MBT) was found in 17 ascidian samples after remediation. This is potentially the result of TBT decomposition in the sediment and subsequent re-mobilisation into the water column during remediation and ingestion by ascidians. The disparity in MBT between ascidian and algal thallus samples after remediation could be the result of acute temporal releases that were filtered out by ascidians but were not present in the water column long enough to be absorbed by algal tissue.

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Differences in the concentration of copper and zinc in fish tissue suggest that the remediation may have slightly reduced their concentrations in some locations directly remediated, and increased tissue concentration of copper and zinc one nearfield location. Given the potential movement of fish between locations, these data should be interpreted cautiously, but it is notable that copper sediment concentrations were also elevated at this location after remediation.

Ideally, one species of macroalgae would have been used across the entire monitoring program, but the temporal variability in dominant macroalgae prevented this. *Dictyopteris* was initially chosen due to its dominance in the disturbance footprint, but the loss of *Dictyopteris* in autumn 2020 meant that a new candidate was required. *Dictyota* was selected and was continued for use in monitoring whenever available after remediation. It is likely that some of the differences in zinc between events (and species) relate to baseline zinc concentrations in algal taxa. Zinc was progressively higher at every location in 2020 and 2023, and frequently highest in location mA. One of the differences between the macroalgae species is that *Dictyopteris* was collected from large, mature specimens, while samples of *Dictyota* tended to be lower and more prostrate. This lower growth form may have allowed contaminated particles, or small fauna, to become entrapped in its lower canopy, rather than being bioaccumulation within the algal tissue. Also, there appeared to be some event variability where all ascidian and algal zinc concentrations from event 5 were much higher than other events, consistent with laboratory anomaly, or broadscale changes in tissue concentration unrelated to remediation.

## 6.5 Water and Sediment Quality

There was no evidence of contamination in the water column directly above the grounding footprint before or after remediation. While there was an issue with QA/QC duplicate samples, these do not affect the validity of the primary environmental samples.

Temporal changes in sediment quality show that the action of the dredge vacuum removal was associated with reduced concentrations of TBT, copper, and arsenic at some locations and a small increase in chromium at location mA. Some changes observed at reference sites were likely the result of laboratory variation rather than spatial changes.

The lack of TBT reduction at mA after remediation signalled that divers had sampled contaminated material left behind in gullies and potholes not worked by the dredger. Conversely, significant reductions in TBT at the other remediation locations (mC and mE) coincided with much larger contiguous remediation areas where significantly more material was removed. There was no evidence of increases in TBT in nearfield sediment sites, suggesting that remediation did not remobilise any of the TBT into neighbouring locations. There was potentially some mobilisation of MBT into ascidian tissue, but MBT was not observed in sediment. There were also some significant increases in sediment copper in nearfield locations consistent with mobilisation of low-level copper out of the direct remediation areas.

## 6.6 Physical Habitat Assessment

Remediation resulted in small increases in the initial values of rugosity (1.5 - 2.7%) at the 50 cm elevation model resolution, and an overall deepening of each location by an average of approximately 10 cm, although some depth changes are probably affected by survey anomalies. Bathymetry changes exceeding 50 cm sat almost exclusively within the dredge head footprint, and were most extensive in locations mC and mE, where the majority of the material was removed.

Acoustic backscatter changes highlighted areas of more reflective seafloor created by the removal of macroalgae, other biota, and unconsolidated material in locations mC and mE, and the removal of unconsolidated material from sand channels in mA. There were strong agreements between the spatially explicit changes in epibiota, dredge tracks, backscatter changes, and remotely sensed seafloor colour.

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# Annex A Photo Plates

## A.1 Event 5

### A.1.1 Event 5 Algae and Ascidian Samp































les

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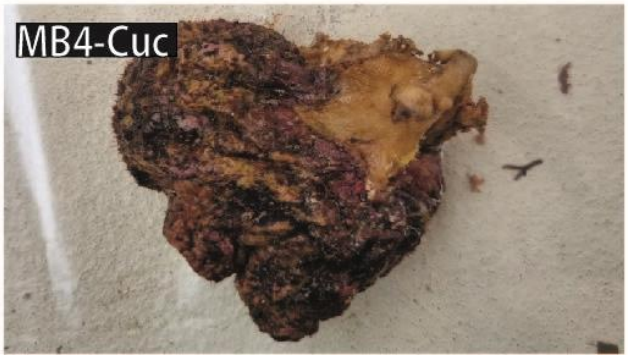
















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MC1-Algae


MC2-Algae


MC3-Algae


MC4-Algae


MC5-Algae

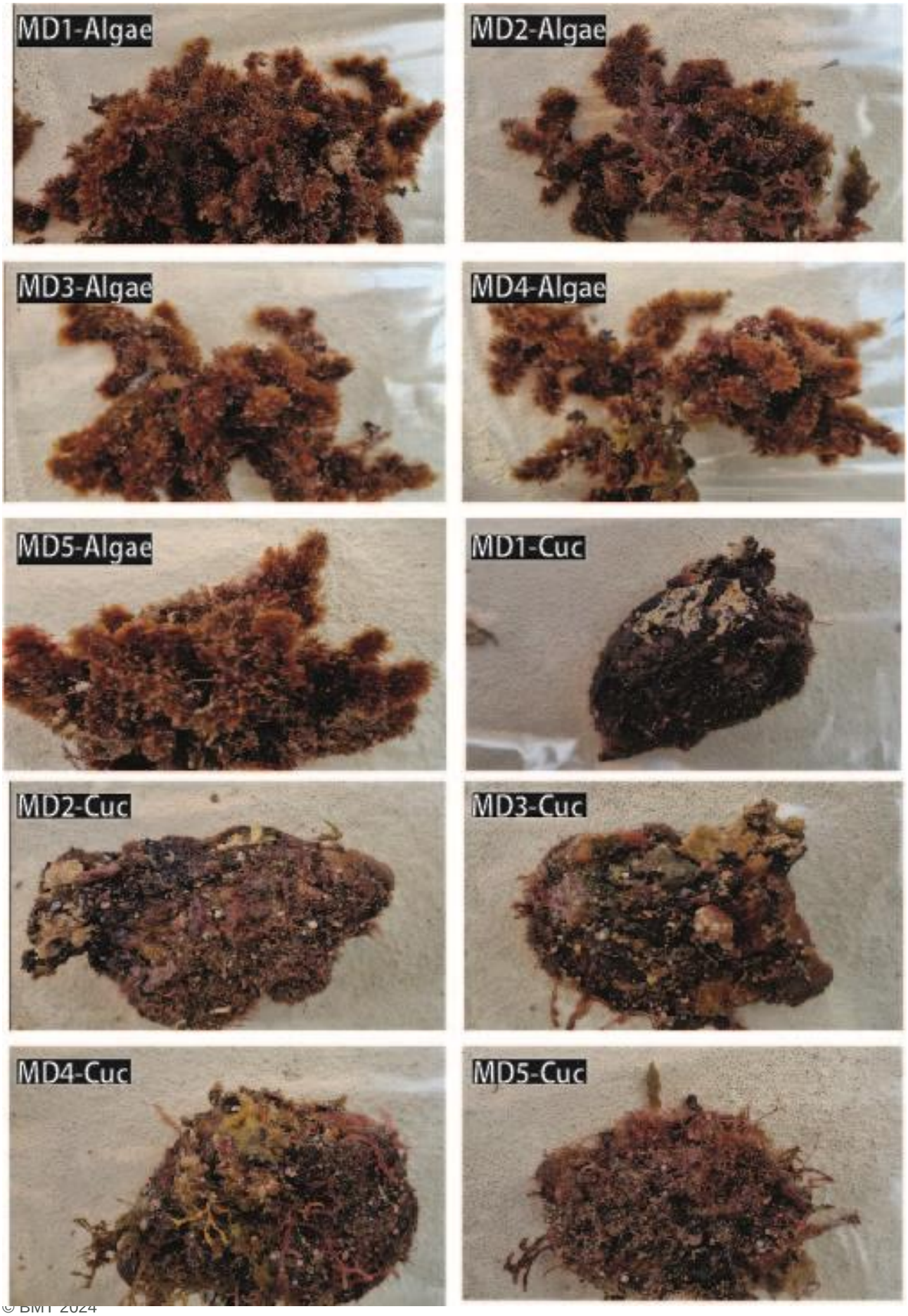

MC1-Cuc


MC2-Cuc


MC3-Cuc


MC4-Cuc


MC5-Cuc


MD1-Algae
MD2-Algae
MD3-Algae
MD4-Algae
MD5-Algae
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MD2-Cuc
MD3-Cuc
MD4-Cuc
MD5-Cuc

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ME1-Algae


ME2-Algae


ME3-Algae


ME4-Algae


ME5-Algae


ME1-Cuc


ME2-Cuc


ME3-Cuc


ME4-Cuc


ME5-Cuc


MG1-Algae


MG2-Algae


MG3-Algae
G3 ALG-1223


MG4-Algae




MG1-Cuc


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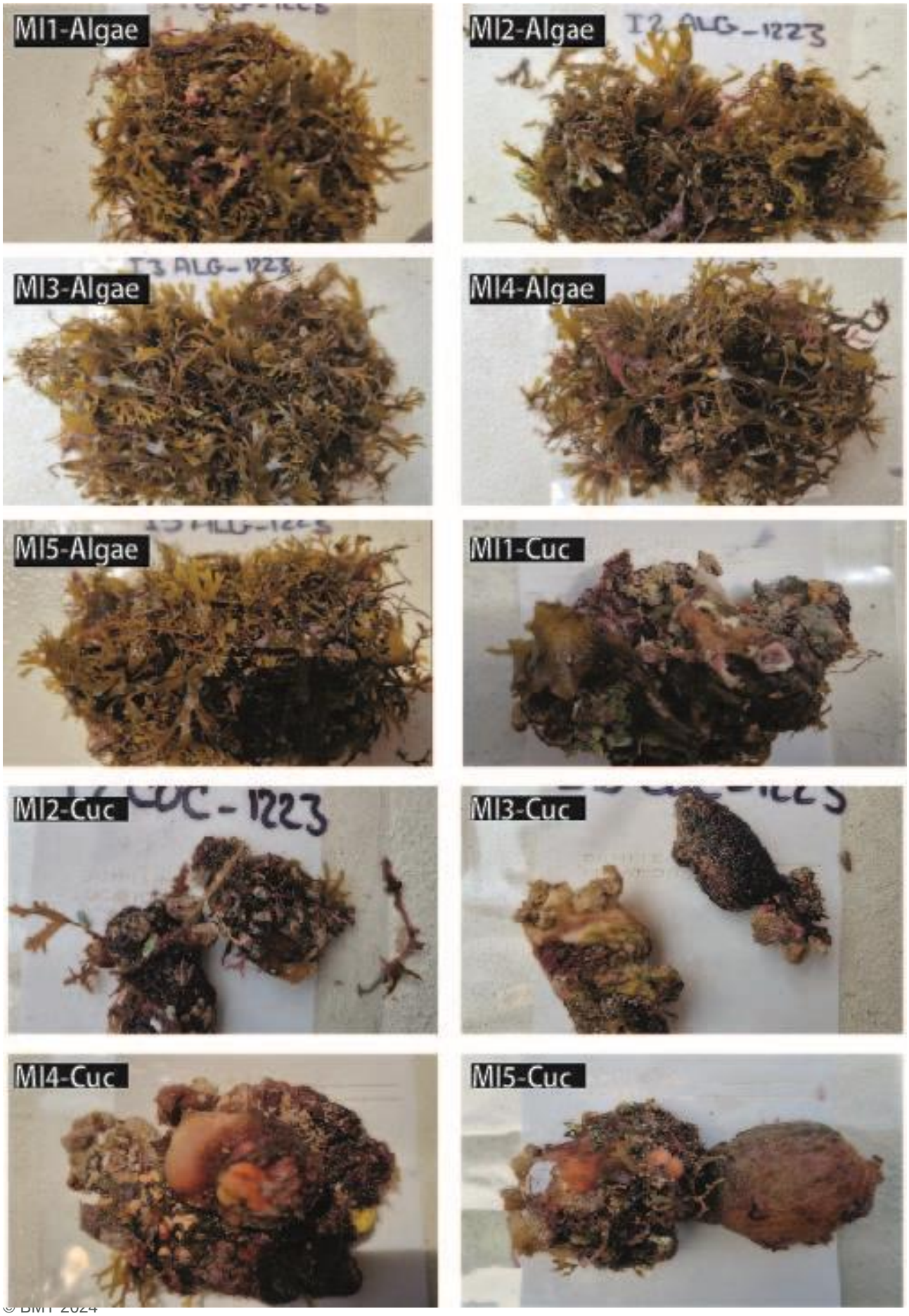

MH1-Cuc


MH2-Cuc


MH3-Cuc

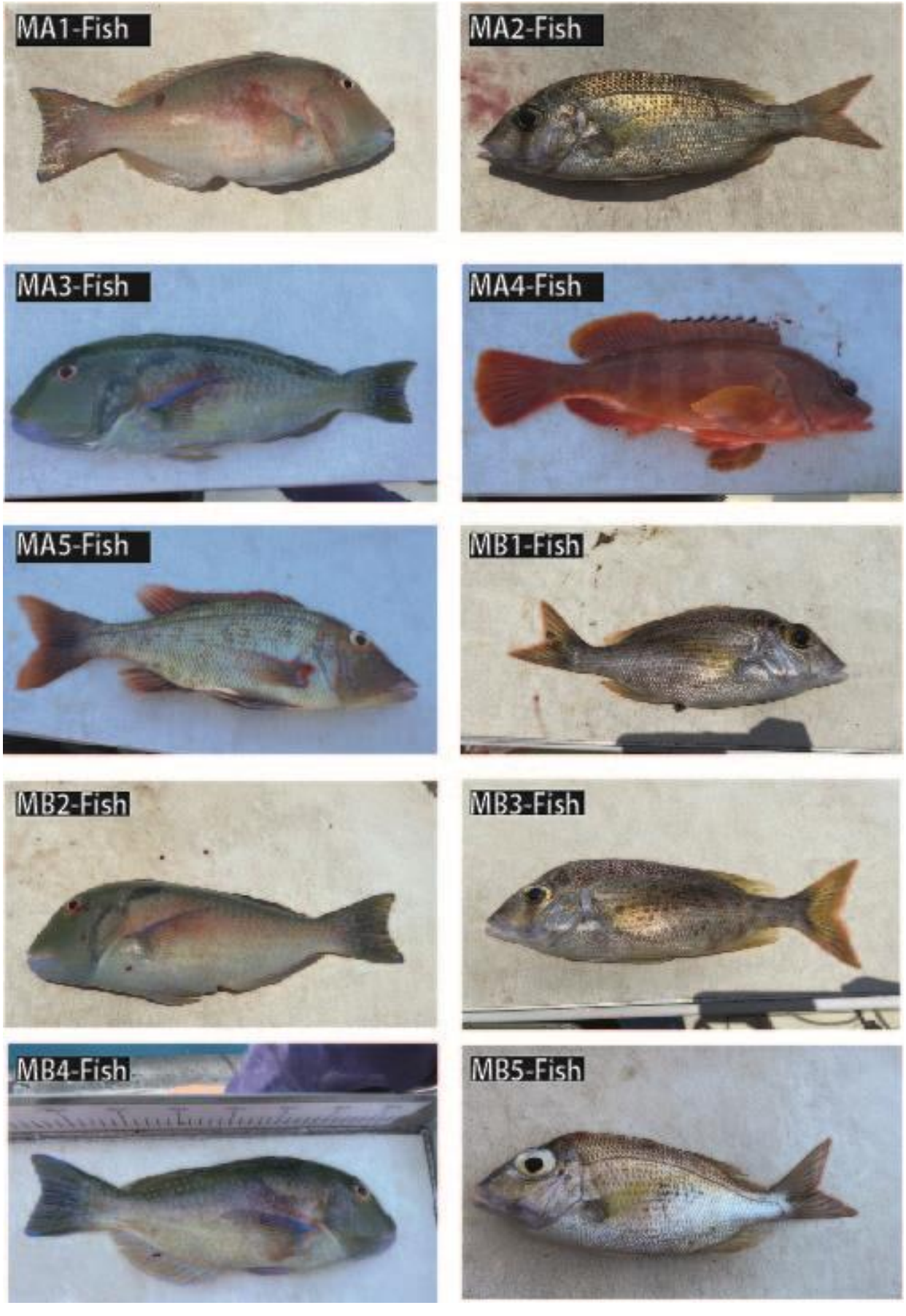

MH4-Cuc


MH5-Cuc


MI1-Algae
MI2-Algae
I2 ALG-1223
MI3-Algae
I3 ALG-1223
MI4-Algae
MI5-Algae
MI1-Cuc
MI2-Cuc
MI3-Cuc
MI4-Cuc
MI5-Cuc

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## A.1.2 Event 5 Fish Samples




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MC1-Fish


MC2-Fish


MC3-Fish

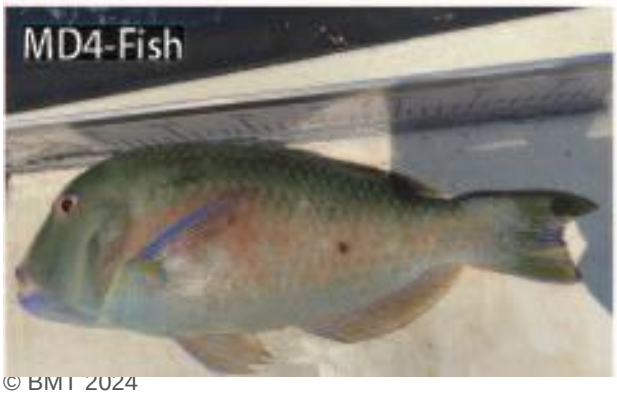

MC4-Fish


MC5-Fish


MD1-Fish


MD2-Fish


MD3-Fish

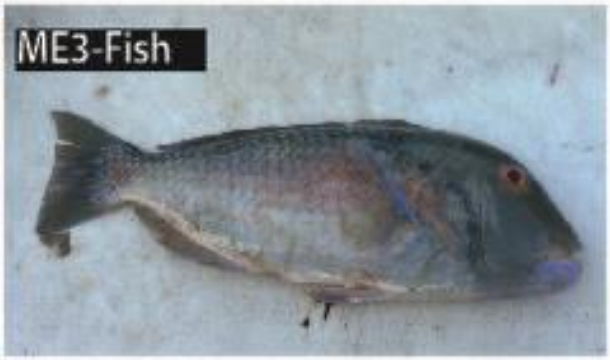

MD4-Fish


MD5-Fish

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ME1-Fish


ME2-Fish


ME3-Fish


ME4-Fish


ME5-Fish


MG1-Fish


MG2-Fish


MG3-Fish


MG4-Fish


MG5-Fish

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MH1-Fish


MH2-Fish


MH3-Fish


MH4-Fish


MH5-Fish


MI1-Fish


MI2-Fish


MI3-Fish


MI4-Fish


MI5-Fish

## A.2 Event 6

### A.2.1 Event 6 Algae and Ascidian Samples
















**Image not available**













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Image not available
















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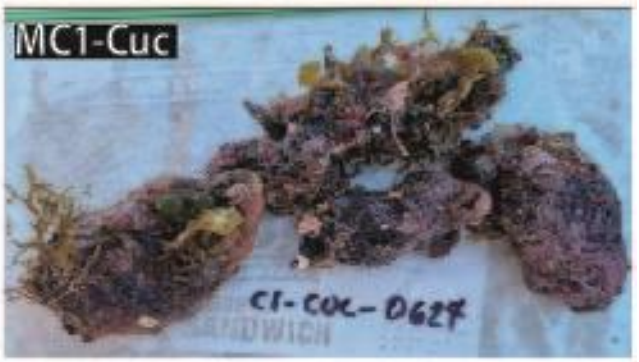

MC1-Algae
C1-ALG-0624


MC2-Algae
C2-ALG-0624

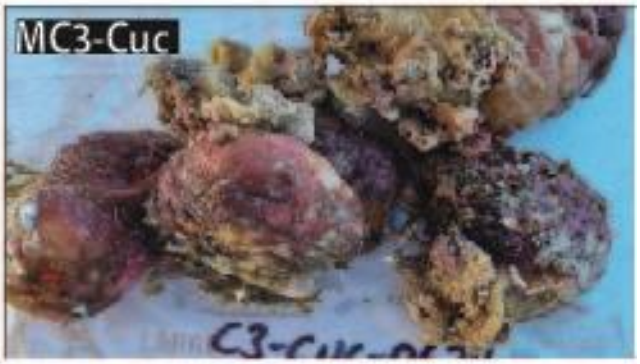

MC3-Algae


MC4-Algae


MC5-Algae


MC1-Cuc
C1-CUC-0624


MC2-Cuc


MC3-Cuc


MC4-Cuc


MC5-Cuc
C5-CUC-0624


MD1-Algae


MD2-Algae


MD3-Algae


MD4-Algae


MD5-Algae


MD1-Cuc


MD2-Cuc


MD3-Cuc


MD4-Cuc


MD5-Cuc









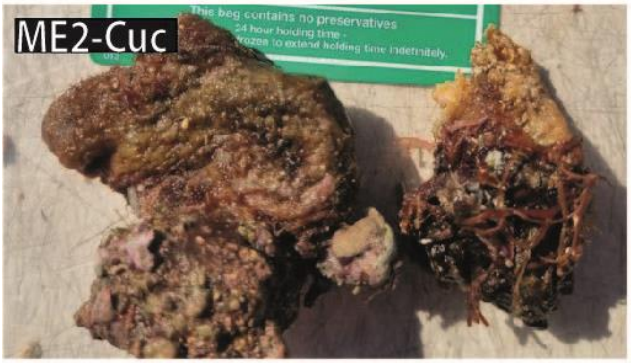
















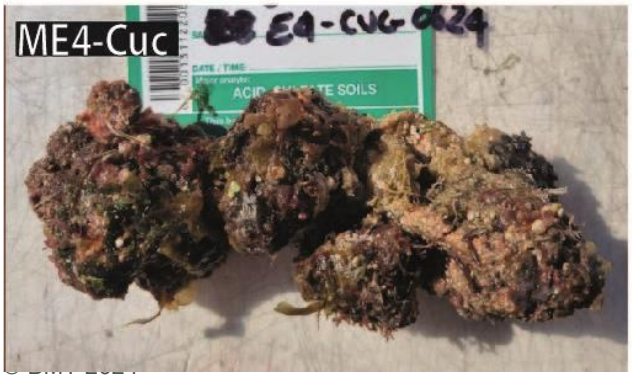



**Image not available**


MG1-Algae


MG2-Algae


MG3-Algae


MG4-Algae


MG5-Algae


MG1-Cuc


MG2-Cuc


MG3-Cuc


MG4-Cuc


MG5-Cuc

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Image not available
















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MI1-Algae
MI2-Algae
I#2-ALG-0624
MI3-Algae
MI4-Algae
I4
MI5-Algae
MI1-Cuc
MI2-Cuc
MI3-Cuc
CUC-0624
MI4-Cuc
MI5-Cuc
23282
BMT
IS-CUC-0624

### A.2.2 Event 6 Fish Samples































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MC1-Fish


MC2-Fish


MC3-Fish


MC4-Fish


MC5-Fish


MD1-Fish


MD2-Fish


MD3-Fish


MD4-Fish


MD5-Fish

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ME1-Fish


ME2-Fish


ME3-Fish


ME4-Fish


ME5-Fish


MG1-Fish


MG2-Fish


MG3-Fish


MG4-Fish


MG5-Fish

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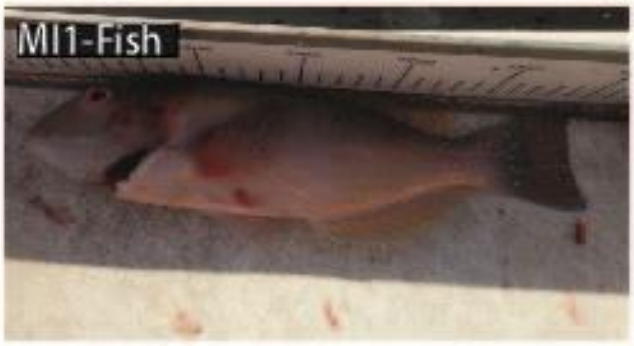

MH1-Fish


MH2-Fish


MH3-Fish


MH4-Fish


MH5-Fish


MI1-Fish


MI2-Fish

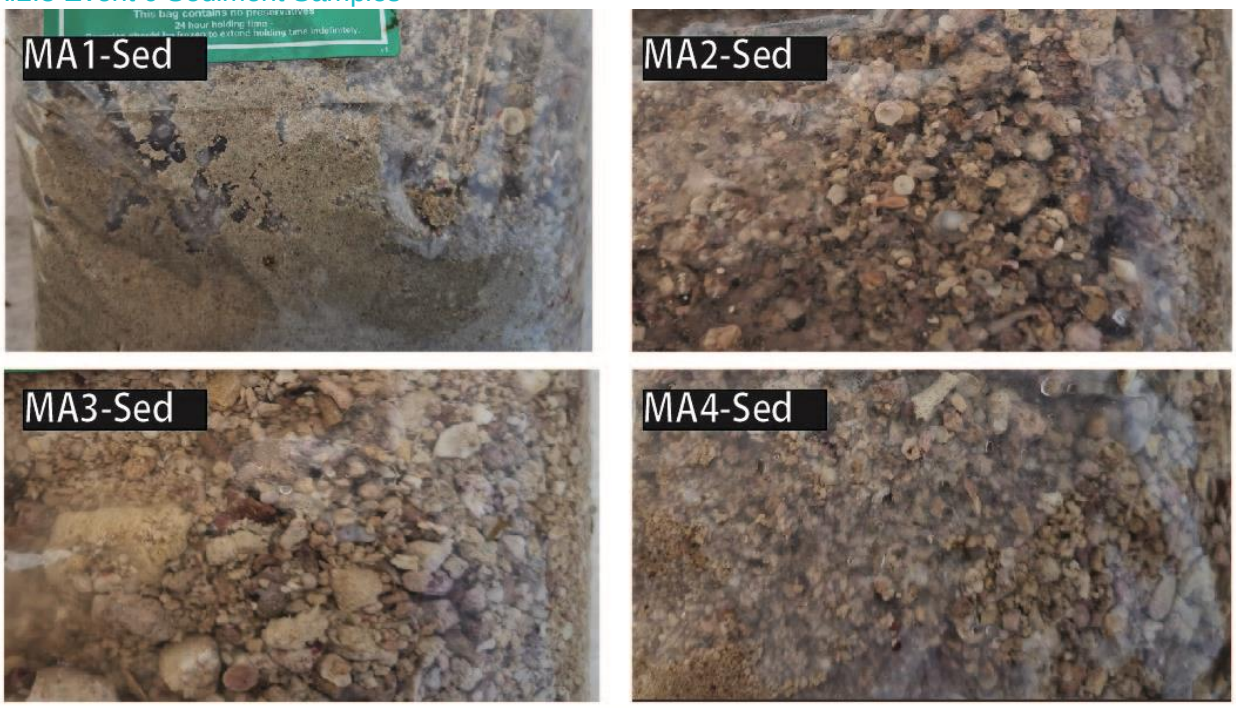

MI3-Fish


MI4-Fish

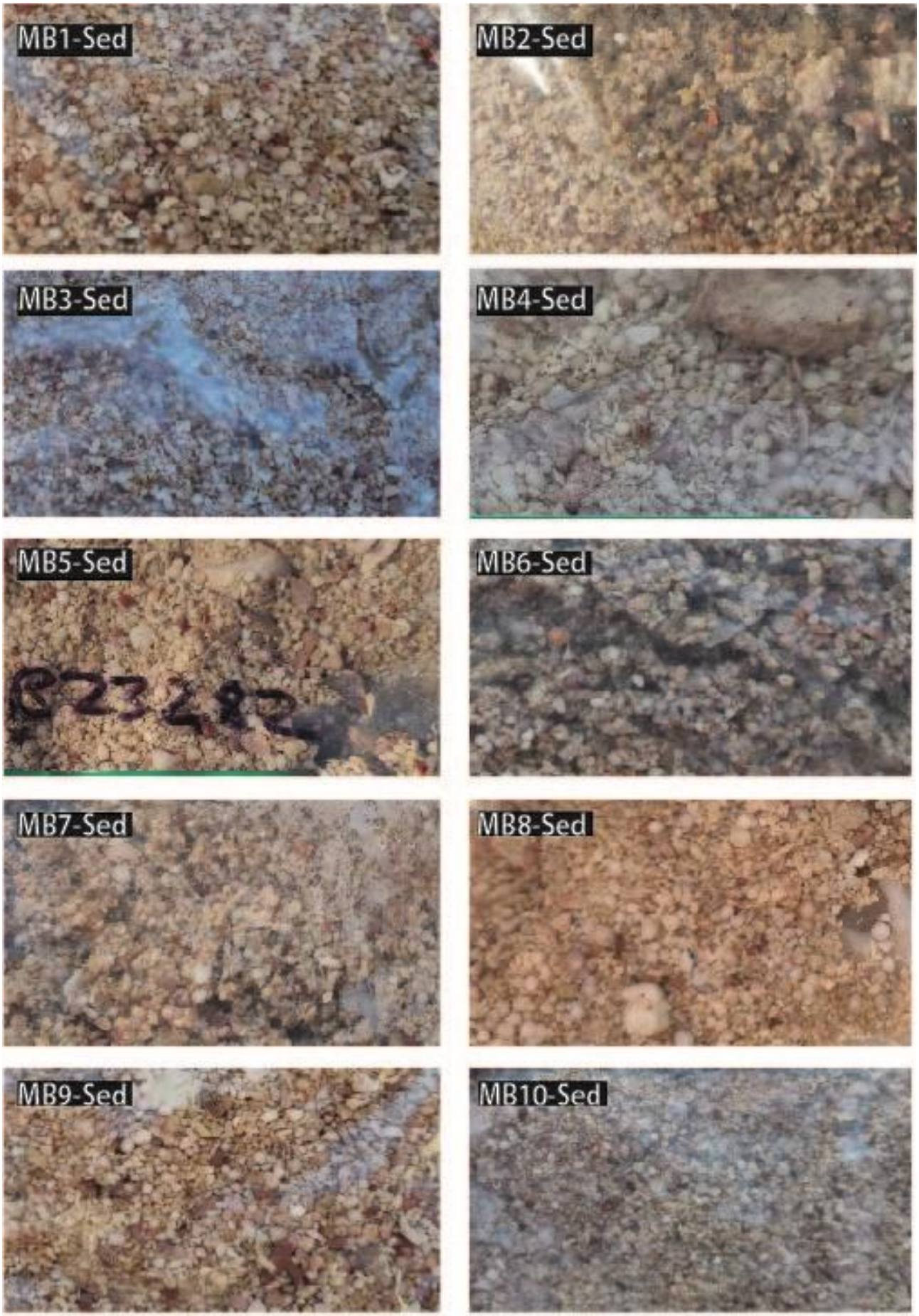

MI5-Fish

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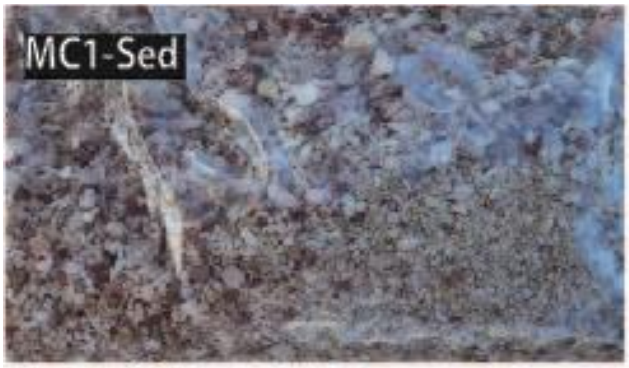
### A.2.3 Event 6 Sediment Samples




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MB1-Sed
MB2-Sed
MB3-Sed
MB4-Sed
MB5-Sed
MB6-Sed
MB7-Sed
MB8-Sed
MB9-Sed
MB10-Sed

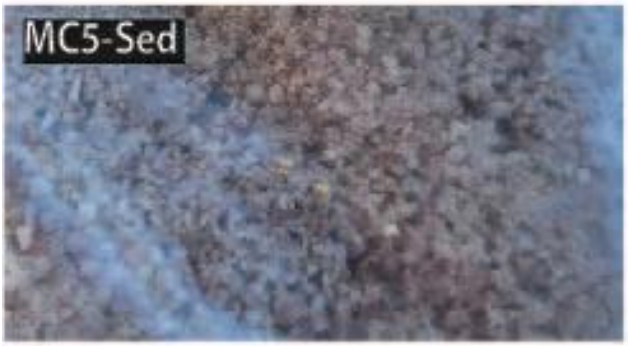
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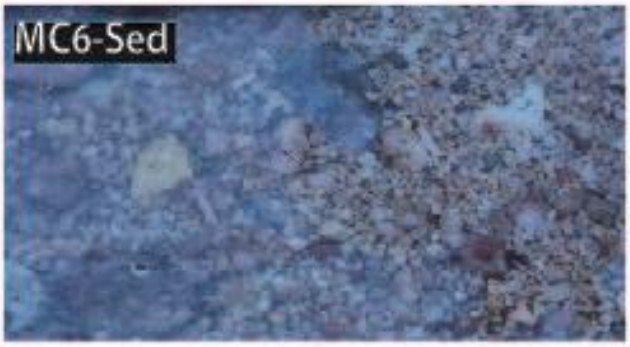

MC1-Sed

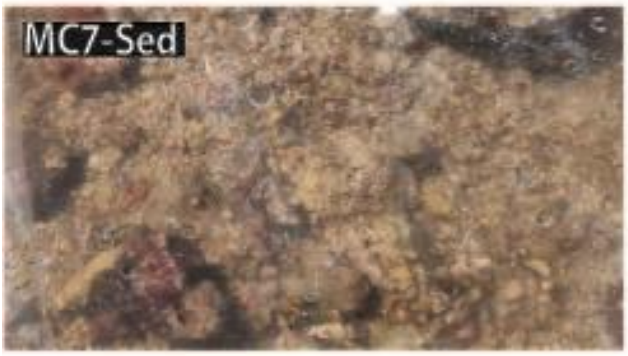

MC2-Sed
B23282 A
BMT
C2-SED-0624


MC3-Sed


MC4-Sed


MC5-Sed


MC6-Sed


MC7-Sed


MC8-Sed


MC9-Sed


MC10-Sed

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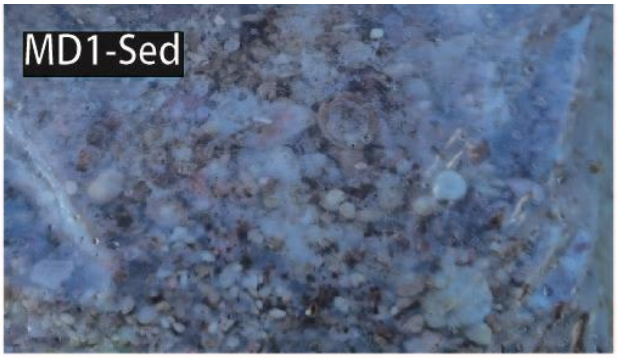




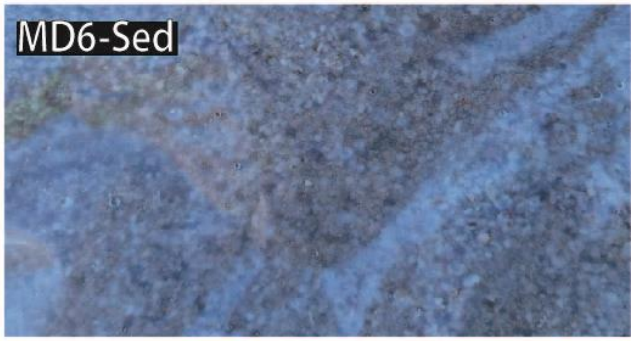


Image not available





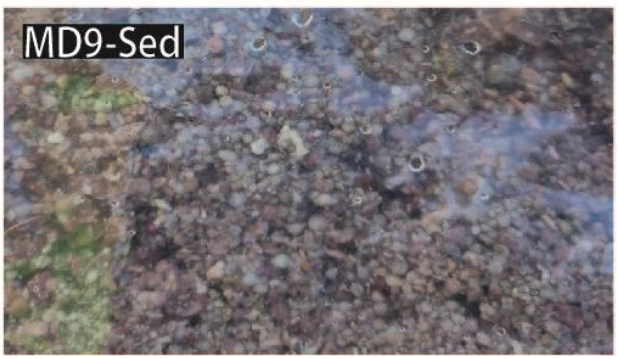










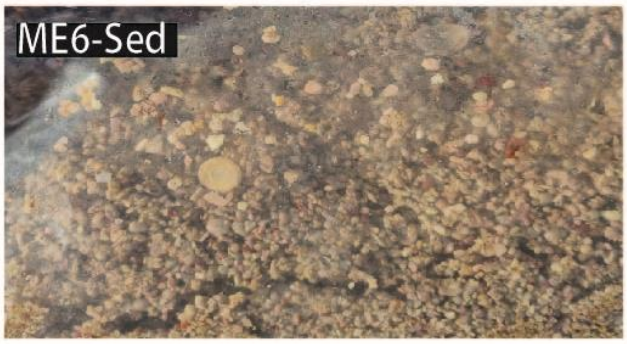







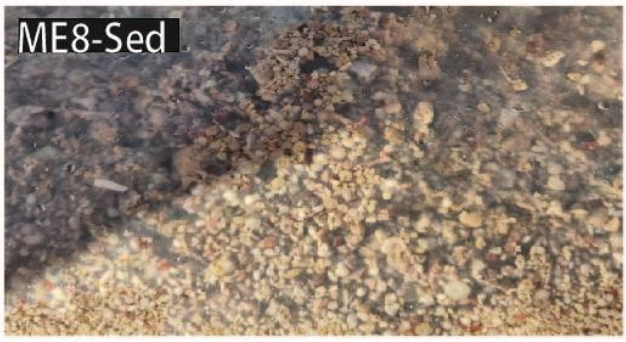
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Image not available



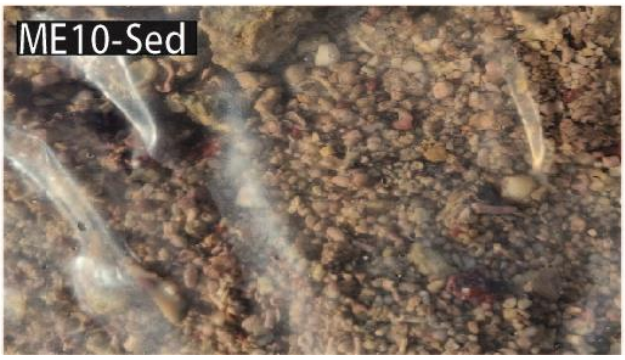




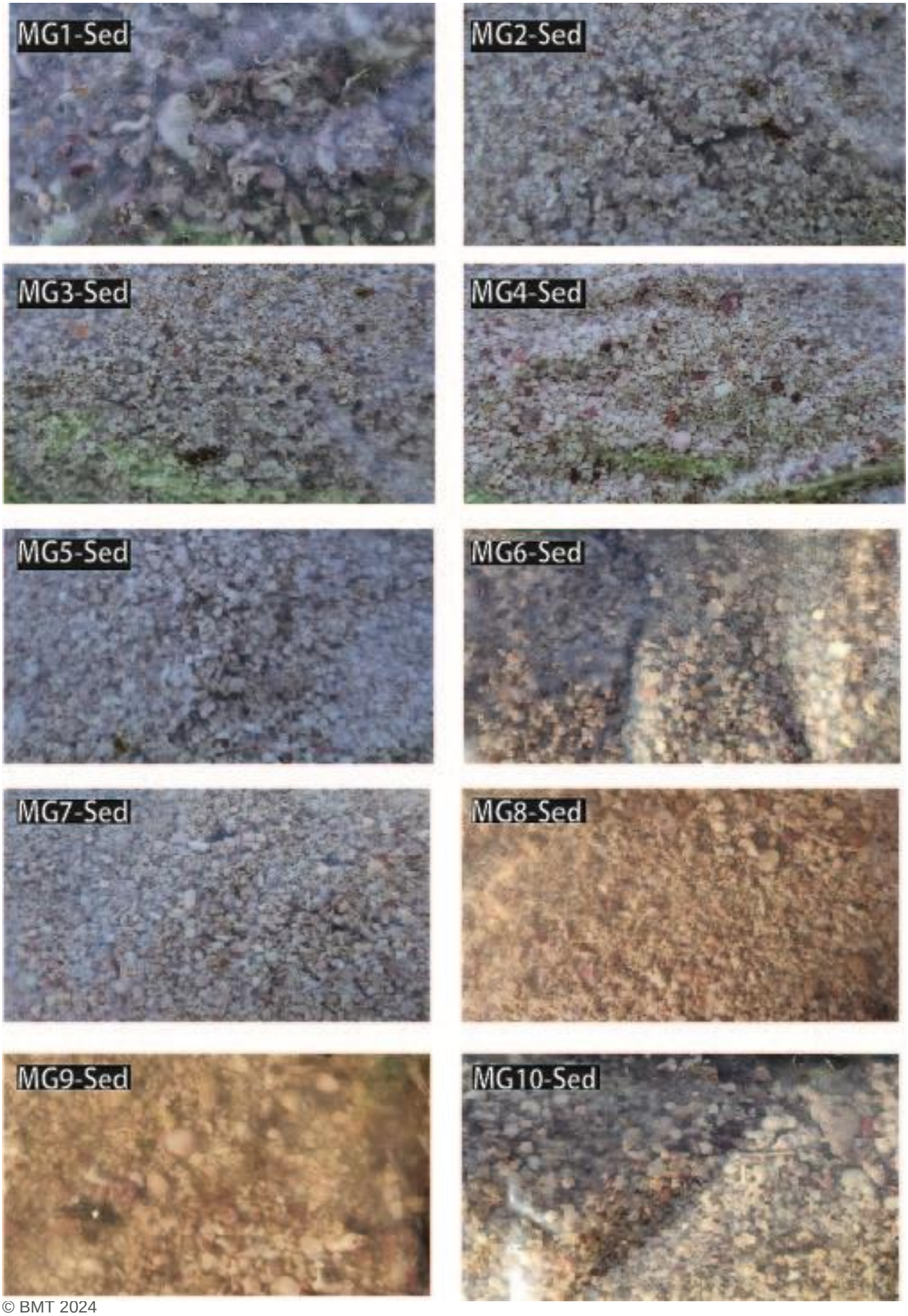




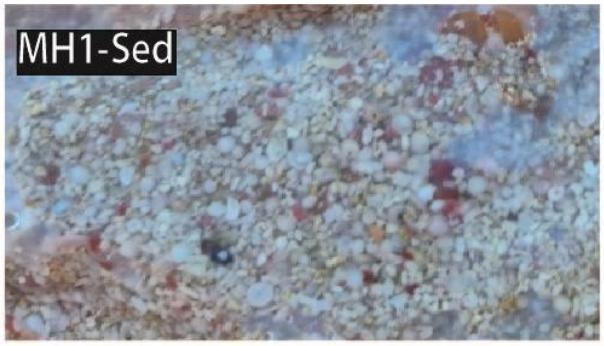


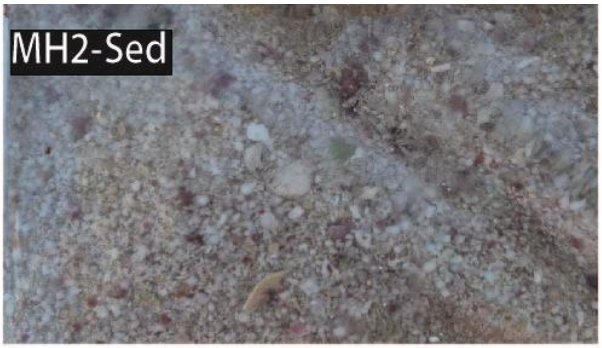



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MG1-Sed
MG2-Sed
MG3-Sed
MG4-Sed
MG5-Sed
MG6-Sed
MG7-Sed
MG8-Sed
MG9-Sed
MG10-Sed

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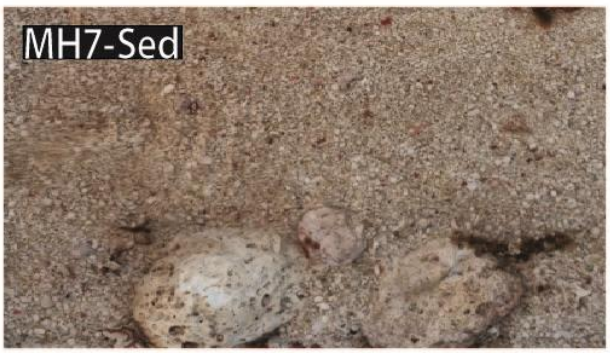




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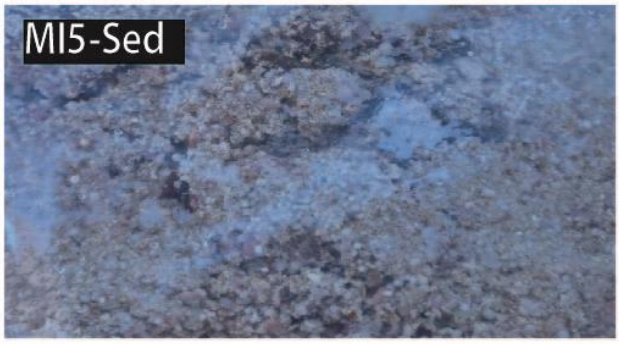


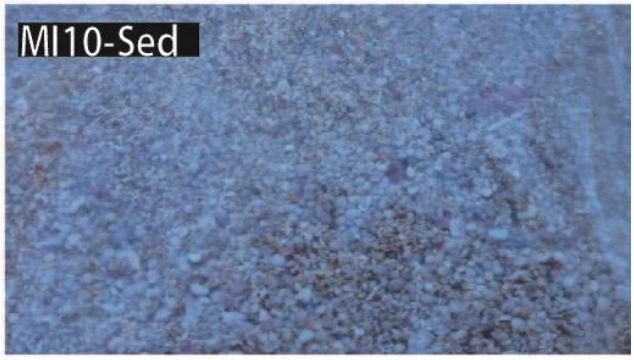

**Image not available**

**Image not available**










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# Annex B Statistical Outputs

## B.1 Benthic Cover Analysis

### B.1.1 Location-level Tests

```
> mod_Acropora <- glmmTMB(Total_Acropora ~ Location * B.A + (1|Treatment) + (1|
Eord), zi=~Location + B.A, family=nbinom1(), data=ccover)
> summary(mod_Acropora)
 Family: nbinom1  ( log )
Formula:          Total_Acropora ~ Location * B.A + (1 | Treatment) + (1 | Eord
)
Zero inflation:                  ~Location + B.A
Data: ccover

     AIC      BIC   logLik deviance df.resid
 13555.8  13746.1  -6749.9  13499.8     6566

Random effects:

Conditional model:
 Groups    Name        Variance  Std.Dev.
 Treatment (Intercept) 9.709e-12 3.116e-06
 Eord      (Intercept) 3.476e-10 1.864e-05
Number of obs: 6594, groups:  Treatment, 3; Eord, 4

Dispersion parameter for nbinom1 family (): 2.56

Conditional model:
                     Estimate Std. Error z value Pr(>|z|)
(Intercept)           2.15440    0.05461   39.45  < 2e-16 ***
Locationm_B           0.32462    0.06988    4.65 3.39e-06 ***
Locationm_C          -0.20130    0.10195   -1.97 0.048324 *
Locationm_D          -0.31833    0.09544   -3.34 0.000851 ***
Locationm_E          -0.17416    0.10429   -1.67 0.094921 .
Locationm_G          -0.22910    0.08030   -2.85 0.004330 **
Locationm_H          -0.45409    0.14007   -3.24 0.001188 **
Locationm_I          -0.63006    0.23221   -2.71 0.006662 **
B.ABefore            -0.39524    0.08888   -4.45 8.71e-06 ***
Locationm_B:B.ABefore  0.09267    0.10914    0.85 0.395798
Locationm_C:B.ABefore  0.09280    0.19604    0.47 0.635932
Locationm_D:B.ABefore  0.36696    0.15439    2.38 0.017461 *
Locationm_E:B.ABefore -0.03667    0.19493   -0.19 0.850786
Locationm_G:B.ABefore  0.11830    0.14042    0.84 0.399542
Locationm_H:B.ABefore  0.45418    0.20693    2.19 0.028177 *
Locationm_I:B.ABefore  0.59487    0.29347    2.03 0.042659 *
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Zero-inflation model:
            Estimate Std. Error z value Pr(>|z|)
(Intercept)  0.54593    0.08261   6.608 3.89e-11 ***
Locationm_B -0.36331    0.10477  -3.468 0.000525 ***
Locationm_C  1.28602    0.13172   9.763  < 2e-16 ***
Locationm_D  0.66147    0.11890   5.563 2.65e-08 ***
Locationm_E  1.19261    0.13336   8.943  < 2e-16 ***
Locationm_G  0.11942    0.11043   1.081 0.279510
Locationm_H  1.49645    0.14493  10.325  < 2e-16 ***
Locationm_I  2.13822    0.18254  11.714  < 2e-16 ***
B.ABefore    0.29948    0.06627   4.519 6.21e-06 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_Acropora)
```

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```
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Total_Acropora
              Chisq Df Pr(>Chisq)
Location     160.349  7  < 2.2e-16 ***
B.A           45.791  1  1.316e-11 ***
Location:B.A  12.740  7    0.07871 .
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_Acropora, pairwise ~ B.A | Location)
$emmeans
Location = m_A:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    2.15 0.0546 Inf      2.05      2.26
 Before   1.76 0.0705 Inf      1.62      1.90

Location = m_B:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    2.48 0.0437 Inf      2.39      2.56
 Before   2.18 0.0461 Inf      2.09      2.27

Location = m_C:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    1.95 0.0863 Inf      1.78      2.12
 Before   1.65 0.1527 Inf      1.35      1.95

Location = m_D:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    1.84 0.0785 Inf      1.68      1.99
 Before   1.81 0.0998 Inf      1.61      2.00

Location = m_E:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    1.98 0.0890 Inf      1.81      2.15
 Before   1.55 0.1500 Inf      1.25      1.84

Location = m_G:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    1.93 0.0592 Inf      1.81      2.04
 Before   1.65 0.0921 Inf      1.47      1.83

Location = m_H:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    1.70 0.1291 Inf      1.45      1.95
 Before   1.76 0.1369 Inf      1.49      2.03

Location = m_I:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    1.52 0.2257 Inf      1.08      1.97
 Before   1.72 0.1698 Inf      1.39      2.06

Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Location = m_A:
 contrast       estimate     SE  df z.ratio p.value
 After - Before   0.3952 0.0889 Inf   4.447  <.0001

Location = m_B:
 contrast       estimate     SE  df z.ratio p.value
 After - Before   0.3026 0.0634 Inf   4.769  <.0001

Location = m_C:
 contrast       estimate     SE  df z.ratio p.value
 After - Before   0.3024 0.1749 Inf   1.729  0.0838

Location = m_D:
```

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```
 contrast       estimate     SE  df z.ratio p.value
 After - Before   0.0283 0.1264 Inf   0.224  0.8230

Location = m_E:
 contrast       estimate     SE  df z.ratio p.value
 After - Before   0.4319 0.1737 Inf   2.486  0.0129

Location = m_G:
 contrast       estimate     SE  df z.ratio p.value
 After - Before   0.2769 0.1090 Inf   2.541  0.0111

Location = m_H:
 contrast       estimate     SE  df z.ratio p.value
 After - Before  -0.0589 0.1871 Inf  -0.315  0.7527

Location = m_I:
 contrast       estimate     SE  df z.ratio p.value
 After - Before  -0.1996 0.2799 Inf  -0.713  0.4757

Results are given on the log (not the response) scale.

>
> mod_Gravel <-glmmTMB(Gravel ~ Location * B.A + (1|Treatment) + (1|Eord) , zi=
~Location + B.A, family=nbinom1(), data=ccover)
> summary(mod_Gravel)
 Family: nbinom1  ( log )
Formula:          Gravel ~ Location * B.A + (1 | Treatment) + (1 | Eord)
Zero inflation:          ~Location + B.A
Data: ccover

     AIC      BIC   logLik deviance df.resid
 18216.0  18406.2  -9080.0  18160.0     6566

Random effects:

Conditional model:
 Groups    Name        Variance  Std.Dev.
 Treatment (Intercept) 3.371e-09 5.806e-05
 Eord      (Intercept) 4.377e-02 2.092e-01
Number of obs: 6594, groups:  Treatment, 3; Eord, 4

Dispersion parameter for nbinom1 family (): 15.7

Conditional model:
                     Estimate Std. Error z value Pr(>|z|)
(Intercept)            2.5735     0.2039  12.624  < 2e-16 ***
Locationm_B           -0.4407     0.2172  -2.029 0.042428 *
Locationm_C           -0.3116     0.1975  -1.578 0.114630
Locationm_D           -0.3141     0.1769  -1.776 0.075731 .
Locationm_E           -0.2270     0.2185  -1.039 0.298834
Locationm_G           -0.1611     0.1938  -0.831 0.405846
Locationm_H           -1.0570     0.2751  -3.842 0.000122 ***
Locationm_I           -0.8248     0.2505  -3.293 0.000992 ***
B.ABefore              0.2302     0.2638   0.873 0.382792
Locationm_B:B.ABefore -0.6951     0.3100  -2.242 0.024946 *
Locationm_C:B.ABefore  0.5675     0.2163   2.623 0.008705 **
Locationm_D:B.ABefore -0.1801     0.2580  -0.698 0.485134
Locationm_E:B.ABefore  0.6424     0.2348   2.736 0.006225 **
Locationm_G:B.ABefore -1.4892     0.2983  -4.992 5.99e-07 ***
Locationm_H:B.ABefore -2.2158     0.2915  -7.602 2.92e-14 ***
Locationm_I:B.ABefore -4.2599     0.5461  -7.801 6.13e-15 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Zero-inflation model:
            Estimate Std. Error z value Pr(>|z|)
(Intercept)  1.42852    0.11019  12.965  < 2e-16 ***
Locationm_B  0.17597    0.21168   0.831 0.405812
```

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```
Locationm_C -0.65419    0.11709  -5.587 2.31e-08 ***
Locationm_D -0.18436    0.15015  -1.228 0.219490
Locationm_E -0.81773    0.12220  -6.692 2.21e-11 ***
Locationm_G  0.01179    0.20270   0.058 0.953613
Locationm_H -1.26333    0.34208  -3.693 0.000222 ***
Locationm_I -0.82653    0.25539  -3.236 0.001211 **
B.ABefore   -0.81206    0.10573  -7.681 1.58e-14 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_Gravel)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Gravel
              Chisq Df Pr(>Chisq)
Location     202.132  7     <2e-16 ***
B.A            0.114  1     0.7357
Location:B.A 214.661  7     <2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_Gravel, pairwise ~ B.A | Location)
$emmeans
Location = m_A:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After   2.573 0.204 Inf     2.174    2.9730
 Before  2.804 0.169 Inf     2.473    3.1344

Location = m_B:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After   2.133 0.229 Inf     1.683    2.5823
 Before  1.668 0.319 Inf     1.043    2.2928

Location = m_C:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After   2.262 0.214 Inf     1.843    2.6807
 Before  3.060 0.157 Inf     2.753    3.3667

Location = m_D:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After   2.259 0.193 Inf     1.881    2.6376
 Before  2.309 0.244 Inf     1.832    2.7871

Location = m_E:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After   2.347 0.234 Inf     1.888    2.8055
 Before  3.219 0.156 Inf     2.914    3.5241

Location = m_G:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After   2.412 0.205 Inf     2.010    2.8145
 Before  1.153 0.301 Inf     0.564    1.7424

Location = m_H:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After   1.516 0.285 Inf     0.959    2.0742
 Before -0.469 0.276 Inf    -1.011    0.0723

Location = m_I:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After   1.749 0.260 Inf     1.238    2.2591
 Before -2.281 0.536 Inf    -3.331   -1.2309

Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Location = m_A:
 contrast       estimate    SE  df z.ratio p.value
 After - Before  -0.2302 0.264 Inf  -0.873  0.3828
```

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```
Location = m_B:
 contrast       estimate    SE  df z.ratio p.value
 After - Before   0.4648 0.350 Inf   1.328  0.1842

Location = m_C:
 contrast       estimate    SE  df z.ratio p.value
 After - Before  -0.7977 0.265 Inf  -3.013  0.0026

Location = m_D:
 contrast       estimate    SE  df z.ratio p.value
 After - Before  -0.0501 0.301 Inf  -0.167  0.8677

Location = m_E:
 contrast       estimate    SE  df z.ratio p.value
 After - Before  -0.8726 0.282 Inf  -3.098  0.0019

Location = m_G:
 contrast       estimate    SE  df z.ratio p.value
 After - Before   1.2590 0.340 Inf   3.703  0.0002

Location = m_H:
 contrast       estimate    SE  df z.ratio p.value
 After - Before   1.9856 0.328 Inf   6.046  <.0001

Location = m_I:
 contrast       estimate    SE  df z.ratio p.value
 After - Before   4.0296 0.567 Inf   7.108  <.0001

Results are given on the log (not the response) scale.

>
> Mod_Dictyopteris <- glmmTMB(Dioptr ~ Location * B.A + (1|Treatment) + (1|Eord
), zi=~Location + B.A, family=nbinom1(), data=ccover)
> summary(Mod_Dictyopteris)
 Family: nbinom1  ( log )
Formula:          Dioptr ~ Location * B.A + (1 | Treatment) + (1 | Eord)
Zero inflation:          ~Location + B.A
Data: ccover

     AIC      BIC   logLik deviance df.resid
 10565.2  10755.5  -5254.6  10509.2     6566

Random effects:

Conditional model:
 Groups    Name        Variance  Std.Dev.
 Treatment (Intercept) 1.060e-10 1.029e-05
 Eord      (Intercept) 5.075e+00 2.253e+00
Number of obs: 6594, groups:  Treatment, 3; Eord, 4

Dispersion parameter for nbinom1 family (): 7.98

Conditional model:
                     Estimate Std. Error z value Pr(>|z|)
(Intercept)            -2.605      1.919  -1.358 0.174509
Locationm_B             2.591      1.970   1.315 0.188604
Locationm_C             3.361      1.068   3.148 0.001645 **
Locationm_D           -14.798   1308.695  -0.011 0.990978
Locationm_E             3.527      1.075   3.282 0.001030 **
Locationm_G             1.702      1.211   1.405 0.160020
Locationm_H             3.261      1.068   3.053 0.002267 **
Locationm_I             3.301      1.067   3.095 0.001970 **
B.ABefore               2.517      2.499   1.007 0.313803
Locationm_B:B.ABefore  -5.930      2.023  -2.931 0.003381 **
Locationm_C:B.ABefore  -2.901      1.072  -2.706 0.006815 **
Locationm_D:B.ABefore  14.997   1308.695   0.011 0.990857
Locationm_E:B.ABefore  -3.309      1.079  -3.067 0.002164 **
```

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```
Locationm_G:B.ABefore   -2.054      1.216  -1.689 0.091205 .
Locationm_H:B.ABefore   -3.481      1.074  -3.241 0.001191 **
Locationm_I:B.ABefore   -3.755      1.075  -3.494 0.000477 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Zero-inflation model:
             Estimate Std. Error z value Pr(>|z|)
(Intercept)   2.8392     0.1959  14.495  < 2e-16 ***
Locationm_B   2.2639     1.5000   1.509   0.1312
Locationm_C  -2.2726     0.1977 -11.493  < 2e-16 ***
Locationm_D  -0.4002     0.2129  -1.879   0.0602 .
Locationm_E  -1.9549     0.1993  -9.806  < 2e-16 ***
Locationm_G  -0.1995     0.2172  -0.919   0.3582
Locationm_H  -1.4910     0.2017  -7.393 1.44e-13 ***
Locationm_I  -1.4101     0.2148  -6.566 5.17e-11 ***
B.ABefore    -1.8610     0.1211 -15.366  < 2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(Mod_Dictyopteris)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Dioptr
                Chisq Df Pr(>Chisq)
Location     107.8677  7    < 2e-16 ***
B.A            0.1151  1     0.7344
Location:B.A  33.4313  7    2.2e-05 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(Mod_Dictyopteris, pairwise ~ B.A | Location)
$emmeans
Location = m_A:
 B.A      emmean      SE  df asymp.LCL asymp.UCL
 After   -2.6051    1.92 Inf     -6.37      1.16
 Before  -0.0883    1.60 Inf     -3.23      3.05

Location = m_B:
 B.A      emmean      SE  df asymp.LCL asymp.UCL
 After   -0.0144    2.30 Inf     -4.53      4.50
 Before  -3.4275    2.56 Inf     -8.44      1.58

Location = m_C:
 B.A      emmean      SE  df asymp.LCL asymp.UCL
 After    0.7563    1.60 Inf     -2.38      3.89
 Before   0.3725    1.60 Inf     -2.76      3.51

Location = m_D:
 B.A      emmean      SE  df asymp.LCL asymp.UCL
 After  -17.4030 1308.70 Inf  -2582.40   2547.59
 Before   0.1107    1.60 Inf     -3.03      3.25

Location = m_E:
 B.A      emmean      SE  df asymp.LCL asymp.UCL
 After    0.9219    1.60 Inf     -2.22      4.07
 Before   0.1295    1.60 Inf     -3.01      3.27

Location = m_G:
 B.A      emmean      SE  df asymp.LCL asymp.UCL
 After   -0.9035    1.71 Inf     -4.26      2.45
 Before  -0.4403    1.60 Inf     -3.58      2.70

Location = m_H:
 B.A      emmean      SE  df asymp.LCL asymp.UCL
 After    0.6564    1.60 Inf     -2.48      3.80
 Before  -0.3081    1.60 Inf     -3.45      2.83

Location = m_I:
 B.A      emmean      SE  df asymp.LCL asymp.UCL
```

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```
 After    0.6959    1.60 Inf     -2.44      3.83
 Before  -0.5427    1.60 Inf     -3.69      2.60

Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Location = m_A:
 contrast       estimate      SE  df z.ratio p.value
 After - Before   -2.517    2.50 Inf  -1.007  0.3138

Location = m_B:
 contrast       estimate      SE  df z.ratio p.value
 After - Before    3.413    2.85 Inf   1.199  0.2305

Location = m_C:
 contrast       estimate      SE  df z.ratio p.value
 After - Before    0.384    2.26 Inf   0.170  0.8653

Location = m_D:
 contrast       estimate      SE  df z.ratio p.value
 After - Before  -17.514 1308.70 Inf  -0.013  0.9893

Location = m_E:
 contrast       estimate      SE  df z.ratio p.value
 After - Before    0.792    2.27 Inf   0.350  0.7266

Location = m_G:
 contrast       estimate      SE  df z.ratio p.value
 After - Before   -0.463    2.34 Inf  -0.198  0.8433

Location = m_H:
 contrast       estimate      SE  df z.ratio p.value
 After - Before    0.965    2.26 Inf   0.426  0.6702

Location = m_I:
 contrast       estimate      SE  df z.ratio p.value
 After - Before    1.239    2.27 Inf   0.547  0.5846

Results are given on the log (not the response) scale.

>
> mod_Sargassum <-glmmTMB(Sarg ~ Location * B.A + (1|Treatment) + (1|Eord), zi=
~Location + B.A, family=nbinom1(), data=ccover)
> summary(mod_Sargassum)
 Family: nbinom1  ( log )
Formula:          Sarg ~ Location * B.A + (1 | Treatment) + (1 | Eord)
Zero inflation:        ~Location + B.A
Data: ccover

     AIC      BIC   logLik deviance df.resid
 20841.0  21031.2 -10392.5  20785.0     6566

Random effects:

Conditional model:
 Groups    Name        Variance  Std.Dev.
 Treatment (Intercept) 1.283e-09 3.582e-05
 Eord      (Intercept) 7.091e-02 2.663e-01
Number of obs: 6594, groups:  Treatment, 3; Eord, 4

Dispersion parameter for nbinom1 family (): 9.25

Conditional model:
                   Estimate Std. Error z value Pr(>|z|)
(Intercept)         -2.4825     1.0421  -2.382  0.01721 *
Locationm_B          3.2531     1.8392   1.769  0.07693 .
Locationm_C          4.8044     1.0278   4.674 2.95e-06 ***
```

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```
Locationm_D             3.1149     1.7549   1.775  0.07590 .
Locationm_E             4.5976     1.0284   4.471 7.80e-06 ***
Locationm_G             0.4328     1.1814   0.366  0.71410
Locationm_H             5.5490     1.0252   5.412 6.22e-08 ***
Locationm_I             6.0895     1.0250   5.941 2.84e-09 ***
B.ABefore               4.6721     1.0641   4.391 1.13e-05 ***
Locationm_B:B.ABefore  -6.1420     1.6398  -3.746  0.00018 ***
Locationm_C:B.ABefore  -4.3745     1.0344  -4.229 2.35e-05 ***
Locationm_D:B.ABefore  -3.7304     1.6073  -2.321  0.02029 *
Locationm_E:B.ABefore  -4.2388     1.0352  -4.095 4.23e-05 ***
Locationm_G:B.ABefore  -0.1772     1.1882  -0.149  0.88148
Locationm_H:B.ABefore  -5.1219     1.0314  -4.966 6.84e-07 ***
Locationm_I:B.ABefore  -5.2941     1.0310  -5.135 2.82e-07 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Zero-inflation model:
            Estimate Std. Error z value Pr(>|z|)
(Intercept)  2.05782    0.18386  11.193  < 2e-16 ***
Locationm_B  1.98077    1.28632   1.540  0.12359
Locationm_C -1.56996    0.17850  -8.795  < 2e-16 ***
Locationm_D  2.05296    0.64605   3.178  0.00148 **
Locationm_E -1.61881    0.18227  -8.881  < 2e-16 ***
Locationm_G -0.81879    0.19682  -4.160 3.18e-05 ***
Locationm_H -3.20904    0.19073 -16.825  < 2e-16 ***
Locationm_I -3.91779    0.20076 -19.515  < 2e-16 ***
B.ABefore   -0.19621    0.09129  -2.149  0.03161 *
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_Sargassum)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Sarg
                Chisq Df Pr(>Chisq)
Location     384.1357  7     <2e-16 ***
B.A            2.6012  1     0.1068
Location:B.A 191.2886  7     <2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_Sargassum, pairwise ~ B.A | Location)
$emmeans
Location = m_A:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After  -2.483 1.042 Inf    -4.525     -0.44
 Before  2.190 0.245 Inf     1.709      2.67

Location = m_B:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After   0.771 1.539 Inf    -2.245      3.79
 Before -0.699 1.745 Inf    -4.120      2.72

Location = m_C:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After   2.322 0.213 Inf     1.905      2.74
 Before  2.619 0.196 Inf     2.236      3.00

Location = m_D:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After   0.632 1.448 Inf    -2.205      3.47
 Before  1.574 0.725 Inf     0.154      2.99

Location = m_E:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After   2.115 0.218 Inf     1.688      2.54
 Before  2.548 0.198 Inf     2.161      2.94

Location = m_G:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
```

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```
 After  -2.050 0.627 Inf    -3.279     -0.82
 Before  2.445 0.210 Inf     2.034      2.86

Location = m_H:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After   3.066 0.192 Inf     2.690      3.44
 Before  2.617 0.195 Inf     2.234      3.00

Location = m_I:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After   3.607 0.190 Inf     3.234      3.98
 Before  2.985 0.192 Inf     2.608      3.36

Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Location = m_A:
 contrast       estimate    SE  df z.ratio p.value
 After - Before   -4.672 1.064 Inf  -4.391  <.0001

Location = m_B:
 contrast       estimate    SE  df z.ratio p.value
 After - Before    1.470 1.310 Inf   1.122  0.2617

Location = m_C:
 contrast       estimate    SE  df z.ratio p.value
 After - Before   -0.298 0.289 Inf  -1.030  0.3028

Location = m_D:
 contrast       estimate    SE  df z.ratio p.value
 After - Before   -0.942 1.273 Inf  -0.739  0.4596

Location = m_E:
 contrast       estimate    SE  df z.ratio p.value
 After - Before   -0.433 0.294 Inf  -1.474  0.1404

Location = m_G:
 contrast       estimate    SE  df z.ratio p.value
 After - Before   -4.495 0.659 Inf  -6.821  <.0001

Location = m_H:
 contrast       estimate    SE  df z.ratio p.value
 After - Before    0.450 0.274 Inf   1.644  0.1001

Location = m_I:
 contrast       estimate    SE  df z.ratio p.value
 After - Before    0.622 0.271 Inf   2.299  0.0215

Results are given on the log (not the response) scale.

>
> mod_Turf <-glmmTMB(Turf ~ Location * B.A + (1|Treatment) + (1|Eord), zi=~Loca
tion + B.A, family=gaussian(), data=ccover)
> summary(mod_Turf)
 Family: gaussian  ( identity )
Formula:          Turf ~ Location * B.A + (1 | Treatment) + (1 | Eord)
Zero inflation:        ~Location + B.A
Data: ccover

     AIC      BIC   logLik deviance df.resid
 57555.6  57745.9 -28749.8  57499.6     6566

Random effects:

Conditional model:
 Groups    Name        Variance  Std.Dev.
 Treatment (Intercept) 6.110e-07 7.816e-04
```

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```
 Eord      (Intercept) 2.030e+01 4.505e+00
 Residual              3.787e+02 1.946e+01
Number of obs: 6594, groups:  Treatment, 3; Eord, 4

Dispersion estimate for gaussian family (sigma^2):  379

Conditional model:
                     Estimate Std. Error z value Pr(>|z|)
(Intercept)           39.1275     3.3331  11.739  < 2e-16 ***
Locationm_B           25.1553     1.3845  18.169  < 2e-16 ***
Locationm_C            0.1441     1.3994   0.103  0.91798
Locationm_D            7.8426     1.3810   5.679 1.36e-08 ***
Locationm_E            7.5549     1.3849   5.455 4.89e-08 ***
Locationm_G            2.1514     1.3951   1.542  0.12306
Locationm_H          -12.0567     1.4154  -8.518  < 2e-16 ***
Locationm_I          -12.2039     1.4062  -8.678  < 2e-16 ***
B.ABefore             15.4866     4.7082   3.289  0.00100 **
Locationm_B:B.ABefore  -5.9320     1.9316  -3.071  0.00213 **
Locationm_C:B.ABefore -22.5914     1.9142 -11.802  < 2e-16 ***
Locationm_D:B.ABefore -21.2750     1.9457 -10.934  < 2e-16 ***
Locationm_E:B.ABefore -31.2429     1.9744 -15.824  < 2e-16 ***
Locationm_G:B.ABefore -23.7446     1.9304 -12.300  < 2e-16 ***
Locationm_H:B.ABefore  -9.1677     1.9744  -4.643 3.43e-06 ***
Locationm_I:B.ABefore -15.9994     1.9898  -8.041 8.92e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Zero-inflation model:
             Estimate Std. Error z value Pr(>|z|)
(Intercept)  -4.8775     0.3859 -12.638  < 2e-16 ***
Locationm_B  -1.5821     0.8944  -1.769 0.076908 .
Locationm_C   1.4692     0.4073   3.607 0.000310 ***
Locationm_D  -0.8055     0.7159  -1.125 0.260513
Locationm_E   1.9410     0.3978   4.880 1.06e-06 ***
Locationm_G  -0.2385     0.5936  -0.402 0.687810
Locationm_H   1.6806     0.4089   4.111 3.95e-05 ***
Locationm_I   2.1512     0.3947   5.450 5.02e-08 ***
B.ABefore     0.5349     0.1569   3.410 0.000649 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_Turf)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Turf
                Chisq Df Pr(>Chisq)
Location     2537.0334  7     <2e-16 ***
B.A             0.0236  1     0.8778
Location:B.A  399.7957  7     <2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_Turf, pairwise ~ B.A | Location)
$emmeans
Location = m_A:
 B.A    emmean   SE   df lower.CL upper.CL
 After    39.1 3.33 6566     32.6     45.7
 Before   54.6 3.33 6566     48.1     61.1

Location = m_B:
 B.A    emmean   SE   df lower.CL upper.CL
 After    64.3 3.33 6566     57.8     70.8
 Before   73.8 3.32 6566     67.3     80.4

Location = m_C:
 B.A    emmean   SE   df lower.CL upper.CL
 After    39.3 3.34 6566     32.7     45.8
 Before   32.2 3.31 6566     25.7     38.7

Location = m_D:
```

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```
 B.A    emmean   SE   df lower.CL upper.CL
 After    47.0 3.33 6566     40.4     53.5
 Before   41.2 3.33 6566     34.6     47.7

Location = m_E:
 B.A    emmean   SE   df lower.CL upper.CL
 After    46.7 3.33 6566     40.1     53.2
 Before   30.9 3.35 6566     24.4     37.5

Location = m_G:
 B.A    emmean   SE   df lower.CL upper.CL
 After    41.3 3.34 6566     34.7     47.8
 Before   33.0 3.32 6566     26.5     39.5

Location = m_H:
 B.A    emmean   SE   df lower.CL upper.CL
 After    27.1 3.35 6566     20.5     33.6
 Before   33.4 3.34 6566     26.8     39.9

Location = m_I:
 B.A    emmean   SE   df lower.CL upper.CL
 After    26.9 3.34 6566     20.4     33.5
 Before   26.4 3.35 6566     19.8     33.0

Confidence level used: 0.95

$contrasts
Location = m_A:
 contrast       estimate   SE   df t.ratio p.value
 After - Before  -15.487 4.71 6566  -3.289  0.0010

Location = m_B:
 contrast       estimate   SE   df t.ratio p.value
 After - Before   -9.555 4.71 6566  -2.030  0.0424

Location = m_C:
 contrast       estimate   SE   df t.ratio p.value
 After - Before    7.105 4.70 6566   1.512  0.1307

Location = m_D:
 contrast       estimate   SE   df t.ratio p.value
 After - Before    5.788 4.71 6566   1.228  0.2195

Location = m_E:
 contrast       estimate   SE   df t.ratio p.value
 After - Before   15.756 4.73 6566   3.334  0.0009

Location = m_G:
 contrast       estimate   SE   df t.ratio p.value
 After - Before    8.258 4.71 6566   1.754  0.0794

Location = m_H:
 contrast       estimate   SE   df t.ratio p.value
 After - Before   -6.319 4.73 6566  -1.337  0.1812

Location = m_I:
 contrast       estimate   SE   df t.ratio p.value
 After - Before    0.513 4.73 6566   0.108  0.9137


> mod_Hardcoral <-glmmTMB(Total_hardcoral ~ Location * B.A + (1|Treatment)
+ (1|Eord), zi=~Location + B.A, family=nbinom1(), data=ccover)
> summary(mod_Hardcoral)
 Family: nbinom1  ( log )
Formula:          Total_hardcoral ~ Location * B.A + (1 | Treatment) + (1 | Eord)
Zero inflation:                     ~Location + B.A
Data: ccover
```

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```
     AIC      BIC   logLik deviance df.resid
 24053.5  24243.7 -11998.7  23997.5     6566

Random effects:

Conditional model:
 Groups    Name        Variance  Std.Dev.
 Treatment (Intercept) 9.230e-11 9.607e-06
 Eord      (Intercept) 2.774e-09 5.267e-05
Number of obs: 6594, groups:  Treatment, 3; Eord, 4

Dispersion parameter for nbinom1 family (): 2.55

Conditional model:
                     Estimate Std. Error z value Pr(>|z|)
(Intercept)           2.13480    0.04569   46.72  < 2e-16 ***
Locationm_B           0.24907    0.06007    4.15 3.38e-05 ***
Locationm_C          -0.09151    0.07955   -1.15 0.249990
Locationm_D          -0.22569    0.07431   -3.04 0.002389 **
Locationm_E          -0.20726    0.07995   -2.59 0.009532 **
Locationm_G          -0.12541    0.06422   -1.95 0.050856 .
Locationm_H          -0.07370    0.06731   -1.09 0.273539
Locationm_I          -0.46793    0.12155   -3.85 0.000118 ***
B.ABefore            -0.17467    0.06549   -2.67 0.007647 **
Locationm_B:B.ABefore  0.03141    0.08455    0.37 0.710283
Locationm_C:B.ABefore  0.06649    0.11855    0.56 0.574899
Locationm_D:B.ABefore  0.19841    0.10408    1.91 0.056607 .
Locationm_E:B.ABefore  0.06254    0.11657    0.54 0.591629
Locationm_G:B.ABefore  0.29089    0.09028    3.22 0.001272 **
Locationm_H:B.ABefore  0.26728    0.09125    2.93 0.003399 **
Locationm_I:B.ABefore  0.42066    0.15231    2.76 0.005747 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Zero-inflation model:
            Estimate Std. Error z value Pr(>|z|)
(Intercept) -0.03033    0.07679  -0.395  0.69287
Locationm_B -0.28281    0.10168  -2.781  0.00541 **
Locationm_C  1.32336    0.10812  12.239  < 2e-16 ***
Locationm_D  0.45183    0.10338   4.371 1.24e-05 ***
Locationm_E  0.91394    0.10668   8.567  < 2e-16 ***
Locationm_G -0.12696    0.10136  -1.253  0.21035
Locationm_H -0.11034    0.10224  -1.079  0.28047
Locationm_I  1.58705    0.11917  13.318  < 2e-16 ***
B.ABefore   -0.15726    0.05399  -2.913  0.00359 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_Hardcoral)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Total_hardcoral
                Chisq Df Pr(>Chisq)
Location     125.2882  7  < 2.2e-16 ***
B.A            1.3129  1  0.2518689
Location:B.A  24.4343  7  0.0009554 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_Hardcoral, pairwise ~ B.A | Location)
$emmeans
Location = m_A:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    2.13 0.0457 Inf      2.05      2.22
 Before   1.96 0.0472 Inf      1.87      2.05

Location = m_B:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
```

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```
 After    2.38 0.0391 Inf      2.31      2.46
 Before   2.24 0.0367 Inf      2.17      2.31

Location = m_C:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    2.04 0.0653 Inf      1.92      2.17
 Before   1.94 0.0745 Inf      1.79      2.08

Location = m_D:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    1.91 0.0588 Inf      1.79      2.02
 Before   1.93 0.0562 Inf      1.82      2.04

Location = m_E:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    1.93 0.0657 Inf      1.80      2.06
 Before   1.82 0.0712 Inf      1.68      1.95

Location = m_G:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    2.01 0.0453 Inf      1.92      2.10
 Before   2.13 0.0429 Inf      2.04      2.21

Location = m_H:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    2.06 0.0496 Inf      1.96      2.16
 Before   2.15 0.0401 Inf      2.08      2.23

Location = m_I:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    1.67 0.1127 Inf      1.45      1.89
 Before   1.91 0.0800 Inf      1.76      2.07

Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Location = m_A:
 contrast       estimate     SE  df z.ratio p.value
 After - Before   0.1747 0.0655 Inf   2.667  0.0076

Location = m_B:
 contrast       estimate     SE  df z.ratio p.value
 After - Before   0.1433 0.0535 Inf   2.677  0.0074

Location = m_C:
 contrast       estimate     SE  df z.ratio p.value
 After - Before   0.1082 0.0989 Inf   1.094  0.2739

Location = m_D:
 contrast       estimate     SE  df z.ratio p.value
 After - Before  -0.0237 0.0810 Inf  -0.293  0.7694

Location = m_E:
 contrast       estimate     SE  df z.ratio p.value
 After - Before   0.1121 0.0965 Inf   1.162  0.2453

Location = m_G:
 contrast       estimate     SE  df z.ratio p.value
 After - Before  -0.1162 0.0622 Inf  -1.869  0.0617

Location = m_H:
 contrast       estimate     SE  df z.ratio p.value
 After - Before  -0.0926 0.0636 Inf  -1.456  0.1454

Location = m_I:
 contrast       estimate     SE  df z.ratio p.value
```

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```
 After - Before  -0.2460 0.1376 Inf  -1.788  0.0738

Results are given on the log (not the response) scale.

>
> mod_Softcoral <-glmmTMB(Total_Softcoral ~ Location * B.A + (1|Treatment)
 + (1|Eord), zi=~Location + B.A, family=nbinom1(), data=ccover)
> summary(mod_Softcoral)
 Family: nbinom1  ( log )
Formula:          Total_Softcoral ~ Location * B.A + (1 | Treatment) + (1 | Eord)
Zero inflation:                     ~Location + B.A
Data: ccover

     AIC      BIC   logLik deviance df.resid
 16197.5  16387.8  -8070.8  16141.5     6566

Random effects:

Conditional model:
 Groups    Name        Variance  Std.Dev.
 Treatment (Intercept) 3.559e-10 1.887e-05
 Eord      (Intercept) 5.430e-04 2.330e-02
Number of obs: 6594, groups:  Treatment, 3; Eord, 4

Dispersion parameter for nbinom1 family (): 1.68

Conditional model:
                     Estimate Std. Error z value Pr(>|z|)
(Intercept)           1.71052    0.08007  21.362  < 2e-16 ***
Locationm_B           0.27775    0.08968   3.097  0.00195 **
Locationm_C           0.08216    0.11256   0.730  0.46546
Locationm_D          -0.03826    0.11630  -0.329  0.74216
Locationm_E           0.07378    0.11075   0.666  0.50530
Locationm_G          -0.01278    0.10477  -0.122  0.90290
Locationm_H           0.63233    0.08415   7.514 5.71e-14 ***
Locationm_I          -0.09161    0.12897  -0.710  0.47749
B.ABefore            -0.07125    0.12500  -0.570  0.56867
Locationm_B:B.ABefore -0.05300    0.13824  -0.383  0.70142
Locationm_C:B.ABefore  0.11672    0.17942   0.651  0.51535
Locationm_D:B.ABefore  0.08178    0.17430   0.469  0.63895
Locationm_E:B.ABefore -0.10282    0.16804  -0.612  0.54062
Locationm_G:B.ABefore  0.22123    0.16071   1.377  0.16863
Locationm_H:B.ABefore  0.06728    0.13028   0.516  0.60557
Locationm_I:B.ABefore  0.06761    0.19177   0.353  0.72442
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Zero-inflation model:
            Estimate Std. Error z value Pr(>|z|)
(Intercept)  1.41784    0.09831  14.422  < 2e-16 ***
Locationm_B -1.44531    0.11772 -12.277  < 2e-16 ***
Locationm_C  0.43287    0.13877   3.119  0.00181 **
Locationm_D  0.02810    0.13382   0.210  0.83369
Locationm_E -0.10487    0.13053  -0.803  0.42172
Locationm_G -0.22935    0.12709  -1.805  0.07114 .
Locationm_H -2.23997    0.12049 -18.591  < 2e-16 ***
Locationm_I  0.34706    0.14243   2.437  0.01482 *
B.ABefore    0.17713    0.06233   2.842  0.00449 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_Softcoral)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Total_Softcoral
               Chisq Df Pr(>Chisq)
Location     377.5135  7     <2e-16 ***
B.A            0.5783  1     0.4470
```

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```
Location:B.A   7.7277  7     0.3572
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_Softcoral, pairwise ~ B.A | Location)
$emmeans
Location = m_A:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    1.71 0.0801 Inf      1.55      1.87
 Before   1.64 0.0968 Inf      1.45      1.83

Location = m_B:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    1.99 0.0473 Inf      1.90      2.08
 Before   1.86 0.0487 Inf      1.77      1.96

Location = m_C:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    1.79 0.0829 Inf      1.63      1.96
 Before   1.84 0.1046 Inf      1.63      2.04

Location = m_D:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    1.67 0.0883 Inf      1.50      1.85
 Before   1.68 0.0908 Inf      1.50      1.86

Location = m_E:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    1.78 0.0805 Inf      1.63      1.94
 Before   1.61 0.0859 Inf      1.44      1.78

Location = m_G:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    1.70 0.0722 Inf      1.56      1.84
 Before   1.85 0.0786 Inf      1.69      2.00

Location = m_H:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    2.34 0.0352 Inf      2.27      2.41
 Before   2.34 0.0347 Inf      2.27      2.41

Location = m_I:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    1.62 0.1038 Inf      1.42      1.82
 Before   1.62 0.1082 Inf      1.40      1.83

Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Location = m_A:
 contrast       estimate     SE  df z.ratio p.value
 After - Before  0.07125 0.1250 Inf   0.570  0.5687

Location = m_B:
 contrast       estimate     SE  df z.ratio p.value
 After - Before  0.12425 0.0678 Inf   1.833  0.0668

Location = m_C:
 contrast       estimate     SE  df z.ratio p.value
 After - Before -0.04547 0.1332 Inf  -0.341  0.7328

Location = m_D:
 contrast       estimate     SE  df z.ratio p.value
 After - Before -0.01053 0.1262 Inf  -0.083  0.9335

Location = m_E:
 contrast       estimate     SE  df z.ratio p.value
```

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```
 After - Before  0.17407 0.1173 Inf   1.483  0.1379

Location = m_G:
 contrast       estimate     SE  df z.ratio p.value
 After - Before -0.14998 0.1065 Inf  -1.408  0.1591

Location = m_H:
 contrast       estimate     SE  df z.ratio p.value
 After - Before  0.00397 0.0494 Inf   0.080  0.9359

Location = m_I:
 contrast       estimate     SE  df z.ratio p.value
 After - Before  0.00364 0.1493 Inf   0.024  0.9806

Results are given on the log (not the response) scale.

>
> mod_Macroalgae <-glmmTMB(Total_Macroalgae ~ Location * B.A + (1|Treatment) + (1|Eord),
> summary(mod_Macroalgae)
 Family: gaussian  ( identity )
Formula:          Total_Macroalgae ~ Location * B.A + (1 | Treatment) + (1 | Eord)
Data: ccover

     AIC      BIC   logLik deviance df.resid
 57682.0  57811.1 -28822.0  57644.0     6575

Random effects:

Conditional model:
 Groups    Name        Variance  Std.Dev.
 Treatment (Intercept) 8.514e-07 9.227e-04
 Eord      (Intercept) 4.110e+01 6.411e+00
 Residual              3.653e+02 1.911e+01
Number of obs: 6594, groups:  Treatment, 3; Eord, 4

Dispersion estimate for gaussian family (sigma^2):  365

Conditional model:
                     Estimate Std. Error z value Pr(>|z|)
(Intercept)            39.560      4.633   8.539  < 2e-16 ***
Locationm_B           -29.980      1.352 -22.182  < 2e-16 ***
Locationm_C            -4.440      1.352  -3.285  0.00102 **
Locationm_D           -12.970      1.352  -9.596  < 2e-16 ***
Locationm_E            -6.971      1.352  -5.158 2.50e-07 ***
Locationm_G            -5.990      1.352  -4.432 9.34e-06 ***
Locationm_H             0.110      1.352   0.081  0.93515
Locationm_I            11.680      1.352   8.642  < 2e-16 ***
B.ABefore             -13.961      6.548  -2.132  0.03301 *
Locationm_B:B.ABefore  11.681      1.887   6.189 6.07e-10 ***
Locationm_C:B.ABefore  26.912      1.847  14.570  < 2e-16 ***
Locationm_D:B.ABefore  20.969      1.898  11.049  < 2e-16 ***
Locationm_E:B.ABefore  21.380      1.891  11.307  < 2e-16 ***
Locationm_G:B.ABefore  28.421      1.878  15.131  < 2e-16 ***
Locationm_H:B.ABefore  14.659      1.898   7.724 1.13e-14 ***
Locationm_I:B.ABefore  19.229      1.898  10.132  < 2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_Macroalgae)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Total_Macroalgae
                Chisq Df Pr(>Chisq)
Location     2698.0249  7     <2e-16 ***
B.A             0.3973  1     0.5285
Location:B.A  333.4552  7     <2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

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```
> emmeans(mod_Macroalgae, pairwise ~ B.A | Location)
$emmeans
Location = m_A:
 B.A    emmean   SE   df lower.CL upper.CL
 After   39.56 4.63 6575   30.478     48.6
 Before  25.60 4.63 6575   16.528     34.7

Location = m_B:
 B.A    emmean   SE   df lower.CL upper.CL
 After    9.58 4.63 6575    0.498     18.7
 Before   7.30 4.63 6575   -1.774     16.4

Location = m_C:
 B.A    emmean   SE   df lower.CL upper.CL
 After   35.12 4.63 6575   26.038     44.2
 Before  48.07 4.61 6575   39.030     57.1

Location = m_D:
 B.A    emmean   SE   df lower.CL upper.CL
 After   26.59 4.63 6575   17.508     35.7
 Before  33.60 4.63 6575   24.516     42.7

Location = m_E:
 B.A    emmean   SE   df lower.CL upper.CL
 After   32.59 4.63 6575   23.507     41.7
 Before  40.01 4.63 6575   30.932     49.1

Location = m_G:
 B.A    emmean   SE   df lower.CL upper.CL
 After   33.57 4.63 6575   24.488     42.7
 Before  48.03 4.63 6575   38.964     57.1

Location = m_H:
 B.A    emmean   SE   df lower.CL upper.CL
 After   39.67 4.63 6575   30.588     48.8
 Before  40.37 4.63 6575   31.286     49.5

Location = m_I:
 B.A    emmean   SE   df lower.CL upper.CL
 After   51.24 4.63 6575   42.158     60.3
 Before  56.51 4.63 6575   47.426     65.6

Confidence level used: 0.95

$contrasts
Location = m_A:
 contrast       estimate   SE   df t.ratio p.value
 After - Before   13.961 6.55 6575   2.132  0.0330

Location = m_B:
 contrast       estimate   SE   df t.ratio p.value
 After - Before    2.280 6.55 6575   0.348  0.7277

Location = m_C:
 contrast       estimate   SE   df t.ratio p.value
 After - Before  -12.952 6.54 6575  -1.981  0.0476

Location = m_D:
 contrast       estimate   SE   df t.ratio p.value
 After - Before   -7.008 6.55 6575  -1.070  0.2848

Location = m_E:
 contrast       estimate   SE   df t.ratio p.value
 After - Before   -7.419 6.55 6575  -1.133  0.2574

Location = m_G:
 contrast       estimate   SE   df t.ratio p.value
```

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```
 After - Before  -14.461 6.55 6575  -2.209  0.0272

Location = m_H:
 contrast       estimate   SE   df t.ratio p.value
 After - Before   -0.698 6.55 6575  -0.107  0.9152

Location = m_I:
 contrast       estimate   SE   df t.ratio p.value
 After - Before   -5.268 6.55 6575  -0.804  0.4214


>
> mod_UnConSed <-glmmTMB(Unconsoildated_sediment ~ Location * B.A + (1|Treatment)
+ (1|Eord), zi=~Location + B.A, family=nbinom1(), data=ccover)
> summary(mod_UnConSed)
 Family: nbinom1  ( log )
Formula:          Unconsoildated_sediment ~ Location * B.A + (1 | Treatment) +      (1 |
Zero inflation:                             ~Location + B.A
Data: ccover

     AIC      BIC   logLik deviance df.resid
 45968.6  46158.9 -22956.3  45912.6     6566

Random effects:

Conditional model:
 Groups    Name        Variance  Std.Dev.
 Treatment (Intercept) 1.087e-09 3.297e-05
 Eord      (Intercept) 4.206e-03 6.485e-02
Number of obs: 6594, groups:  Treatment, 3; Eord, 4

Dispersion parameter for nbinom1 family (): 16.7

Conditional model:
                    Estimate Std. Error z value Pr(>|z|)
(Intercept)          2.96133    0.07331   40.40  < 2e-16 ***
Locationm_B          0.05306    0.07630    0.70 0.486776
Locationm_C          0.27118    0.07063    3.84 0.000123 ***
Locationm_D          0.28783    0.07170    4.01 5.96e-05 ***
Locationm_E          0.16874    0.08112    2.08 0.037504 *
Locationm_G          0.22679    0.07448    3.04 0.002328 **
Locationm_H          0.25724    0.06848    3.76 0.000172 ***
Locationm_I          0.25992    0.06843    3.80 0.000146 ***
B.ABefore            0.11616    0.10005    1.16 0.245636
Locationm_B:B.ABefore -0.53937    0.12763   -4.23 2.38e-05 ***
Locationm_C:B.ABefore -0.20644    0.09629   -2.14 0.032043 *
Locationm_D:B.ABefore -0.11809    0.10015   -1.18 0.238344
Locationm_E:B.ABefore  0.23165    0.10220    2.27 0.023410 *
Locationm_G:B.ABefore -0.29928    0.10560   -2.83 0.004597 **
Locationm_H:B.ABefore -0.56819    0.10900   -5.21 1.86e-07 ***
Locationm_I:B.ABefore -0.50619    0.10216   -4.95 7.25e-07 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Zero-inflation model:
            Estimate Std. Error z value Pr(>|z|)
(Intercept) -0.84376    0.08620  -9.789  < 2e-16 ***
Locationm_B  0.20044    0.11481   1.746  0.08083 .
Locationm_C -0.71656    0.11598  -6.178 6.48e-10 ***
Locationm_D -0.16399    0.11075  -1.481  0.13867
Locationm_E -0.33118    0.11357  -2.916  0.00354 **
Locationm_G  0.10256    0.10811   0.949  0.34281
Locationm_H -1.25005    0.15843  -7.890 3.02e-15 ***
Locationm_I -1.94444    0.21384  -9.093  < 2e-16 ***
B.ABefore    0.39933    0.06418   6.222 4.92e-10 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

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```
> Anova(mod_UnConSed)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Unconsoildated_sediment
               Chisq Df Pr(>Chisq)
Location     118.4198  7     <2e-16 ***
B.A            2.0405  1     0.1532
Location:B.A 101.0918  7     <2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_UnConSed, pairwise ~ B.A | Location)
$emmeans
Location = m_A:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    2.96 0.0733 Inf      2.82      3.11
 Before   3.08 0.0689 Inf      2.94      3.21

Location = m_B:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    3.01 0.0688 Inf      2.88      3.15
 Before   2.59 0.1019 Inf      2.39      2.79

Location = m_C:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    3.23 0.0624 Inf      3.11      3.35
 Before   3.14 0.0624 Inf      3.02      3.26

Location = m_D:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    3.25 0.0636 Inf      3.12      3.37
 Before   3.25 0.0671 Inf      3.12      3.38

Location = m_E:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    3.13 0.0740 Inf      2.98      3.28
 Before   3.48 0.0588 Inf      3.36      3.59

Location = m_G:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    3.19 0.0667 Inf      3.06      3.32
 Before   3.01 0.0724 Inf      2.86      3.15

Location = m_H:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    3.22 0.0599 Inf      3.10      3.34
 Before   2.77 0.0830 Inf      2.60      2.93

Location = m_I:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    3.22 0.0598 Inf      3.10      3.34
 Before   2.83 0.0746 Inf      2.68      2.98

Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Location = m_A:
 contrast       estimate     SE  df z.ratio p.value
 After - Before -0.11616 0.1001 Inf  -1.161  0.2456

Location = m_B:
 contrast       estimate     SE  df z.ratio p.value
 After - Before  0.42320 0.1219 Inf   3.471  0.0005

Location = m_C:
 contrast       estimate     SE  df z.ratio p.value
 After - Before  0.09028 0.0878 Inf   1.028  0.3039
```

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```
Location = m_D:
 contrast       estimate     SE  df z.ratio p.value
 After - Before  0.00193 0.0921 Inf   0.021  0.9833

Location = m_E:
 contrast       estimate     SE  df z.ratio p.value
 After - Before -0.34781 0.0944 Inf  -3.683  0.0002

Location = m_G:
 contrast       estimate     SE  df z.ratio p.value
 After - Before  0.18312 0.0980 Inf   1.869  0.0617

Location = m_H:
 contrast       estimate     SE  df z.ratio p.value
 After - Before  0.45202 0.1019 Inf   4.435  <.0001

Location = m_I:
 contrast       estimate     SE  df z.ratio p.value
 After - Before  0.39002 0.0947 Inf   4.119  <.0001

Results are given on the log (not the response) scale.
```

### B.1.2 Treatment-Level Tests

```
> mod_Acropora <- glmmTMB(Total_Acropora ~ Treatment * B.A, zi=~Treatment + B.A
, family=nbinom1(), data=ccover)
> summary(mod_Acropora)
 Family: nbinom1  ( log )
Formula:          Total_Acropora ~ Treatment * B.A
Zero inflation:                  ~Treatment + B.A
Data: ccover

     AIC      BIC   logLik deviance df.resid
 13889.0  13963.7  -6933.5  13867.0     6583


Dispersion parameter for nbinom1 family (): 2.99

Conditional model:
                              Estimate Std. Error z value Pr(>|z|)
(Intercept)                    2.13930    0.03457   61.88  < 2e-16 ***
TreatmentReference            -0.48185    0.12383   -3.89 9.98e-05 ***
TreatmentRemediation          -0.06341    0.05509   -1.15  0.24965
B.ABefore                     -0.14525    0.05268   -2.76  0.00583 **
TreatmentReference:B.ABefore   0.24652    0.17026    1.45  0.14764
TreatmentRemediation:B.ABefore -0.21998    0.09212   -2.39  0.01695 *
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Zero-inflation model:
                     Estimate Std. Error z value Pr(>|z|)
(Intercept)           0.65831    0.05443  12.096  < 2e-16 ***
TreatmentReference    1.65264    0.10858  15.220  < 2e-16 ***
TreatmentRemediation  0.61493    0.06902   8.910  < 2e-16 ***
B.ABefore             0.29628    0.06460   4.586 4.51e-06 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_Acropora)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Total_Acropora
               Chisq Df Pr(>Chisq)
```

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```
Treatment     22.2161  2  1.499e-05 ***
B.A           21.7389  1  3.124e-06 ***
Treatment:B.A  9.3245  2   0.009445 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_Acropora, pairwise ~ B.A | Treatment)
$emmeans
Treatment = Nearfield:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    2.14 0.0346 Inf      2.07      2.21
 Before   1.99 0.0402 Inf      1.92      2.07

Treatment = Reference:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    1.66 0.1191 Inf      1.42      1.89
 Before   1.76 0.1122 Inf      1.54      1.98

Treatment = Remediation:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    2.08 0.0433 Inf      1.99      2.16
 Before   1.71 0.0627 Inf      1.59      1.83

Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Treatment = Nearfield:
 contrast       estimate     SE  df z.ratio p.value
 After - Before    0.145 0.0527 Inf   2.757  0.0058

Treatment = Reference:
 contrast       estimate     SE  df z.ratio p.value
 After - Before   -0.101 0.1621 Inf  -0.625  0.5322

Treatment = Remediation:
 contrast       estimate     SE  df z.ratio p.value
 After - Before    0.365 0.0759 Inf   4.814  <.0001

Results are given on the log (not the response) scale.

>
> mod_Gravel <-glmmTMB(Gravel ~ Treatment * B.A, zi=~Treatment + B.A, family=nb
inom1(), data=ccover)
> summary(mod_Gravel)
 Family: nbinom1  ( log )
Formula:          Gravel ~ Treatment * B.A
Zero inflation:          ~Treatment + B.A
Data: ccover

     AIC      BIC   logLik deviance df.resid
 18350.6  18425.3  -9164.3  18328.6     6583


Dispersion parameter for nbinom1 family (): 15.1

Conditional model:
                            Estimate Std. Error z value Pr(>|z|)
(Intercept)                  2.49245    0.07085   35.18  < 2e-16 ***
TreatmentReference          -0.57433    0.15423   -3.72 0.000196 ***
TreatmentRemediation         0.00244    0.11286    0.02 0.982750
B.ABefore                   -0.51397    0.20622   -2.49 0.012690 *
TreatmentReference:B.ABefore -2.25958    0.28083   -8.05 8.54e-16 ***
TreatmentRemediation:B.ABefore  1.08798    0.21058    5.17 2.38e-07 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Zero-inflation model:
                     Estimate Std. Error z value Pr(>|z|)
```

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```
(Intercept)           1.59848    0.09093  17.578  < 2e-16 ***
TreatmentReference   -0.91536    0.16351  -5.598 2.17e-08 ***
TreatmentRemediation -0.64347    0.11980  -5.371 7.82e-08 ***
B.ABefore            -0.80015    0.09696  -8.252  < 2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_Gravel)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Gravel
                 Chisq Df Pr(>Chisq)
Treatment     153.3708  2     <2e-16 ***
B.A             0.3017  1     0.5828
Treatment:B.A 227.2154  2     <2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_Gravel, pairwise ~ B.A | Treatment)
$emmeans
Treatment = Nearfield:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After   2.492 0.0708 Inf      2.35     2.631
 Before  1.978 0.1995 Inf      1.59     2.370

Treatment = Reference:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After   1.918 0.1368 Inf      1.65     2.186
 Before -0.855 0.2020 Inf     -1.25    -0.459

Treatment = Remediation:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After   2.495 0.0887 Inf      2.32     2.669
 Before  3.069 0.0328 Inf      3.00     3.133

Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Treatment = Nearfield:
 contrast       estimate     SE  df z.ratio p.value
 After - Before    0.514 0.2062 Inf   2.492  0.0127

Treatment = Reference:
 contrast       estimate     SE  df z.ratio p.value
 After - Before    2.774 0.2129 Inf  13.030  <.0001

Treatment = Remediation:
 contrast       estimate     SE  df z.ratio p.value
 After - Before   -0.574 0.0939 Inf  -6.113  <.0001

Results are given on the log (not the response) scale.

>
> Mod_Dictyopteris <- glmmTMB(Dioptr ~ Treatment * B.A, zi=~Location + B.A, fam
ily=nbinom1(), data=ccover)
> summary(Mod_Dictyopteris)
 Family: nbinom1  ( log )
Formula:          Dioptr ~ Treatment * B.A
Zero inflation:          ~Location + B.A
Data: ccover

     AIC      BIC   logLik deviance df.resid
 12078.2  12186.9  -6023.1  12046.2     6578


Dispersion parameter for nbinom1 family (): 8.14

Conditional model:
                              Estimate Std. Error z value Pr(>|z|)
```

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```
(Intercept)                      -0.6576     0.4578  -1.436    0.151
TreatmentReference                2.8400     0.4639   6.122 9.22e-10 ***
TreatmentRemediation              2.9244     0.4659   6.278 3.44e-10 ***
B.ABefore                         3.2650     0.4611   7.081 1.43e-12 ***
TreatmentReference:B.ABefore     -3.0189     0.4710  -6.410 1.46e-10 ***
TreatmentRemediation:B.ABefore   -2.5257     0.4703  -5.370 7.85e-08 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Zero-inflation model:
            Estimate Std. Error z value Pr(>|z|)
(Intercept)  3.28935    0.15280  21.528  < 2e-16 ***
Locationm_B  3.26604    0.72216   4.523 6.11e-06 ***
Locationm_C -1.78787    0.15527 -11.515  < 2e-16 ***
Locationm_D -0.56373    0.19005  -2.966  0.00301 **
Locationm_E -1.62759    0.15921 -10.223  < 2e-16 ***
Locationm_G -0.46316    0.18896  -2.451  0.01424 *
Locationm_H -1.29741    0.16475  -7.875 3.41e-15 ***
Locationm_I -1.19628    0.16607  -7.203 5.87e-13 ***
B.ABefore   -1.20460    0.09006 -13.376  < 2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(Mod_Dictyopteris)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Dioptr
               Chisq Df Pr(>Chisq)
Treatment     75.868  2  < 2.2e-16 ***
B.A           50.683  1  1.085e-12 ***
Treatment:B.A 45.815  2  1.126e-10 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(Mod_Dictyopteris, pairwise ~ B.A | Treatment)
$emmeans
Treatment = Nearfield:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After  -0.658 0.4578 Inf     -1.55      0.24
 Before  2.607 0.0669 Inf      2.48      2.74

Treatment = Reference:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After   2.182 0.0883 Inf      2.01      2.36
 Before  2.429 0.0658 Inf      2.30      2.56

Treatment = Remediation:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After   2.267 0.1051 Inf      2.06      2.47
 Before  3.006 0.0307 Inf      2.95      3.07

Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Treatment = Nearfield:
 contrast       estimate    SE  df z.ratio p.value
 After - Before   -3.265 0.461 Inf  -7.081  <.0001

Treatment = Reference:
 contrast       estimate    SE  df z.ratio p.value
 After - Before   -0.246 0.109 Inf  -2.257  0.0240

Treatment = Remediation:
 contrast       estimate    SE  df z.ratio p.value
 After - Before   -0.739 0.109 Inf  -6.752  <.0001

Results are given on the log (not the response) scale.

>
```

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```
> mod_Sargassum <-glmmTMB(Sarg ~ Treatment * B.A, zi=~Location + B.A, family=nb
inom1(), data=ccover)
> summary(mod_Sargassum)
 Family: nbinom1  ( log )
Formula:          Sarg ~ Treatment * B.A
Zero inflation:        ~Location + B.A
Data: ccover

     AIC      BIC   logLik deviance df.resid
 21306.9  21415.6 -10637.4  21274.9     6578


Dispersion parameter for nbinom1 family (): 11.8

Conditional model:
                                Estimate Std. Error z value Pr(>|z|)
(Intercept)                      -0.6210     0.3956  -1.570    0.116
TreatmentReference                4.0753     0.3958  10.296   < 2e-16 ***
TreatmentRemediation              3.3387     0.3991   8.366   < 2e-16 ***
B.ABefore                         3.0861     0.4008   7.699 1.37e-14 ***
TreatmentReference:B.ABefore     -3.7301     0.4013  -9.295   < 2e-16 ***
TreatmentRemediation:B.ABefore   -3.2043     0.4061  -7.890 3.01e-15 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Zero-inflation model:
             Estimate Std. Error z value Pr(>|z|)
(Intercept)   2.95102    0.15401  19.162  < 2e-16 ***
Locationm_B   2.20831    0.52480   4.208 2.58e-05 ***
Locationm_C  -2.23020    0.16082 -13.868  < 2e-16 ***
Locationm_D   1.46218    0.38812   3.767 0.000165 ***
Locationm_E  -2.22404    0.16286 -13.657  < 2e-16 ***
Locationm_G  -1.35736    0.19020  -7.136 9.58e-13 ***
Locationm_H  -3.91332    0.17113 -22.868  < 2e-16 ***
Locationm_I  -4.86599    0.20454 -23.790  < 2e-16 ***
B.ABefore    -0.53339    0.08739  -6.104 1.03e-09 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_Sargassum)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Sarg
                Chisq Df Pr(>Chisq)
Treatment      110.89  2  < 2.2e-16 ***
B.A            160.63  1  < 2.2e-16 ***
Treatment:B.A  116.25  2  < 2.2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_Sargassum, pairwise ~ B.A | Treatment)
$emmeans
Treatment = Nearfield:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After  -0.621 0.3956 Inf     -1.40     0.154
 Before  2.465 0.0979 Inf      2.27     2.657

Treatment = Reference:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After   3.454 0.0231 Inf      3.41     3.500
 Before  2.810 0.0386 Inf      2.73     2.886

Treatment = Remediation:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After   2.718 0.0649 Inf      2.59     2.845
 Before  2.599 0.0421 Inf      2.52     2.682

Results are given on the log (not the response) scale.
Confidence level used: 0.95
```

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```
$contrasts
Treatment = Nearfield:
 contrast       estimate     SE  df z.ratio p.value
 After - Before   -3.086 0.4008 Inf  -7.699  <.0001

Treatment = Reference:
 contrast       estimate     SE  df z.ratio p.value
 After - Before    0.644 0.0450 Inf  14.314  <.0001

Treatment = Remediation:
 contrast       estimate     SE  df z.ratio p.value
 After - Before    0.118 0.0767 Inf   1.541  0.1234

Results are given on the log (not the response) scale.


> mod_Turf <-glmmTMB(Turf ~ Treatment * B.A, zi=~Treatment + B.A, family=gaussi
an(), data=ccover)
> summary(mod_Turf)
 Family: gaussian  ( identity )
Formula:          Turf ~ Treatment * B.A
Zero inflation:        ~Treatment + B.A
Data: ccover

     AIC      BIC   logLik deviance df.resid
 59382.1  59456.8 -29680.1  59360.1     6583


Dispersion estimate for gaussian family (sigma^2):  504

Conditional model:
                             Estimate Std. Error z value Pr(>|z|)
(Intercept)                   50.9029     0.6542   77.80  < 2e-16 ***
TreatmentReference           -23.5064     1.0558  -22.26  < 2e-16 ***
TreatmentRemediation          -9.0857     0.9269   -9.80  < 2e-16 ***
B.ABefore                     -1.6212     0.9128   -1.78  0.07572 .
TreatmentReference:B.ABefore   4.3861     1.4846    2.95  0.00313 **
TreatmentRemediation:B.ABefore -0.9356     1.2924   -0.72  0.46909
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Zero-inflation model:
                   Estimate Std. Error z value Pr(>|z|)
(Intercept)         -5.5036     0.3350 -16.429  < 2e-16 ***
TreatmentReference   2.6272     0.3342   7.861 3.80e-15 ***
TreatmentRemediation 2.0670     0.3340   6.189 6.06e-10 ***
B.ABefore            0.4815     0.1500   3.211  0.00132 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_Turf)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Turf
                Chisq Df Pr(>Chisq)
Treatment     829.4739  2  < 2.2e-16 ***
B.A             2.8498  1   0.091383 .
Treatment:B.A  13.6931  2   0.001063 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_Turf, pairwise ~ B.A | Treatment)
$emmeans
Treatment = Nearfield:
 B.A    emmean    SE   df lower.CL upper.CL
 After    50.9 0.654 6583     49.6     52.2
 Before   49.3 0.637 6583     48.0     50.5

Treatment = Reference:
 B.A    emmean    SE   df lower.CL upper.CL
```

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```
 After    27.4 0.829 6583     25.8     29.0
 Before   30.2 0.828 6583     28.5     31.8

Treatment = Remediation:
 B.A    emmean    SE   df lower.CL upper.CL
 After    41.8 0.657 6583     40.5     43.1
 Before   39.3 0.637 6583     38.0     40.5

Confidence level used: 0.95

$contrasts
Treatment = Nearfield:
 contrast       estimate    SE   df t.ratio p.value
 After - Before     1.62 0.913 6583   1.776  0.0758

Treatment = Reference:
 contrast       estimate    SE   df t.ratio p.value
 After - Before    -2.76 1.171 6583  -2.361  0.0183

Treatment = Remediation:
 contrast       estimate    SE   df t.ratio p.value
 After - Before     2.56 0.915 6583   2.794  0.0052


>
> mod_Hardcoral <-glmmTMB(Total_hardcoral ~ Treatment * B.A , zi=~Treatment + B
.A, family=nbinom1(), data=ccover)
> summary(mod_Hardcoral)
 Family: nbinom1  ( log )
Formula:          Total_hardcoral ~ Treatment * B.A
Zero inflation:                     ~Location + B.A
Data: ccover

     AIC      BIC   logLik deviance df.resid
 24139.0  24247.7 -12053.5  24107.0     6578


Dispersion parameter for nbinom1 family (): 2.74

Conditional model:
                               Estimate Std. Error z value Pr(>|z|)
(Intercept)                    2.125708   0.027411   77.55  < 2e-16 ***
TreatmentReference            -0.148266   0.054163   -2.74  0.00619 **
TreatmentRemediation          -0.065827   0.043030   -1.53  0.12607
B.ABefore                      0.007588   0.037328    0.20  0.83891
TreatmentReference:B.ABefore   0.116920   0.070031    1.67  0.09501 .
TreatmentRemediation:B.ABefore -0.146305   0.061289   -2.39  0.01698 *
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Zero-inflation model:
            Estimate Std. Error z value Pr(>|z|)
(Intercept) -0.04668    0.07739  -0.603  0.54635
Locationm_B -0.29213    0.10297  -2.837  0.00455 **
Locationm_C  1.33586    0.10822  12.343  < 2e-16 ***
Locationm_D  0.49753    0.10292   4.834 1.34e-06 ***
Locationm_E  0.94636    0.10624   8.908  < 2e-16 ***
Locationm_G -0.10499    0.10158  -1.034  0.30135
Locationm_H -0.11210    0.10332  -1.085  0.27792
Locationm_I  1.63957    0.11823  13.868  < 2e-16 ***
B.ABefore   -0.15929    0.05407  -2.946  0.00322 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_Hardcoral)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Total_hardcoral
               Chisq Df Pr(>Chisq)
```

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```
Treatment     19.9626  2  4.626e-05 ***
B.A            0.2181  1   0.640464
Treatment:B.A 12.3695  2   0.002061 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_Hardcoral, pairwise ~ B.A | Treatment)
$emmeans
Treatment = Nearfield:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    2.13 0.0274 Inf      2.07      2.18
 Before   2.13 0.0257 Inf      2.08      2.18

Treatment = Reference:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    1.98 0.0469 Inf      1.89      2.07
 Before   2.10 0.0367 Inf      2.03      2.17

Treatment = Remediation:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    2.06 0.0334 Inf      1.99      2.13
 Before   1.92 0.0358 Inf      1.85      1.99

Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Treatment = Nearfield:
 contrast       estimate     SE  df z.ratio p.value
 After - Before -0.00759 0.0373 Inf  -0.203  0.8389

Treatment = Reference:
 contrast       estimate     SE  df z.ratio p.value
 After - Before -0.12451 0.0593 Inf  -2.098  0.0359

Treatment = Remediation:
 contrast       estimate     SE  df z.ratio p.value
 After - Before  0.13872 0.0487 Inf   2.848  0.0044

Results are given on the log (not the response) scale.

>
> mod_Softcoral <-glmmTMB(Total_Softcoral ~ Treatment * B.A, zi=~Location + B.A
, family=nbinom1(), data=ccover)
> summary(mod_Softcoral)
 Family: nbinom1  ( log )
Formula:          Total_Softcoral ~ Treatment * B.A
Zero inflation:                   ~Location + B.A
Data: ccover

     AIC      BIC   logLik deviance df.resid
 16316.0  16424.7  -8142.0  16284.0     6578


Dispersion parameter for nbinom1 family (): 1.96

Conditional model:
                              Estimate Std. Error z value Pr(>|z|)
(Intercept)                    1.86047    0.03621   51.37  < 2e-16 ***
TreatmentReference             0.37994    0.04778    7.95 1.83e-15 ***
TreatmentRemediation          -0.08703    0.05990   -1.45    0.146
B.ABefore                     -0.02531    0.05209   -0.49    0.627
TreatmentReference:B.ABefore   0.03339    0.06810    0.49    0.624
TreatmentRemediation:B.ABefore -0.06508    0.09049   -0.72    0.472
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Zero-inflation model:
            Estimate Std. Error z value Pr(>|z|)
```

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```
(Intercept)  1.41760    0.09795  14.473  < 2e-16 ***
Locationm_B -1.46800    0.11796 -12.445  < 2e-16 ***
Locationm_C  0.41260    0.13834   2.982  0.00286 **
Locationm_D  0.04616    0.13296   0.347  0.72847
Locationm_E -0.10827    0.12976  -0.834  0.40408
Locationm_G -0.22515    0.12659  -1.779  0.07532 .
Locationm_H -2.24895    0.12051 -18.663  < 2e-16 ***
Locationm_I  0.40315    0.14093   2.861  0.00423 **
B.ABefore    0.17597    0.06250   2.816  0.00487 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_Softcoral)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Total_Softcoral
                Chisq Df Pr(>Chisq)
Treatment     207.7719  2     <2e-16 ***
B.A             0.4299  1     0.5120
Treatment:B.A   1.3197  2     0.5169
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_Softcoral, pairwise ~ B.A | Treatment)
$emmeans
Treatment = Nearfield:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    1.86 0.0362 Inf      1.79      1.93
 Before   1.84 0.0378 Inf      1.76      1.91

Treatment = Reference:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    2.24 0.0314 Inf      2.18      2.30
 Before   2.25 0.0309 Inf      2.19      2.31

Treatment = Remediation:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    1.77 0.0480 Inf      1.68      1.87
 Before   1.68 0.0570 Inf      1.57      1.79

Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Treatment = Nearfield:
 contrast       estimate     SE  df z.ratio p.value
 After - Before  0.02531 0.0521 Inf   0.486  0.6271

Treatment = Reference:
 contrast       estimate     SE  df z.ratio p.value
 After - Before -0.00808 0.0439 Inf  -0.184  0.8539

Treatment = Remediation:
 contrast       estimate     SE  df z.ratio p.value
 After - Before  0.09039 0.0742 Inf   1.218  0.2232

Results are given on the log (not the response) scale.

>
> mod_Macroalgae <-glmmTMB(Total_Macroalgae ~ Treatment * B.A, zi=~Location + B
.A, family=gaussian(), data=ccover)
> summary(mod_Macroalgae)
 Family: gaussian  ( identity )
Formula:          Total_Macroalgae ~ Treatment * B.A
Zero inflation:                     ~Location + B.A
Data: ccover

     AIC      BIC   logLik deviance df.resid
 55640.5  55749.2 -27804.3  55608.5     6578
```

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```
Dispersion estimate for gaussian family (sigma^2):  436

Conditional model:
                              Estimate Std. Error z value Pr(>|z|)
(Intercept)                    28.3230     0.6750   41.96  < 2e-16 ***
TreatmentReference             17.1320     1.0002   17.13  < 2e-16 ***
TreatmentRemediation            9.8599     0.9211   10.70  < 2e-16 ***
B.ABefore                       7.8449     0.9373    8.37  < 2e-16 ***
TreatmentReference:B.ABefore   -4.4734     1.4066   -3.18  0.00147 **
TreatmentRemediation:B.ABefore -1.7190     1.2835   -1.34  0.18047
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Zero-inflation model:
            Estimate Std. Error z value Pr(>|z|)
(Intercept) -1.62799    0.10454 -15.573  < 2e-16 ***
Locationm_B  1.31107    0.11374  11.527  < 2e-16 ***
Locationm_C -1.29196    0.16645  -7.762 8.37e-15 ***
Locationm_D -1.46628    0.19220  -7.629 2.37e-14 ***
Locationm_E -1.72485    0.20415  -8.449  < 2e-16 ***
Locationm_G -3.19226    0.50455  -6.327 2.50e-10 ***
Locationm_H -7.07588    6.17536  -1.146 0.251868
Locationm_I -3.43229    0.44008  -7.799 6.23e-15 ***
B.ABefore    0.37204    0.09664   3.850 0.000118 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_Macroalgae)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Total_Macroalgae
                Chisq Df Pr(>Chisq)
Treatment     465.100  2  < 2.2e-16 ***
B.A           118.918  1  < 2.2e-16 ***
Treatment:B.A  10.171  2   0.006186 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_Macroalgae, pairwise ~ B.A | Treatment)
$emmeans
Treatment = Nearfield:
 B.A    emmean    SE   df lower.CL upper.CL
 After    28.3 0.675 6578     27.0     29.6
 Before   36.2 0.650 6578     34.9     37.4

Treatment = Reference:
 B.A    emmean    SE   df lower.CL upper.CL
 After    45.5 0.738 6578     44.0     46.9
 Before   48.8 0.745 6578     47.4     50.3

Treatment = Remediation:
 B.A    emmean    SE   df lower.CL upper.CL
 After    38.2 0.627 6578     37.0     39.4
 Before   44.3 0.613 6578     43.1     45.5

Confidence level used: 0.95

$contrasts
Treatment = Nearfield:
 contrast       estimate    SE   df t.ratio p.value
 After - Before    -7.84 0.937 6578  -8.369  <.0001

Treatment = Reference:
 contrast       estimate    SE   df t.ratio p.value
 After - Before    -3.37 1.049 6578  -3.214  0.0013

Treatment = Remediation:
 contrast       estimate    SE   df t.ratio p.value
 After - Before    -6.13 0.877 6578  -6.983  <.0001
```

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```
>
mod_Unconsolidated <-glmmTMB(Unconsolidated_sediment ~ Treatment * B.A, zi=~Tre
atment + B.A, family=nbinom1(), data=ccover)
> summary(mod_Unconsolidated)
 Family: nbinom1  ( log )
Formula:          Unconsolidated_sediment ~ Treatment * B.A
Zero inflation:                            ~Location + B.A
Data: ccover

     AIC      BIC   logLik deviance df.resid
 46100.6  46209.3 -23034.3  46068.6     6578


Dispersion parameter for nbinom1 family (): 17.2

Conditional model:
                              Estimate Std. Error z value Pr(>|z|)
(Intercept)                    3.16585    0.02814  112.49  < 2e-16 ***
TreatmentReference             0.05505    0.03867    1.42 0.154566
TreatmentRemediation          -0.03339    0.04035   -0.83 0.408050
B.ABefore                     -0.15627    0.04413   -3.54 0.000398 ***
TreatmentReference:B.ABefore  -0.24083    0.06742   -3.57 0.000354 ***
TreatmentRemediation:B.ABefore  0.27833    0.05819    4.78 1.73e-06 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Zero-inflation model:
            Estimate Std. Error z value Pr(>|z|)
(Intercept) -0.81634    0.08290  -9.848  < 2e-16 ***
Locationm_B  0.26466    0.10525   2.515 0.011915 *
Locationm_C -0.75532    0.11341  -6.660 2.73e-11 ***
Locationm_D -0.24687    0.11052  -2.234 0.025504 *
Locationm_E -0.38258    0.11121  -3.440 0.000582 ***
Locationm_G  0.05563    0.10601   0.525 0.599775
Locationm_H -1.26152    0.14618  -8.630  < 2e-16 ***
Locationm_I -1.97485    0.20060  -9.845  < 2e-16 ***
B.ABefore    0.42435    0.06253   6.786 1.15e-11 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_Unconsolidated)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Unconsolidated_sediment
               Chisq Df Pr(>Chisq)
Treatment     21.629  2  2.011e-05 ***
B.A           12.833  1  0.0003405 ***
Treatment:B.A 68.732  2  1.189e-15 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_Unconsolidated, pairwise ~ B.A | Treatment)
$emmeans
Treatment = Nearfield:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    3.17 0.0281 Inf      3.11      3.22
 Before   3.01 0.0349 Inf      2.94      3.08

Treatment = Reference:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    3.22 0.0279 Inf      3.17      3.28
 Before   2.82 0.0444 Inf      2.74      2.91

Treatment = Remediation:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    3.13 0.0299 Inf      3.07      3.19
 Before   3.25 0.0250 Inf      3.21      3.30
```

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```
Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Treatment = Nearfield:
 contrast       estimate     SE  df z.ratio p.value
 After - Before    0.156 0.0441 Inf   3.542  0.0004

Treatment = Reference:
 contrast       estimate     SE  df z.ratio p.value
 After - Before    0.397 0.0517 Inf   7.685  <.0001

Treatment = Remediation:
 contrast       estimate     SE  df z.ratio p.value
 After - Before   -0.122 0.0383 Inf  -3.189  0.0014

Results are given on the log (not the response) scale.

.
Mod_Bleach_HC <- glmmTMB(Total_Bleached_Hardcoral ~ Treatment * B.A, zi=~Treatm
ent + B.A, family=nbinom2(), data=ccover)
> summary(Mod_Bleach_HC)
 Family: nbinom2  ( log )
Formula:          Total_Bleached_Hardcoral ~ Treatment * B.A
Zero inflation:                             ~Treatment + B.A
Data: ccover

     AIC      BIC   logLik deviance df.resid
  6652.0   6726.8  -3315.0   6630.0     6583


Dispersion parameter for nbinom2 family (): 11.4

Conditional model:
                             Estimate Std. Error z value Pr(>|z|)
(Intercept)                   1.77348    0.07690  23.063   <2e-16 ***
TreatmentReference           -0.13623    0.13664  -0.997    0.319
TreatmentRemediation         -0.06759    0.10500  -0.644    0.520
B.ABefore                     0.00579    0.08414   0.069    0.945
TreatmentReference:B.ABefore -0.06694    0.15238  -0.439    0.660
TreatmentRemediation:B.ABefore -0.10936    0.11816  -0.926    0.355
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Zero-inflation model:
                  Estimate Std. Error z value Pr(>|z|)
(Intercept)        3.01581    0.10417  28.951  < 2e-16 ***
TreatmentReference 0.47055    0.11875   3.963 7.41e-05 ***
TreatmentRemediation  0.26477    0.09701   2.729  0.00635 **
B.ABefore         -1.44836    0.10474 -13.829  < 2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(Mod_Bleach_HC)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Total_Bleached_Hardcoral
               Chisq Df Pr(>Chisq)
Treatment     15.1605  2  0.0005104 ***
B.A            0.9309  1  0.3346201
Treatment:B.A  0.8634  2  0.6493988
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(Mod_Bleach_HC, pairwise ~ B.A | Treatment)
$emmeans
Treatment = Nearfield:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    1.77 0.0769 Inf      1.62      1.92
 Before   1.78 0.0342 Inf      1.71      1.85
```

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```
Treatment = Reference:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    1.64 0.1130 Inf      1.42      1.86
 Before   1.58 0.0582 Inf      1.46      1.69

Treatment = Remediation:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    1.71 0.0715 Inf      1.57      1.85
 Before   1.60 0.0421 Inf      1.52      1.68

Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Treatment = Nearfield:
 contrast       estimate     SE  df z.ratio p.value
 After - Before -0.00579 0.0841 Inf  -0.069  0.9451

Treatment = Reference:
 contrast       estimate     SE  df z.ratio p.value
 After - Before  0.06115 0.1271 Inf   0.481  0.6303

Treatment = Remediation:
 contrast       estimate     SE  df z.ratio p.value
 After - Before  0.10357 0.0830 Inf   1.248  0.2119

Results are given on the log (not the response) scale.

> Mod_Bleach_SC <- glmmTMB(Total_Bleached_Softcoral ~ Treatment * B.A , zi=~Tre
atment + B.A, family=nbinom2(), data=ccover)
> summary(Mod_Bleach_SC)
 Family: nbinom2  ( log )
Formula:          Total_Bleached_Softcoral ~ Treatment * B.A
Zero inflation:                             ~Treatment + B.A
Data: ccover

     AIC      BIC   logLik deviance df.resid
   658.2    732.9   -318.1    636.2     6583


Dispersion parameter for nbinom2 family ():  216

Conditional model:
                              Estimate Std. Error z value Pr(>|z|)
(Intercept)                    1.37674    0.36363   3.786 0.000153 ***
TreatmentReference             0.92576    0.42963   2.155 0.031181 *
TreatmentRemediation         -14.68222  651.57814  -0.023 0.982023
B.ABefore                     -0.01525    0.42320  -0.036 0.971260
TreatmentReference:B.ABefore  -0.74320    0.49162  -1.512 0.130605
TreatmentRemediation:B.ABefore 14.77980  651.57819   0.023 0.981903
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Zero-inflation model:
                  Estimate Std. Error z value Pr(>|z|)
(Intercept)         7.1156     0.5903  12.054  < 2e-16 ***
TreatmentReference -1.5484     0.4107  -3.770 0.000163 ***
TreatmentRemediation -0.3734     0.4710  -0.793 0.427954
B.ABefore           -1.9615     0.5361  -3.659 0.000253 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(Mod_Bleach_SC)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Total_Bleached_Softcoral
             Chisq Df Pr(>Chisq)
Treatment   3.0271  2   0.220125
```

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```
B.A           6.8997  1   0.008621 **
Treatment:B.A 2.2858  2   0.318886
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(Mod_Bleach_SC, pairwise ~ B.A | Treatment)
$emmeans
Treatment = Nearfield:
 B.A    emmean      SE  df asymp.LCL asymp.UCL
 After    1.38   0.364 Inf     0.664      2.09
 Before   1.36   0.217 Inf     0.937      1.79

Treatment = Reference:
 B.A    emmean      SE  df asymp.LCL asymp.UCL
 After    2.30   0.229 Inf     1.854      2.75
 Before   1.54   0.101 Inf     1.345      1.74

Treatment = Remediation:
 B.A    emmean      SE  df asymp.LCL asymp.UCL
 After  -13.31 651.578 Inf -1290.375   1263.76
 Before   1.46   0.150 Inf     1.164      1.75

Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Treatment = Nearfield:
 contrast       estimate      SE  df z.ratio p.value
 After - Before   0.0152   0.423 Inf   0.036  0.9713

Treatment = Reference:
 contrast       estimate      SE  df z.ratio p.value
 After - Before   0.7584   0.250 Inf   3.030  0.0024

Treatment = Remediation:
 contrast       estimate      SE  df z.ratio p.value
 After - Before -14.7646 651.578 Inf  -0.023  0.9819

Results are given on the log (not the response) scale.
```

```
> Mod_Bleach_HC <- glmmTMB(Total_Bleached_Hardcoral ~ Treatment * B.A + (1|Eord
), zi=~Treatment + B.A, family=nbinom2(), data=ccover)
> summary(Mod_Bleach_HC)
 Family: nbinom2  ( log )
Formula:          Total_Bleached_Hardcoral ~ Treatment * B.A + (1 | Eord)
Zero inflation:                             ~Treatment + B.A
Data: ccover

     AIC      BIC   logLik deviance df.resid
  6035.1   6116.6  -3005.5   6011.1     6582

Random effects:

Conditional model:
 Groups Name        Variance Std.Dev.
 Eord   (Intercept) 3.65     1.911
Number of obs: 6594, groups:  Eord, 4

Dispersion parameter for nbinom2 family (): 10.4

Conditional model:
                           Estimate Std. Error z value Pr(>|z|)
(Intercept)                 1.56067    1.35902   1.148    0.251
TreatmentReference         -0.17232    0.14166  -1.216    0.224
```

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```
TreatmentRemediation           -0.04596    0.10878  -0.422    0.673
B.ABefore                      -2.46857    1.92202  -1.284    0.199
TreatmentReference:B.ABefore   -0.03181    0.15720  -0.202    0.840
TreatmentRemediation:B.ABefore -0.11352    0.12184  -0.932    0.351

Zero-inflation model:
                     Estimate Std. Error z value Pr(>|z|)
(Intercept)            2.9690     0.1075  27.612  < 2e-16 ***
TreatmentReference     0.5418     0.1272   4.259 2.05e-05 ***
TreatmentRemediation   0.2945     0.1052   2.800  0.00511 **
B.ABefore             -2.3016     0.1095 -21.013  < 2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(Mod_Bleach_HC)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Total_Bleached_Hardcoral
                Chisq Df Pr(>Chisq)
Treatment     13.7174  2    0.00105 **
B.A            1.7450  1    0.18650
Treatment:B.A  0.8946  2    0.63934
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(Mod_Bleach_HC, pairwise ~ B.A | Treatment)
$emmeans
Treatment = Nearfield:
 B.A    emmean   SE  df asymp.LCL asymp.UCL
 After   1.561 1.36 Inf     -1.10      4.22
 Before -0.908 1.36 Inf     -3.57      1.76

Treatment = Reference:
 B.A    emmean   SE  df asymp.LCL asymp.UCL
 After   1.388 1.36 Inf     -1.28      4.06
 Before -1.112 1.36 Inf     -3.78      1.55

Treatment = Remediation:
 B.A    emmean   SE  df asymp.LCL asymp.UCL
 After   1.515 1.36 Inf     -1.15      4.18
 Before -1.067 1.36 Inf     -3.73      1.60

Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Treatment = Nearfield:
 contrast       estimate   SE  df z.ratio p.value
 After - Before     2.47 1.92 Inf   1.284  0.1990

Treatment = Reference:
 contrast       estimate   SE  df z.ratio p.value
 After - Before     2.50 1.93 Inf   1.298  0.1942

Treatment = Remediation:
 contrast       estimate   SE  df z.ratio p.value
 After - Before     2.58 1.92 Inf   1.344  0.1789

Results are given on the log (not the response) scale.

>
> Mod_Bleach_SC <- glmmTMB(Total_Bleached_Softcoral ~ Treatment * B.A
+ (1|Eord), zi=~Treatment + B.A, family=nbinom2(), data=ccover)
> summary(Mod_Bleach_SC)
 Family: nbinom2  ( log )
Formula:          Total_Bleached_Softcoral ~ Treatment * B.A + (1 | Eord)
Zero inflation:                             ~Treatment + B.A
Data: ccover

     AIC      BIC   logLik deviance df.resid
```

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```
   618.8    700.3   -297.4    594.8     6582

Random effects:

Conditional model:
 Groups Name        Variance Std.Dev.
 Eord   (Intercept) 18.64    4.317
Number of obs: 6594, groups:  Eord, 4

Dispersion parameter for nbinom2 family (): 80.6

Conditional model:
                             Estimate Std. Error z value Pr(>|z|)
(Intercept)                   -2.5160     4.3874  -0.574   0.5663
TreatmentReference             0.9226     0.4396   2.099   0.0358 *
TreatmentRemediation         -18.9478  5614.9236  -0.003   0.9973
B.ABefore                     -0.6144     5.1065  -0.120   0.9042
TreatmentReference:B.ABefore  -0.7384     0.5023  -1.470   0.1416
TreatmentRemediation:B.ABefore 19.0465  5614.9236   0.003   0.9973
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Zero-inflation model:
                  Estimate Std. Error z value Pr(>|z|)
(Intercept)         6.4791     0.6058  10.696  < 2e-16 ***
TreatmentReference -1.5543     0.4131  -3.762 0.000168 ***
TreatmentRemediation -0.3847     0.4726  -0.814 0.415561
B.ABefore           -2.0333     0.5523  -3.681 0.000232 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(Mod_Bleach_SC)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Total_Bleached_Softcoral
              Chisq Df Pr(>Chisq)
Treatment     2.8995  2     0.2346
B.A           0.0542  1     0.8159
Treatment:B.A 2.1608  2     0.3395
> emmeans(Mod_Bleach_SC, pairwise ~ B.A | Treatment)
$emmeans
Treatment = Nearfield:
 B.A    emmean      SE  df asymp.LCL asymp.UCL
 After   -2.52    4.39 Inf     -11.1      6.08
 Before  -3.13    4.11 Inf     -11.2      4.92

Treatment = Reference:
 B.A    emmean      SE  df asymp.LCL asymp.UCL
 After   -1.59    4.37 Inf     -10.2      6.98
 Before  -2.95    4.10 Inf     -11.0      5.09

Treatment = Remediation:
 B.A    emmean      SE  df asymp.LCL asymp.UCL
 After  -21.46 5614.93 Inf  -11026.5  10983.59
 Before  -3.03    4.10 Inf     -11.1      5.01

Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Treatment = Nearfield:
 contrast       estimate      SE  df z.ratio p.value
 After - Before    0.614    5.11 Inf   0.120  0.9042

Treatment = Reference:
 contrast       estimate      SE  df z.ratio p.value
 After - Before    1.353    5.09 Inf   0.266  0.7905

Treatment = Remediation:
```

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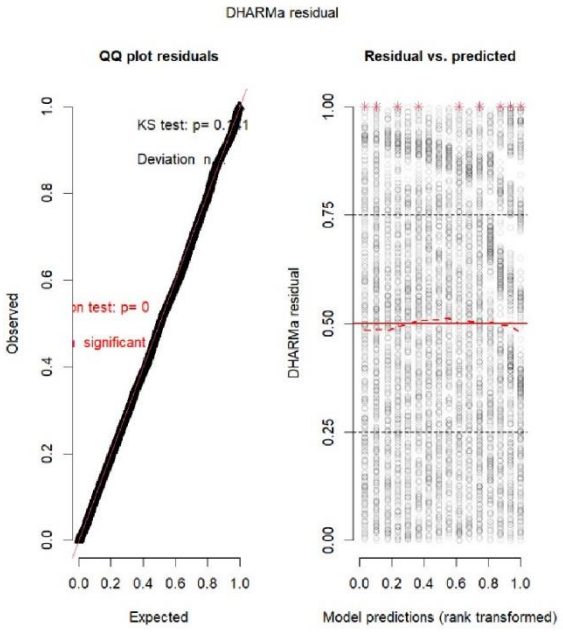
```
 contrast       estimate      SE  df z.ratio p.value
 After - Before  -18.432 5614.93 Inf  -0.003  0.9974

Results are given on the log (not the response) scale.
```

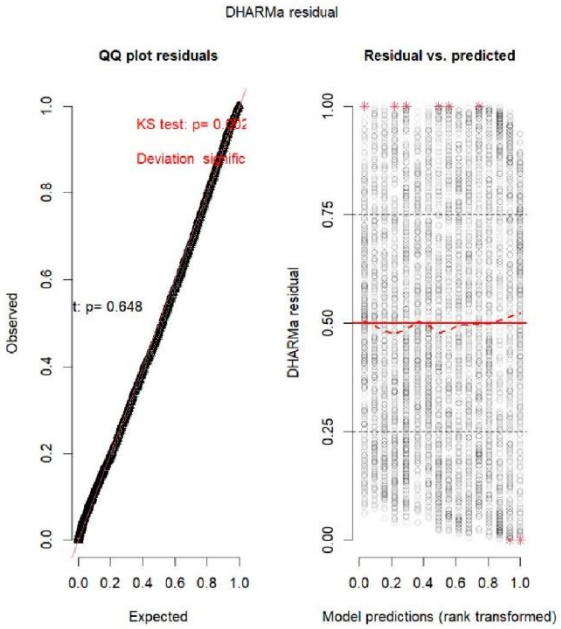
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### B.1.3 Benthic Cover Residual Plots

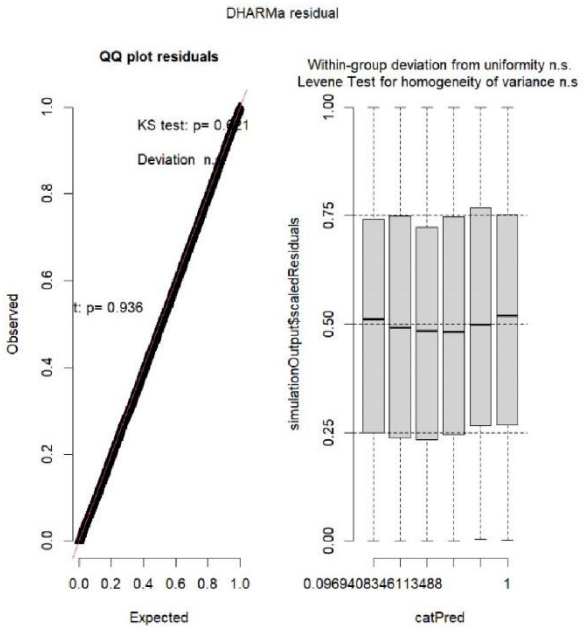
Soft Coral



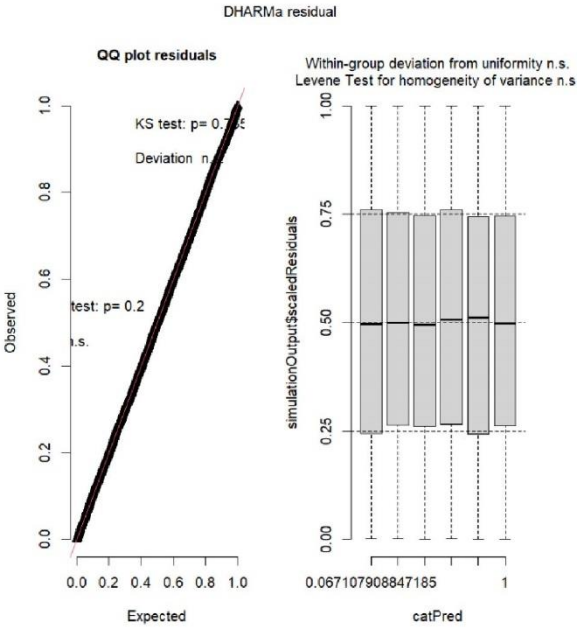

Turf




Bleached Hard Coral

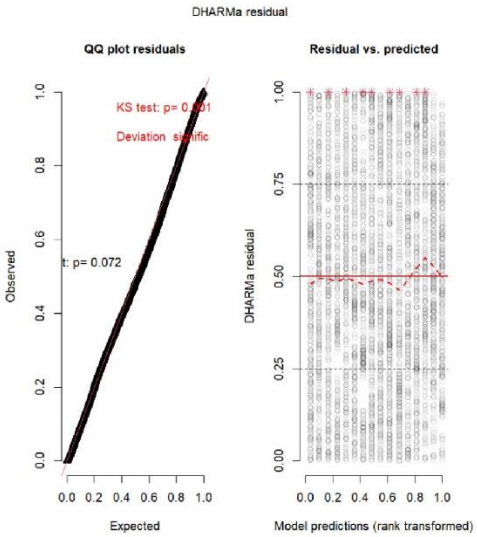



Bleached Soft Coral

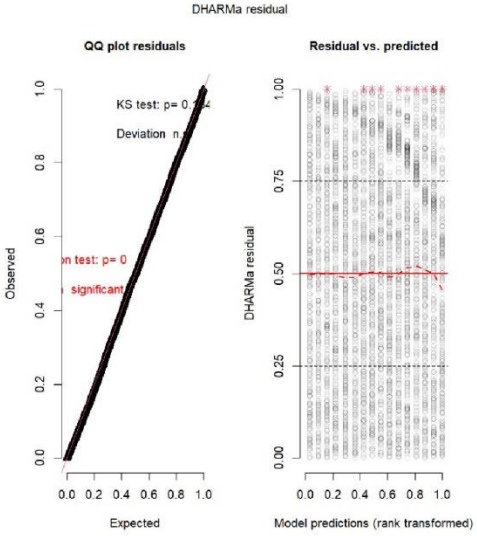



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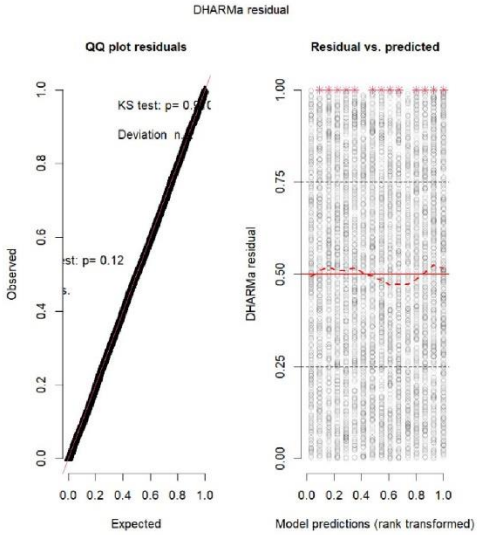
## Unconsolidated Material



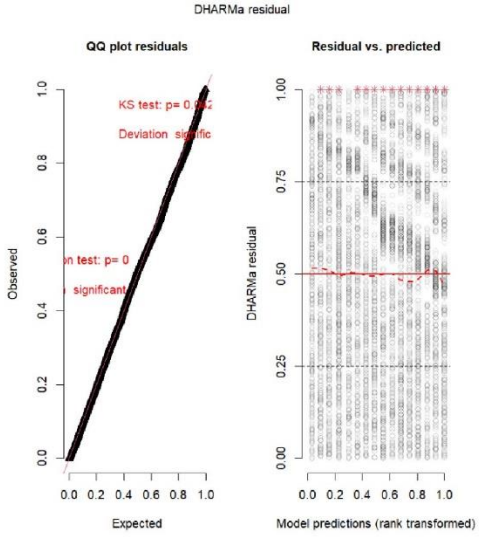

## Acropora



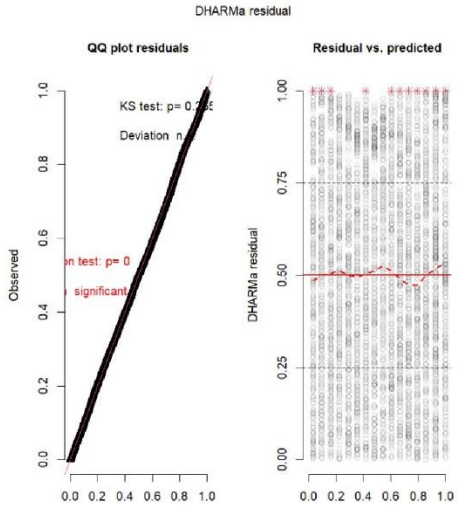

## Dictyopteris



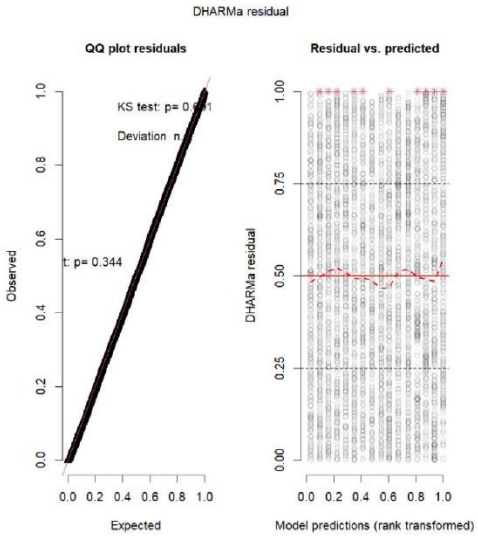

## Hard Coral




## Gravel




## Sargassum




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## B.1.4 Multivariate Tests of Benthic Cover

# PERMANOVA
## Permutational MANOVA

*Resemblance worksheet*
Name: Resem3
Data type: Similarity
Selection: All
Transform: Fourth root
Resemblance: S17 Bray-Curtis similarity

Sums of squares type: Type III (partial)
Fixed effects sum to zero for mixed terms
Permutation method: Permutation of residuals under a reduced model
Number of permutations: 999

*Factors*

| Name | Abbrev. | Type | Levels |
|---|---|---|---|
| B.A | B. | Fixed | 2 |
| Location | Lo | Random | 8 |
| Treatment | Tr | Fixed | 4 |

*PERMANOVA table of results*

| Source | df | SS | MS | Pseudo-F | P(perm) | Unique perms |
|---|---|---|---|---|---|---|
| B. | 1 | 2610.2 | 2610.2 | 15.111 | 0.002 | 998 |
| Tr | 3 | 5432.9 | 1811 | 2.8559 | 0.006 | 970 |
| Lo(Tr) | 5 | 3684.7 | 736.93 | 2.4037 | 0.003 | 999 |
| B.xTr** | 2 | 886.08 | 443.04 | 2.5732 | 0.026 | 999 |
| B.xLo(Tr) | 5 | 860.07 | 172.01 | 0.56107 | 0.964 | 997 |
| Res | 15 | 4598.7 | 306.58 | | | |
| Total | 31 | 18131 | | | | |

** Term has one or more empty cells

*Details of the expected mean squares (EMS) for the model*

| Source | EMS |
|---|---|
| B. | 1*V(Res) + 1.9091*V(B.xLo(Tr)) + 14.727*S(B.) |
| Tr | 1*V(Res) + 2.8921*V(Lo(Tr)) + 7.0602*S(Tr) |
| Lo(Tr) | 1*V(Res) + 3.8*V(Lo(Tr)) |
| B.xTr | 1*V(Res) + 1.9057*V(B.xLo(Tr)) + 4.9811*S(B.xTr) |
| B.xLo(Tr) | 1*V(Res) + 1.9*V(B.xLo(Tr)) |
| Res | 1*V(Res) |

*Construction of Pseudo-F ratio(s) from mean squares*

| Source | Numerator | Denominator | Num.df | Den.df |
|---|---|---|---|---|
| B. | 0.0047847*Res + 1*B. | 1.0048*B.xLo(Tr) | 1 | 5 |
| Tr | 1*Tr | 0.76108*Lo(Tr) + 0.23892*Res | 3 | 6.36 |
| Lo(Tr) | 1*Lo(Tr) | 1*Res | 5 | 15 |
| B.xTr | 0.0029791*Res + 1*B.xTr | 1.003*B.xLo(Tr) | 2.01 | 5 |
| B.xLo(Tr) | 1*B.xLo(Tr) | 1*Res | 5 | 15 |

*Estimates of components of variation*

| Source | Estimate | Sq.root |
|---|---|---|
| S(B.) | 165.6 | 12.869 |
| S(Tr) | 166.69 | 12.911 |
| V(Lo(Tr)) | 113.25 | 10.642 |
| S(B.xTr) | 54.491 | 7.3818 |
| V(B.xLo(Tr)) | -70.826 | -8.4158 |
| V(Res) | 306.58 | 17.51 |

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## B.2 Temporal Sediment Contamination

```
> mod_TBT <- glmmTMB(Tributyltin ~  Eord*Location, family=tweedie(), data=conta
ms)
> summary(mod_TBT)
 Family: tweedie  ( log )
Formula:          Tributyltin ~ Eord * Location
Data: contams

     AIC      BIC   logLik deviance df.resid
   315.5    370.8   -139.7    279.5      142


Dispersion parameter for tweedie family (): 1.03

Conditional model:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)      5.594044   0.390167  14.338  < 2e-16 ***
Eord            -0.007534   0.090713  -0.083    0.934
LocationmB      -6.980492   0.551773 -12.651  < 2e-16 ***
LocationmC      -0.766862   0.551793  -1.390    0.165
LocationmD      -6.980369   0.551785 -12.651  < 2e-16 ***
LocationmE      -5.694443   0.551788 -10.320  < 2e-16 ***
LocationmG      -6.980473   0.551774 -12.651  < 2e-16 ***
LocationmH      -6.980184   0.551805 -12.650  < 2e-16 ***
LocationmI      -6.980349   0.551788 -12.650  < 2e-16 ***
Eord:LocationmB  0.007567   0.128288   0.059    0.953
Eord:LocationmC -1.028062   0.128288  -8.014 1.11e-15 ***
Eord:LocationmD  0.007536   0.128288   0.059    0.953
Eord:LocationmE -0.206785   0.128288  -1.612    0.107
Eord:LocationmG  0.007561   0.128288   0.059    0.953
Eord:LocationmH  0.007506   0.128291   0.059    0.953
Eord:LocationmI  0.007536   0.128289   0.059    0.953
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_TBT)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Tributyltin
               Chisq Df Pr(>Chisq)
Eord          24.017  1  9.546e-07 ***
Location     829.255  7  < 2.2e-16 ***
Eord:Location 111.899  7  < 2.2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_TBT, pairwise ~ Eord | Location)
$emmeans
Location = mA:
 Eord emmean    SE  df asymp.LCL asymp.UCL
    1  5.587 0.321 Inf     4.958     6.215
    6  5.549 0.321 Inf     4.920     6.177

Location = mB:
 Eord emmean    SE  df asymp.LCL asymp.UCL
    1 -1.386 0.321 Inf    -2.015    -0.758
    6 -1.386 0.321 Inf    -2.015    -0.758

Location = mC:
 Eord emmean    SE  df asymp.LCL asymp.UCL
    1  3.792 0.321 Inf     3.163     4.420
    6 -1.386 0.321 Inf    -2.015    -0.758

Location = mD:
 Eord emmean    SE  df asymp.LCL asymp.UCL
    1 -1.386 0.321 Inf    -2.015    -0.758
    6 -1.386 0.321 Inf    -2.015    -0.758

Location = mE:
```

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```
 Eord emmean    SE  df asymp.LCL asymp.UCL
    1 -0.315 0.321 Inf    -0.943     0.314
    6 -1.386 0.321 Inf    -2.015    -0.758

Location = mG:
 Eord emmean    SE  df asymp.LCL asymp.UCL
    1 -1.386 0.321 Inf    -2.015    -0.758
    6 -1.386 0.321 Inf    -2.015    -0.758

Location = mH:
 Eord emmean    SE  df asymp.LCL asymp.UCL
    1 -1.386 0.321 Inf    -2.015    -0.758
    6 -1.386 0.321 Inf    -2.015    -0.758

Location = mI:
 Eord emmean    SE  df asymp.LCL asymp.UCL
    1 -1.386 0.321 Inf    -2.015    -0.758
    6 -1.386 0.321 Inf    -2.015    -0.758

Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Location = mA:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6  0.037670 0.454 Inf   0.083  0.9338

Location = mB:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6 -0.000163 0.454 Inf   0.000  0.9338

Location = mC:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6  5.177979 0.454 Inf  11.416  <.0001

Location = mD:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6 -0.000008 0.454 Inf   0.000  1.0000

Location = mE:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6  1.071593 0.454 Inf   2.363  0.0181

Location = mG:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6 -0.000135 0.454 Inf   0.000  0.9998

Location = mH:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6  0.000140 0.454 Inf   0.000  0.9998

Location = mI:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6 -0.000011 0.454 Inf   0.000  1.0000

Results are given on the log (not the response) scale.


>

mod_Copper <- glmmTMB(Copper ~  Eord * Location, family=tweedie(), data=contams
)
> summary(mod_Copper)
 Family: tweedie  ( log )
Formula:          Copper ~ Eord * Location
Data: contams
```

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```
     AIC      BIC   logLik deviance df.resid
   318.6    374.0   -141.3    282.6      142


Dispersion parameter for tweedie family (): 0.435

Conditional model:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)      3.63928    0.25385  14.336  < 2e-16 ***
Eord            -0.15344    0.05902  -2.600  0.00933 **
LocationmB      -4.33241    0.35901 -12.068  < 2e-16 ***
LocationmC      -2.74187    0.35900  -7.637 2.22e-14 ***
LocationmD      -4.35510    0.35901 -12.131  < 2e-16 ***
LocationmE      -4.56127    0.35901 -12.705  < 2e-16 ***
LocationmG      -4.52200    0.35900 -12.596  < 2e-16 ***
LocationmH      -4.33241    0.35901 -12.068  < 2e-16 ***
LocationmI      -4.33245    0.35900 -12.068  < 2e-16 ***
Eord:LocationmB  0.15343    0.08347   1.838  0.06602 .
Eord:LocationmC -0.02127    0.08347  -0.255  0.79886
Eord:LocationmD  0.17610    0.08347   2.110  0.03487 *
Eord:LocationmE  0.38228    0.08347   4.580 4.65e-06 ***
Eord:LocationmG  0.34300    0.08347   4.109 3.97e-05 ***
Eord:LocationmH  0.15343    0.08347   1.838  0.06602 .
Eord:LocationmI  0.15344    0.08347   1.838  0.06601 .
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_Copper)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Copper
               Chisq Df Pr(>Chisq)
Eord          0.4576  1     0.4988
Location    532.8695  7  < 2.2e-16 ***
Eord:Location  40.5609  7  9.829e-07 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_Copper, pairwise ~ Eord | Location)
$emmeans
Location = mA:
 Eord emmean    SE  df asymp.LCL asymp.UCL
    1  3.486 0.209 Inf    3.0769     3.895
    6  2.719 0.209 Inf    2.3097     3.128

Location = mB:
 Eord emmean    SE  df asymp.LCL asymp.UCL
    1 -0.693 0.209 Inf   -1.1021    -0.284
    6 -0.693 0.209 Inf   -1.1021    -0.284

Location = mC:
 Eord emmean    SE  df asymp.LCL asymp.UCL
    1  0.723 0.209 Inf    0.3137     1.132
    6 -0.151 0.209 Inf   -0.5598     0.258

Location = mD:
 Eord emmean    SE  df asymp.LCL asymp.UCL
    1 -0.693 0.209 Inf   -1.1021    -0.284
    6 -0.580 0.209 Inf   -0.9888    -0.171

Location = mE:
 Eord emmean    SE  df asymp.LCL asymp.UCL
    1 -0.693 0.209 Inf   -1.1021    -0.284
    6  0.451 0.209 Inf    0.0421     0.860

Location = mG:
 Eord emmean    SE  df asymp.LCL asymp.UCL
    1 -0.693 0.209 Inf   -1.1021    -0.284
    6  0.255 0.209 Inf   -0.1543     0.664
```

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```
Location = mH:
 Eord emmean    SE  df asymp.LCL asymp.UCL
    1 -0.693 0.209 Inf   -1.1021    -0.284
    6 -0.693 0.209 Inf   -1.1021    -0.284

Location = mI:
 Eord emmean    SE  df asymp.LCL asymp.UCL
    1 -0.693 0.209 Inf   -1.1021    -0.284
    6 -0.693 0.209 Inf   -1.1021    -0.284

Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Location = mA:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6  7.67e-01 0.295 Inf   2.600  0.0093

Location = mB:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6  1.38e-05 0.295 Inf   0.000  1.0000

Location = mC:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6  8.74e-01 0.295 Inf   2.960  0.0031

Location = mD:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6 -1.13e-01 0.295 Inf  -0.384  0.7009

Location = mE:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6 -1.14e+00 0.295 Inf  -3.877  0.0001

Location = mG:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6 -9.48e-01 0.295 Inf  -3.212  0.0013

Location = mH:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6  1.66e-05 0.295 Inf   0.000  1.0000

Location = mI:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6 -1.67e-05 0.295 Inf   0.000  1.0000

Results are given on the log (not the response) scale.

>
>
> mod_Arsenic <- glmmTMB(Arsenic ~  Eord*Location, family=tweedie(), data=conta
ms)
> summary(mod_Arsenic)
 Family: tweedie  ( log )
Formula:          Arsenic ~ Eord * Location
Data: contams

     AIC      BIC   logLik deviance df.resid
    70.1    125.5    -17.1     34.1      142


Dispersion parameter for tweedie family (): 0.0846

Conditional model:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)     0.146604   0.108930   1.346  0.17835
Eord           -0.079881   0.028060  -2.847  0.00442 **
LocationmB      0.184002   0.150643   1.222  0.22192
```

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```
LocationmC        0.216999   0.144650   1.500  0.13357
LocationmD        0.139292   0.148678   0.937  0.34883
LocationmE        0.061740   0.147888   0.418  0.67633
LocationmG       -0.154396   0.158395  -0.975  0.32968
LocationmH        0.135287   0.146684   0.922  0.35637
LocationmI        0.160550   0.144582   1.110  0.26681
Eord:LocationmB -0.074255   0.041010  -1.811  0.07020 .
Eord:LocationmC  0.046300   0.036316   1.275  0.20234
Eord:LocationmD  0.007481   0.038118   0.196  0.84440
Eord:LocationmE  0.094679   0.036194   2.616  0.00890 **
Eord:LocationmG  0.038482   0.039736   0.969  0.33282
Eord:LocationmH  0.061891   0.036497   1.696  0.08993 .
Eord:LocationmI  0.097704   0.035444   2.757  0.00584 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_Arsenic)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Arsenic
               Chisq Df Pr(>Chisq)
Eord          16.720  1  4.332e-05 ***
Location      72.816  7  3.977e-13 ***
Eord:Location 31.797  7  4.429e-05 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_Arsenic, pairwise ~ Eord | Location)
$emmeans
Location = mA:
 Eord  emmean     SE  df asymp.LCL asymp.UCL
    1  0.0667 0.0890 Inf  -0.10763    0.2411
    6 -0.3327 0.1085 Inf  -0.54533   -0.1200

Location = mB:
 Eord  emmean     SE  df asymp.LCL asymp.UCL
    1  0.1765 0.0842 Inf   0.01138    0.3416
    6 -0.5942 0.1236 Inf  -0.83638   -0.3520

Location = mC:
 Eord  emmean     SE  df asymp.LCL asymp.UCL
    1  0.3300 0.0780 Inf   0.17707    0.4830
    6  0.1621 0.0848 Inf  -0.00415    0.3284

Location = mD:
 Eord  emmean     SE  df asymp.LCL asymp.UCL
    1  0.2135 0.0827 Inf   0.05142    0.3756
    6 -0.1485 0.0990 Inf  -0.34254    0.0455

Location = mE:
 Eord  emmean     SE  df asymp.LCL asymp.UCL
    1  0.2231 0.0823 Inf   0.06184    0.3844
    6  0.2971 0.0793 Inf   0.14166    0.4526

Location = mG:
 Eord  emmean     SE  df asymp.LCL asymp.UCL
    1 -0.0492 0.0942 Inf  -0.23388    0.1355
    6 -0.2562 0.1044 Inf  -0.46089   -0.0515

Location = mH:
 Eord  emmean     SE  df asymp.LCL asymp.UCL
    1  0.2639 0.0806 Inf   0.10583    0.4220
    6  0.1740 0.0843 Inf   0.00866    0.3393

Location = mI:
 Eord  emmean     SE  df asymp.LCL asymp.UCL
    1  0.3250 0.0782 Inf   0.17164    0.4783
    6  0.4141 0.0748 Inf   0.26740    0.5608

Results are given on the log (not the response) scale.
```

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```
Confidence level used: 0.95

$contrasts
Location = mA:
 contrast      estimate    SE  df z.ratio p.value
 Eord1 - Eord6   0.3994 0.140 Inf   2.847  0.0044

Location = mB:
 contrast      estimate    SE  df z.ratio p.value
 Eord1 - Eord6   0.7707 0.150 Inf   5.154  <.0001

Location = mC:
 contrast      estimate    SE  df z.ratio p.value
 Eord1 - Eord6   0.1679 0.115 Inf   1.457  0.1452

Location = mD:
 contrast      estimate    SE  df z.ratio p.value
 Eord1 - Eord6   0.3620 0.129 Inf   2.806  0.0050

Location = mE:
 contrast      estimate    SE  df z.ratio p.value
 Eord1 - Eord6  -0.0740 0.114 Inf  -0.647  0.5174

Location = mG:
 contrast      estimate    SE  df z.ratio p.value
 Eord1 - Eord6   0.2070 0.141 Inf   1.471  0.1412

Location = mH:
 contrast      estimate    SE  df z.ratio p.value
 Eord1 - Eord6   0.0899 0.117 Inf   0.771  0.4408

Location = mI:
 contrast      estimate    SE  df z.ratio p.value
 Eord1 - Eord6  -0.0891 0.108 Inf  -0.823  0.4105

Results are given on the log (not the response) scale.

>
> mod_Chromium <- glmmTMB(Chromium ~  Eord*Location, family=tweedie(), data=con
tams)
> summary(mod_Chromium)
 Family: tweedie  ( log )
Formula:          Chromium ~ Eord * Location
Data: contams

     AIC      BIC   logLik deviance df.resid
   466.7    522.1   -215.4    430.7      142


Dispersion parameter for tweedie family (): 0.0467

Conditional model:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)      1.29533    0.08312  15.584  < 2e-16 ***
Eord             0.05792    0.01932   2.997 0.002723 **
LocationmB      -0.12592    0.11755  -1.071 0.284054
LocationmC       0.31215    0.11755   2.656 0.007918 **
LocationmD      -0.07175    0.11755  -0.610 0.541600
LocationmE       0.34101    0.11755   2.901 0.003720 **
LocationmG       0.05424    0.11755   0.461 0.644466
LocationmH       0.35898    0.11755   3.054 0.002259 **
LocationmI       0.48374    0.11755   4.115 3.87e-05 ***
Eord:LocationmB -0.06106    0.02733  -2.234 0.025461 *
Eord:LocationmC -0.06199    0.02733  -2.268 0.023316 *
Eord:LocationmD -0.06956    0.02733  -2.545 0.010914 *
Eord:LocationmE -0.05333    0.02733  -1.951 0.051029 .
Eord:LocationmG -0.09109    0.02733  -3.333 0.000859 ***
Eord:LocationmH -0.04831    0.02733  -1.768 0.077111 .
```

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```
Eord:LocationmI -0.05360    0.02733  -1.961 0.049843 *
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_Chromium)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Chromium
               Chisq Df Pr(>Chisq)
Eord           0.200  1    0.65472
Location     187.292  7    < 2e-16 ***
Eord:Location  12.518  7    0.08477 .
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_Chromium, pairwise ~ Eord | Location)
$emmeans
Location = mA:
 Eord emmean     SE  df asymp.LCL asymp.UCL
    1   1.35 0.0683 Inf      1.22      1.49
    6   1.64 0.0683 Inf      1.51      1.78

Location = mB:
 Eord emmean     SE  df asymp.LCL asymp.UCL
    1   1.17 0.0683 Inf      1.03      1.30
    6   1.15 0.0683 Inf      1.02      1.28

Location = mC:
 Eord emmean     SE  df asymp.LCL asymp.UCL
    1   1.60 0.0683 Inf      1.47      1.74
    6   1.58 0.0683 Inf      1.45      1.72

Location = mD:
 Eord emmean     SE  df asymp.LCL asymp.UCL
    1   1.21 0.0683 Inf      1.08      1.35
    6   1.15 0.0683 Inf      1.02      1.29

Location = mE:
 Eord emmean     SE  df asymp.LCL asymp.UCL
    1   1.64 0.0683 Inf      1.51      1.77
    6   1.66 0.0683 Inf      1.53      1.80

Location = mG:
 Eord emmean     SE  df asymp.LCL asymp.UCL
    1   1.32 0.0683 Inf      1.18      1.45
    6   1.15 0.0683 Inf      1.02      1.28

Location = mH:
 Eord emmean     SE  df asymp.LCL asymp.UCL
    1   1.66 0.0683 Inf      1.53      1.80
    6   1.71 0.0683 Inf      1.58      1.85

Location = mI:
 Eord emmean     SE  df asymp.LCL asymp.UCL
    1   1.78 0.0683 Inf      1.65      1.92
    6   1.81 0.0683 Inf      1.67      1.94

Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Location = mA:
 contrast      estimate     SE  df z.ratio p.value
 Eord1 - Eord6  -0.2896 0.0966 Inf  -2.997  0.0027

Location = mB:
 contrast      estimate     SE  df z.ratio p.value
 Eord1 - Eord6   0.0157 0.0966 Inf   0.162  0.8710

Location = mC:
```

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```
 contrast      estimate     SE  df z.ratio p.value
 Eord1 - Eord6   0.0203 0.0966 Inf   0.210  0.8334

Location = mD:
 contrast      estimate     SE  df z.ratio p.value
 Eord1 - Eord6   0.0582 0.0966 Inf   0.602  0.5469

Location = mE:
 contrast      estimate     SE  df z.ratio p.value
 Eord1 - Eord6  -0.0230 0.0966 Inf  -0.238  0.8119

Location = mG:
 contrast      estimate     SE  df z.ratio p.value
 Eord1 - Eord6   0.1658 0.0966 Inf   1.716  0.0861

Location = mH:
 contrast      estimate     SE  df z.ratio p.value
 Eord1 - Eord6  -0.0481 0.0966 Inf  -0.497  0.6189

Location = mI:
 contrast      estimate     SE  df z.ratio p.value
 Eord1 - Eord6  -0.0216 0.0966 Inf  -0.224  0.8230

Results are given on the log (not the response) scale.

>
> mod_Nickel <- glmmTMB(Nickel ~  Eord*Location, family=tweedie(), data=contams
)
> summary(mod_Nickel)
 Family: tweedie  ( log )
Formula:          Nickel ~ Eord * Location
Data: contams

     AIC      BIC   logLik deviance df.resid
     7.9     63.3     14.0    -28.1      142


Dispersion parameter for tweedie family (): 0.0984

Conditional model:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)     -0.24792    0.12068  -2.054  0.03995 *
Eord             0.04945    0.02806   1.762  0.07800 .
LocationmB       0.02522    0.17067   0.148  0.88254
LocationmC       0.42929    0.17067   2.515  0.01189 *
LocationmD      -0.30928    0.17067  -1.812  0.06997 .
LocationmE       0.43562    0.17067   2.552  0.01070 *
LocationmG      -0.18708    0.17067  -1.096  0.27302
LocationmH      -0.34991    0.17067  -2.050  0.04035 *
LocationmI      -0.53418    0.17067  -3.130  0.00175 **
Eord:LocationmB -0.12786    0.03968  -3.222  0.00127 **
Eord:LocationmC -0.06532    0.03968  -1.646  0.09974 .
Eord:LocationmD -0.07210    0.03968  -1.817  0.06920 .
Eord:LocationmE -0.03829    0.03968  -0.965  0.33456
Eord:LocationmG -0.09248    0.03968  -2.331  0.01978 *
Eord:LocationmH -0.04945    0.03968  -1.246  0.21269
Eord:LocationmI  0.03949    0.03968   0.995  0.31968
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_Nickel)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Nickel
                Chisq Df Pr(>Chisq)
Eord           0.0172  1  0.8955769
Location     174.6793  7  < 2.2e-16 ***
Eord:Location  24.4268  7  0.0009583 ***
---
```

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```
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_Nickel, pairwise ~ Eord | Location)
$emmeans
Location = mA:
 Eord  emmean     SE  df asymp.LCL asymp.UCL
    1 -0.1985 0.0992 Inf  -0.39290  -0.00403
    6  0.0488 0.0992 Inf  -0.14565   0.24322

Location = mB:
 Eord  emmean     SE  df asymp.LCL asymp.UCL
    1 -0.3011 0.0992 Inf  -0.49554  -0.10668
    6 -0.6932 0.0992 Inf  -0.88759  -0.49873

Location = mC:
 Eord  emmean     SE  df asymp.LCL asymp.UCL
    1  0.1655 0.0992 Inf  -0.02893   0.35993
    6  0.0862 0.0992 Inf  -0.10828   0.28058

Location = mD:
 Eord  emmean     SE  df asymp.LCL asymp.UCL
    1 -0.5798 0.0992 Inf  -0.77428  -0.38542
    6 -0.6931 0.0992 Inf  -0.88755  -0.49868

Location = mE:
 Eord  emmean     SE  df asymp.LCL asymp.UCL
    1  0.1989 0.0992 Inf   0.00443   0.39330
    6  0.2547 0.0992 Inf   0.06023   0.44909

Location = mG:
 Eord  emmean     SE  df asymp.LCL asymp.UCL
    1 -0.4780 0.0992 Inf  -0.67246  -0.28359
    6 -0.6932 0.0992 Inf  -0.88760  -0.49874

Location = mH:
 Eord  emmean     SE  df asymp.LCL asymp.UCL
    1 -0.5978 0.0992 Inf  -0.79226  -0.40340
    6 -0.5978 0.0992 Inf  -0.79226  -0.40340

Location = mI:
 Eord  emmean     SE  df asymp.LCL asymp.UCL
    1 -0.6932 0.0992 Inf  -0.88759  -0.49873
    6 -0.2485 0.0992 Inf  -0.44291  -0.05405

Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Location = mA:
 contrast       estimate   SE  df z.ratio p.value
 Eord1 - Eord6 -2.47e-01 0.14 Inf  -1.762  0.0780

Location = mB:
 contrast       estimate   SE  df z.ratio p.value
 Eord1 - Eord6  3.92e-01 0.14 Inf   2.795  0.0052

Location = mC:
 contrast       estimate   SE  df z.ratio p.value
 Eord1 - Eord6  7.93e-02 0.14 Inf   0.566  0.5717

Location = mD:
 contrast       estimate   SE  df z.ratio p.value
 Eord1 - Eord6  1.13e-01 0.14 Inf   0.807  0.4194

Location = mE:
 contrast       estimate   SE  df z.ratio p.value
 Eord1 - Eord6 -5.58e-02 0.14 Inf  -0.398  0.6909

Location = mG:
```

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```
 contrast       estimate   SE  df z.ratio p.value
 Eord1 - Eord6  2.15e-01 0.14 Inf   1.534  0.1251

Location = mH:
 contrast       estimate   SE  df z.ratio p.value
 Eord1 - Eord6  9.00e-07 0.14 Inf   0.000  1.0000

Location = mI:
 contrast       estimate   SE  df z.ratio p.value
 Eord1 - Eord6 -4.45e-01 0.14 Inf  -3.170  0.0015

Results are given on the log (not the response) scale.

>
> mod_Manganese <- glmmTMB(Manganese ~  Eord*Location, family=tweedie(), data=c
ontams)
> summary(mod_Manganese)
 Family: tweedie  ( log )
Formula:          Manganese ~ Eord * Location
Data: contams

     AIC      BIC   logLik deviance df.resid
  1013.3   1068.7   -488.6    977.3      142


Dispersion parameter for tweedie family (): 0.151

Conditional model:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)      2.46411    0.14939  16.495  < 2e-16 ***
Eord             0.03730    0.03473   1.074   0.2829
LocationmB      -0.30676    0.21127  -1.452   0.1465
LocationmC       0.39425    0.21127   1.866   0.0620 .
LocationmD      -0.12801    0.21127  -0.606   0.5446
LocationmE       0.14873    0.21127   0.704   0.4815
LocationmG      -0.30607    0.21127  -1.449   0.1474
LocationmH       1.45531    0.21127   6.888 5.64e-12 ***
LocationmI       0.37424    0.21127   1.771   0.0765 .
Eord:LocationmB -0.01990    0.04912  -0.405   0.6854
Eord:LocationmC -0.08620    0.04912  -1.755   0.0793 .
Eord:LocationmD -0.04122    0.04912  -0.839   0.4013
Eord:LocationmE  0.01709    0.04912   0.348   0.7279
Eord:LocationmG  0.01296    0.04912   0.264   0.7919
Eord:LocationmH -0.23589    0.04912  -4.802 1.57e-06 ***
Eord:LocationmI -0.02496    0.04912  -0.508   0.6113
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_Manganese)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Manganese
                Chisq Df Pr(>Chisq)
Eord           0.6588  1     0.417
Location     106.4779  7  < 2.2e-16 ***
Eord:Location  40.1042  7  1.202e-06 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_Manganese, pairwise ~ Eord | Location)
$emmeans
Location = mA:
 Eord emmean    SE  df asymp.LCL asymp.UCL
    1   2.50 0.123 Inf      2.26      2.74
    6   2.69 0.123 Inf      2.45      2.93

Location = mB:
 Eord emmean    SE  df asymp.LCL asymp.UCL
    1   2.17 0.123 Inf      1.93      2.42
    6   2.26 0.123 Inf      2.02      2.50
```

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```
Location = mC:
 Eord emmean    SE  df asymp.LCL asymp.UCL
    1   2.81 0.123 Inf      2.57      3.05
    6   2.56 0.123 Inf      2.32      2.81

Location = mD:
 Eord emmean    SE  df asymp.LCL asymp.UCL
    1   2.33 0.123 Inf      2.09      2.57
    6   2.31 0.123 Inf      2.07      2.55

Location = mE:
 Eord emmean    SE  df asymp.LCL asymp.UCL
    1   2.67 0.123 Inf      2.43      2.91
    6   2.94 0.123 Inf      2.70      3.18

Location = mG:
 Eord emmean    SE  df asymp.LCL asymp.UCL
    1   2.21 0.123 Inf      1.97      2.45
    6   2.46 0.123 Inf      2.22      2.70

Location = mH:
 Eord emmean    SE  df asymp.LCL asymp.UCL
    1   3.72 0.123 Inf      3.48      3.96
    6   2.73 0.123 Inf      2.49      2.97

Location = mI:
 Eord emmean    SE  df asymp.LCL asymp.UCL
    1   2.85 0.123 Inf      2.61      3.09
    6   2.91 0.123 Inf      2.67      3.15

Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Location = mA:
 contrast      estimate    SE  df z.ratio p.value
 Eord1 - Eord6  -0.1865 0.174 Inf  -1.074  0.2829

Location = mB:
 contrast      estimate    SE  df z.ratio p.value
 Eord1 - Eord6  -0.0870 0.174 Inf  -0.501  0.6164

Location = mC:
 contrast      estimate    SE  df z.ratio p.value
 Eord1 - Eord6   0.2445 0.174 Inf   1.408  0.1592

Location = mD:
 contrast      estimate    SE  df z.ratio p.value
 Eord1 - Eord6   0.0196 0.174 Inf   0.113  0.9100

Location = mE:
 contrast      estimate    SE  df z.ratio p.value
 Eord1 - Eord6  -0.2719 0.174 Inf  -1.566  0.1174

Location = mG:
 contrast      estimate    SE  df z.ratio p.value
 Eord1 - Eord6  -0.2513 0.174 Inf  -1.447  0.1479

Location = mH:
 contrast      estimate    SE  df z.ratio p.value
 Eord1 - Eord6   0.9929 0.174 Inf   5.718  <.0001

Location = mI:
 contrast      estimate    SE  df z.ratio p.value
 Eord1 - Eord6  -0.0617 0.174 Inf  -0.355  0.7225

Results are given on the log (not the response) scale.
```

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```
>
> mod_Zinc <- glmmTMB(Zinc ~  Eord*Location, family=tweedie(), data=contams)
> summary(mod_Zinc)
 Family: tweedie  ( log )
Formula:          Zinc ~ Eord * Location
Data: contams

     AIC      BIC   logLik deviance df.resid
   172.7    228.0    -68.3    136.7      142


Dispersion parameter for tweedie family (): 0.195

Conditional model:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)      1.72482    0.16992  10.151  < 2e-16 ***
Eord             0.03827    0.03950   0.969  0.33264
LocationmB      -2.23995    0.24029  -9.322  < 2e-16 ***
LocationmC      -0.78829    0.24030  -3.280  0.00104 **
LocationmD      -2.43688    0.24030 -10.141  < 2e-16 ***
LocationmE      -1.80172    0.24030  -7.498 6.49e-14 ***
LocationmG      -2.30367    0.24029  -9.587  < 2e-16 ***
LocationmH      -2.41811    0.24029 -10.063  < 2e-16 ***
LocationmI      -2.41791    0.24030 -10.062  < 2e-16 ***
Eord:LocationmB -0.06794    0.05587  -1.216  0.22395
Eord:LocationmC -0.14189    0.05587  -2.540  0.01109 *
Eord:LocationmD -0.01924    0.05587  -0.344  0.73058
Eord:LocationmE -0.01263    0.05587  -0.226  0.82115
Eord:LocationmG -0.05732    0.05587  -1.026  0.30489
Eord:LocationmH -0.03824    0.05587  -0.685  0.49361
Eord:LocationmI -0.03828    0.05587  -0.685  0.49320
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_Zinc)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Zinc
                Chisq Df Pr(>Chisq)
Eord           0.3855  1     0.5347
Location     601.9706  7     <2e-16 ***
Eord:Location   8.8835  7     0.2611
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_Zinc, pairwise ~ Eord | Location)
$emmeans
Location = mA:
 Eord  emmean   SE  df asymp.LCL asymp.UCL
    1  1.7631 0.14 Inf    1.4893     2.037
    6  1.9544 0.14 Inf    1.6807     2.228

Location = mB:
 Eord  emmean   SE  df asymp.LCL asymp.UCL
    1 -0.5448 0.14 Inf   -0.8185    -0.271
    6 -0.6931 0.14 Inf   -0.9669    -0.419

Location = mC:
 Eord  emmean   SE  df asymp.LCL asymp.UCL
    1  0.8329 0.14 Inf    0.5592     1.107
    6  0.3148 0.14 Inf    0.0411     0.589

Location = mD:
 Eord  emmean   SE  df asymp.LCL asymp.UCL
    1 -0.6930 0.14 Inf   -0.9668    -0.419
    6 -0.5979 0.14 Inf   -0.8716    -0.324

Location = mE:
 Eord  emmean   SE  df asymp.LCL asymp.UCL
```

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```
    1 -0.0513 0.14 Inf   -0.3250     0.222
    6  0.0770 0.14 Inf   -0.1968     0.351

Location = mG:
 Eord  emmean   SE  df asymp.LCL asymp.UCL
    1 -0.5979 0.14 Inf   -0.8716    -0.324
    6 -0.6931 0.14 Inf   -0.9669    -0.419

Location = mH:
 Eord  emmean   SE  df asymp.LCL asymp.UCL
    1 -0.6933 0.14 Inf   -0.9670    -0.420
    6 -0.6931 0.14 Inf   -0.9669    -0.419

Location = mI:
 Eord  emmean   SE  df asymp.LCL asymp.UCL
    1 -0.6931 0.14 Inf   -0.9669    -0.419
    6 -0.6932 0.14 Inf   -0.9669    -0.419

Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Location = mA:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6 -1.91e-01 0.198 Inf  -0.969  0.3326

Location = mB:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6  1.48e-01 0.198 Inf   0.751  0.4527

Location = mC:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6  5.18e-01 0.198 Inf   2.623  0.0087

Location = mD:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6 -9.52e-02 0.198 Inf  -0.482  0.6299

Location = mE:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6 -1.28e-01 0.198 Inf  -0.649  0.5163

Location = mG:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6  9.52e-02 0.198 Inf   0.482  0.6297

Location = mH:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6 -1.36e-04 0.198 Inf  -0.001  0.9994

Location = mI:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6  5.04e-05 0.198 Inf   0.000  0.9998

Results are given on the log (not the response) scale.

>
> mod_Vanadium <- glmmTMB(Vanadium ~  Eord*Location, family=tweedie(), data=con
tams)
> summary(mod_Vanadium)
 Family: tweedie  ( log )
Formula:          Vanadium ~ Eord * Location
Data: contams

     AIC      BIC   logLik deviance df.resid
    52.1    107.4     -8.0     16.1      142
```

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```
Dispersion parameter for tweedie family (): 0.0541

Conditional model:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)     0.180194   0.089501   2.013   0.0441 *
Eord            0.043006   0.020808   2.067   0.0388 *
LocationmB     -0.180156   0.126573  -1.423   0.1546
LocationmC      0.009048   0.126572   0.072   0.9430
LocationmD     -0.180212   0.126571  -1.424   0.1545
LocationmE     -0.243137   0.126572  -1.921   0.0547 .
LocationmG     -0.180159   0.126573  -1.423   0.1546
LocationmH     -0.054940   0.126572  -0.434   0.6642
LocationmI     -0.219962   0.126572  -1.738   0.0822 .
Eord:LocationmB -0.043013   0.029427  -1.462   0.1438
Eord:LocationmC -0.033403   0.029427  -1.135   0.2563
Eord:LocationmD -0.043003   0.029427  -1.461   0.1439
Eord:LocationmE  0.019952   0.029427   0.678   0.4978
Eord:LocationmG -0.043013   0.029427  -1.462   0.1438
Eord:LocationmH -0.063883   0.029427  -2.171   0.0299 *
Eord:LocationmI -0.003237   0.029427  -0.110   0.9124
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_Vanadium)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Vanadium
               Chisq Df Pr(>Chisq)
Eord          5.2188  1    0.02234 *
Location     38.2150  7  2.758e-06 ***
Eord:Location 13.0802  7    0.07018 .
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_Vanadium, pairwise ~ Eord | Location)
$emmeans
Location = mA:
 Eord    emmean     SE  df asymp.LCL asymp.UCL
    1  2.23e-01 0.0736 Inf    0.0790     0.367
    6  4.38e-01 0.0736 Inf    0.2940     0.582

Location = mB:
 Eord    emmean     SE  df asymp.LCL asymp.UCL
    1  3.11e-05 0.0736 Inf   -0.1442     0.144
    6 -3.40e-06 0.0736 Inf   -0.1442     0.144

Location = mC:
 Eord    emmean     SE  df asymp.LCL asymp.UCL
    1  1.99e-01 0.0736 Inf    0.0547     0.343
    6  2.47e-01 0.0736 Inf    0.1027     0.391

Location = mD:
 Eord    emmean     SE  df asymp.LCL asymp.UCL
    1 -1.44e-05 0.0736 Inf   -0.1442     0.144
    6  2.50e-06 0.0736 Inf   -0.1442     0.144

Location = mE:
 Eord    emmean     SE  df asymp.LCL asymp.UCL
    1  1.58e-05 0.0736 Inf   -0.1442     0.144
    6  3.15e-01 0.0736 Inf    0.1706     0.459

Location = mG:
 Eord    emmean     SE  df asymp.LCL asymp.UCL
    1  2.84e-05 0.0736 Inf   -0.1442     0.144
    6 -6.20e-06 0.0736 Inf   -0.1442     0.144

Location = mH:
 Eord    emmean     SE  df asymp.LCL asymp.UCL
    1  1.04e-01 0.0736 Inf   -0.0398     0.249
    6 -5.40e-06 0.0736 Inf   -0.1442     0.144
```

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```
Location = mI:
 Eord    emmean     SE  df asymp.LCL asymp.UCL
    1  1.70e-06 0.0736 Inf   -0.1442     0.144
    6  1.99e-01 0.0736 Inf    0.0547     0.343

Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Location = mA:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6 -2.15e-01 0.104 Inf  -2.067  0.0388

Location = mB:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6  3.45e-05 0.104 Inf   0.000  0.9997

Location = mC:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6 -4.80e-02 0.104 Inf  -0.462  0.6444

Location = mD:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6 -1.68e-05 0.104 Inf   0.000  0.9999

Location = mE:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6 -3.15e-01 0.104 Inf  -3.026  0.0025

Location = mG:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6  3.45e-05 0.104 Inf   0.000  0.9997

Location = mH:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6  1.04e-01 0.104 Inf   1.003  0.3157

Location = mI:
 contrast       estimate    SE  df z.ratio p.value
 Eord1 - Eord6 -1.99e-01 0.104 Inf  -1.911  0.0560

Results are given on the log (not the response) scale.
```

## B.3 Fish Biomass and Diversity Metrics

### B.3.1 B20 Biomass (Location level)

```
> mod_B20 <- glmmTMB(sumWeight ~ B.A * Location + (1|Eord) , family=(tweedie())
, data=Weight_sum)
> summary(mod_B20)
 Family: tweedie  ( log )
Formula:          sumWeight ~ B.A * Location + (1 | Eord)
Data: Weight_sum

     AIC      BIC   logLik deviance df.resid
   761.5    812.4   -361.7    723.5       89

Random effects:

Conditional model:
 Groups Name        Variance  Std.Dev.
 Eord   (Intercept) 9.398e-14 3.066e-07
Number of obs: 108, groups:  Eord, 5

Dispersion parameter for tweedie family (): 0.77
```

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```
Conditional model:
                     Estimate Std. Error z value Pr(>|z|)
(Intercept)           2.07728    0.39233   5.295 1.19e-07 ***
B.ABefore            -0.12196    0.50012  -0.244  0.80733
LocationmB            1.62104    0.55483   2.922  0.00348 **
LocationmC            0.07410    0.55483   0.134  0.89376
LocationmD            0.36191    0.55483   0.652  0.51422
LocationmE           -0.23883    0.55483  -0.430  0.66686
LocationmG            1.17359    0.55483   2.115  0.03441 *
LocationmH           -0.07293    0.58848  -0.124  0.90138
LocationmI           -0.75793    0.55483  -1.366  0.17192
B.ABefore:LocationmB -0.36471    0.69968  -0.521  0.60219
B.ABefore:LocationmC -0.11959    0.69967  -0.171  0.86429
B.ABefore:LocationmD  0.62382    0.71692   0.870  0.38423
B.ABefore:LocationmE  0.54404    0.69967   0.778  0.43683
B.ABefore:LocationmG -1.04808    0.69968  -1.498  0.13415
B.ABefore:LocationmH  0.95899    0.72665   1.320  0.18692
B.ABefore:LocationmI  0.69200    0.69968   0.989  0.32265
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_B20)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: sumWeight
              Chisq Df Pr(>Chisq)
B.A           0.0128  1    0.91006
Location     36.4497  7  5.961e-06 ***
B.A:Location 12.5743  7    0.08319 .
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_B20, pairwise ~ B.A | Location)
$emmeans
Location = mA:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After    2.08 0.392 Inf      1.31      2.85
 Before   1.96 0.310 Inf      1.35      2.56

Location = mB:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After    3.70 0.392 Inf      2.93      4.47
 Before   3.21 0.292 Inf      2.64      3.78

Location = mC:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After    2.15 0.392 Inf      1.38      2.92
 Before   1.91 0.292 Inf      1.34      2.48

Location = mD:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After    2.44 0.392 Inf      1.67      3.21
 Before   2.94 0.332 Inf      2.29      3.59

Location = mE:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After    1.84 0.392 Inf      1.07      2.61
 Before   2.26 0.292 Inf      1.69      2.83

Location = mG:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After    3.25 0.392 Inf      2.48      4.02
 Before   2.08 0.292 Inf      1.51      2.65

Location = mH:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After    2.00 0.439 Inf      1.14      2.86
 Before   2.84 0.292 Inf      2.27      3.41
```

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```
Location = mI:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After    1.32 0.392 Inf      0.55      2.09
 Before   1.89 0.292 Inf      1.32      2.46

Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Location = mA:
 contrast       estimate    SE  df z.ratio p.value
 After - Before    0.122 0.500 Inf   0.244  0.8073

Location = mB:
 contrast       estimate    SE  df z.ratio p.value
 After - Before    0.487 0.489 Inf   0.995  0.3199

Location = mC:
 contrast       estimate    SE  df z.ratio p.value
 After - Before    0.242 0.489 Inf   0.494  0.6216

Location = mD:
 contrast       estimate    SE  df z.ratio p.value
 After - Before   -0.502 0.514 Inf  -0.977  0.3286

Location = mE:
 contrast       estimate    SE  df z.ratio p.value
 After - Before   -0.422 0.489 Inf  -0.863  0.3884

Location = mG:
 contrast       estimate    SE  df z.ratio p.value
 After - Before    1.170 0.489 Inf   2.391  0.0168

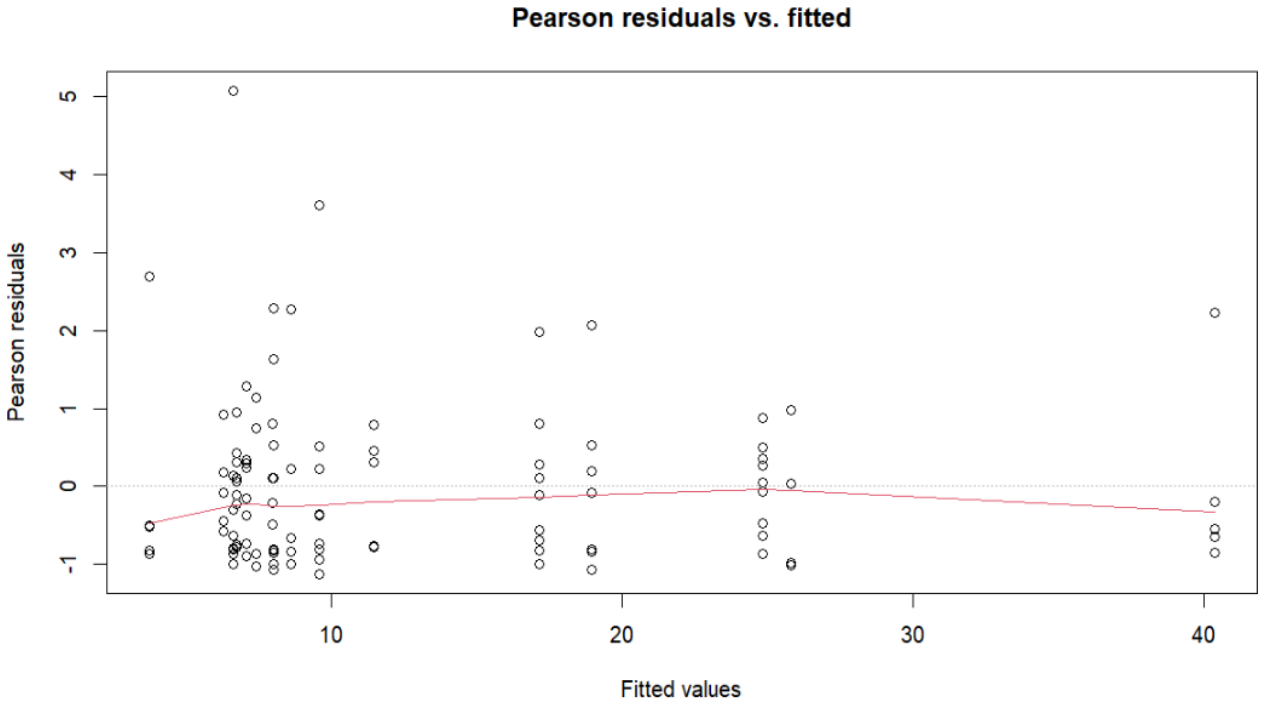
Location = mH:
 contrast       estimate    SE  df z.ratio p.value
 After - Before   -0.837 0.527 Inf  -1.588  0.1123

Location = mI:
 contrast       estimate    SE  df z.ratio p.value
 After - Before   -0.570 0.489 Inf  -1.165  0.2440

Results are given on the log (not the response) scale.


.
```

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### B.3.2 B20 Biomass (Treatment level)

```
> mod_B20 <- glmmTMB(sumWeight ~ B.A * Treatment + (1|Eord), family=(tweedie())
, data=Weight_sum)
> summary(mod_B20)
 Family: tweedie  ( log )
Formula:          sumWeight ~ B.A * Treatment + (1 | Eord)
Data: Weight_sum

     AIC      BIC   logLik deviance df.resid
   762.4    786.5   -372.2    744.4       99

Random effects:

Conditional model:
 Groups Name        Variance  Std.Dev.
 Eord   (Intercept) 1.703e-13 4.127e-07
Number of obs: 108, groups:  Eord, 5

Dispersion parameter for tweedie family (): 0.898

Conditional model:
                                Estimate Std. Error z value Pr(>|z|)
(Intercept)                       3.1636     0.2299  13.761  < 2e-16 ***
B.ABefore                        -0.3233     0.2980  -1.085  0.27793
TreatmentReference               -1.4815     0.3907  -3.792  0.00015 ***
TreatmentRemediation             -1.1188     0.3492  -3.204  0.00136 **
B.ABefore:TreatmentReference      1.1158     0.4884   2.285  0.02233 *
B.ABefore:TreatmentRemediation    0.3365     0.4387   0.767  0.44301
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_B20)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: sumWeight
              Chisq Df Pr(>Chisq)
B.A           0.1148  1    0.73479
Treatment    21.3583  2  2.302e-05 ***
B.A:Treatment  5.2590  2    0.07211 .
---
```

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```
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_B20, pairwise ~ B.A | Treatment)
$emmeans
Treatment = Nearfield:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After    3.16 0.230 Inf      2.71      3.61
 Before   2.84 0.190 Inf      2.47      3.21

Treatment = Reference:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After    1.68 0.316 Inf      1.06      2.30
 Before   2.47 0.223 Inf      2.04      2.91

Treatment = Remediation:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After    2.04 0.263 Inf      1.53      2.56
 Before   2.06 0.186 Inf      1.69      2.42

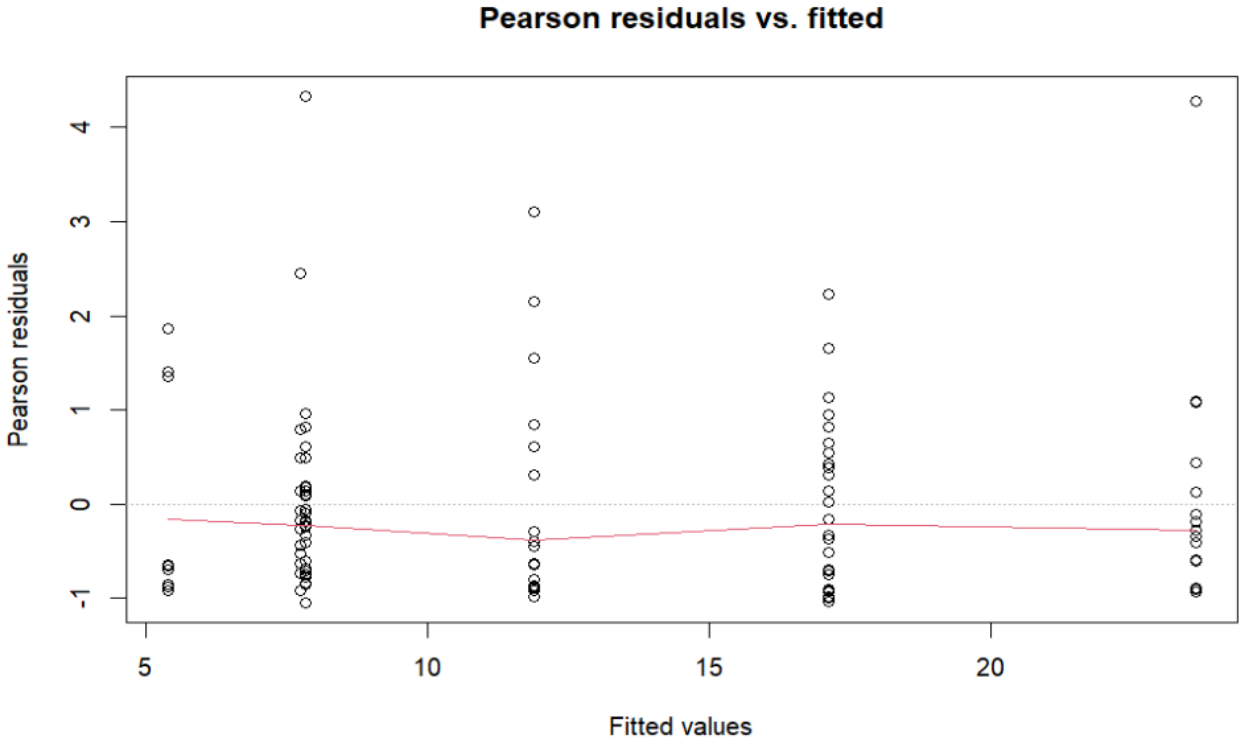
Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Treatment = Nearfield:
 contrast       estimate    SE  df z.ratio p.value
 After - Before   0.3233 0.298 Inf   1.085  0.2779

Treatment = Reference:
 contrast       estimate    SE  df z.ratio p.value
 After - Before  -0.7925 0.387 Inf  -2.048  0.0405

Treatment = Remediation:
 contrast       estimate    SE  df z.ratio p.value
 After - Before  -0.0132 0.322 Inf  -0.041  0.9672

Results are given on the log (not the response) scale.
```




### B.3.3 B20 *Choerodon venustus*

```
> mod_VenustusB20 <- glmmTMB(sumWeight ~ B.A * Treatment + (1|Eord),
family=(tweedie()), data=Venustus_sum)
> summary(mod_VenustusB20)
 Family: tweedie  ( log )
Formula:          sumWeight ~ B.A * Treatment + (1 | Eord)
Data: Venustus_sum

     AIC      BIC   logLik deviance df.resid
   282.5    304.3   -132.2    264.5       75

Random effects:

Conditional model:
 Groups Name        Variance  Std.Dev.
 Eord   (Intercept) 3.039e-05 0.005513
Number of obs: 84, groups:  Eord, 5

Dispersion parameter for tweedie family (): 0.503

Conditional model:
                              Estimate Std. Error z value Pr(>|z|)
(Intercept)                     0.9303     0.2052   4.533 5.81e-06 ***
B.ABefore                      -0.2791     0.2570  -1.086    0.277
TreatmentReference             -0.3519     0.3238  -1.087    0.277
TreatmentRemediation           -0.4431     0.3375  -1.313    0.189
B.ABefore:TreatmentReference    0.4209     0.3981   1.057    0.290
B.ABefore:TreatmentRemediation  0.4594     0.4055   1.133    0.257
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_VenustusB20)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: sumWeight
              Chisq Df Pr(>Chisq)
B.A          0.0214  1     0.8837
Treatment    0.5081  2     0.7756
B.A:Treatment 1.7077  2     0.4258
> emmeans(mod_VenustusB20, pairwise ~ B.A | Treatment)
$emmeans
Treatment = Nearfield:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After   0.930 0.205 Inf    0.5281     1.333
 Before  0.651 0.155 Inf    0.3476     0.955

Treatment = Reference:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After   0.578 0.251 Inf    0.0861     1.071
 Before  0.720 0.172 Inf    0.3829     1.058

Treatment = Remediation:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After   0.487 0.269 Inf   -0.0397     1.014
 Before  0.667 0.163 Inf    0.3483     0.987

Results are given on the log (not the response) scale.
Confidence level used: 0.95

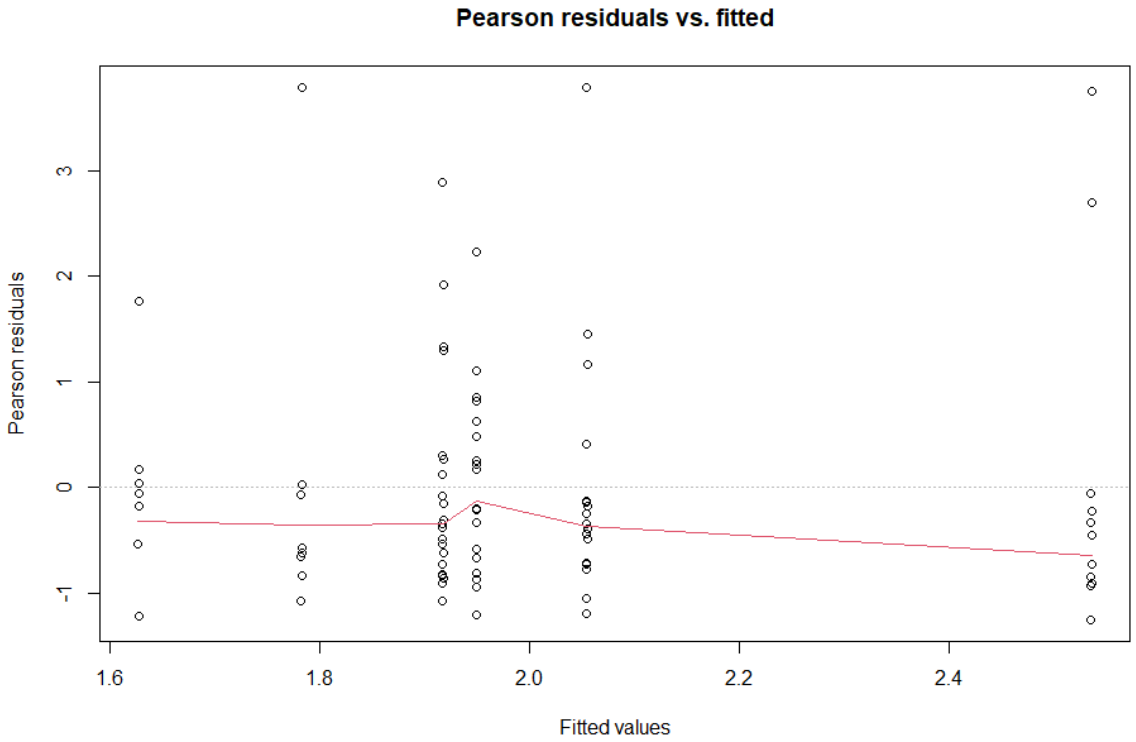
$contrasts
Treatment = Nearfield:
 contrast       estimate    SE  df z.ratio p.value
 After - Before    0.279 0.257 Inf   1.086  0.2775

Treatment = Reference:
 contrast       estimate    SE  df z.ratio p.value
 After - Before   -0.142 0.305 Inf  -0.466  0.6415

Treatment = Remediation:
 contrast       estimate    SE  df z.ratio p.value
```

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```
 After - Before   -0.180 0.314 Inf  -0.573  0.5665
Results are given on the log (not the response) scale.
```




### B.3.4 Richness

```
> mod_Richness <- glmmTMB(Richness ~ B.A * Treatment + (1|Eord), family =
poisson(), data = Diversity)
> summary(mod_Richness)
 Family: poisson  ( log )
Formula:          Richness ~ B.A * Treatment + (1 | Eord)
Data: Diversity

     AIC      BIC   logLik deviance df.resid
   749.3    768.8   -367.7    735.3      113

Random effects:

Conditional model:
 Groups Name        Variance Std.Dev.
 Eord   (Intercept) 0.001221 0.03495
Number of obs: 120, groups:  Eord, 5

Conditional model:
                             Estimate Std. Error z value Pr(>|z|)
(Intercept)                   3.27873    0.04245   77.23  < 2e-16 ***
B.ABefore                    -0.37077    0.07378   -5.03 5.03e-07 ***
TreatmentReference           -0.04056    0.05978   -0.68 0.497441
TreatmentRemediation         -0.20176    0.05569   -3.62 0.000291 ***
B.ABefore:TreatmentReference  0.09367    0.10447    0.90 0.369916
B.ABefore:TreatmentRemediation  0.15206    0.09652    1.58 0.115169
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_Richness)
Analysis of Deviance Table (Type II Wald chisquare tests)
```

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```
Response: Richness
              Chisq Df Pr(>Chisq)
B.A          31.431  1  2.067e-08 ***
Treatment    12.864  2   0.001609 **
B.A:Treatment  2.534  2   0.281673
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_Richness, pairwise ~ B.A | Treatment)
$emmeans
Treatment = Nearfield:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    3.28 0.0425 Inf      3.20      3.36
 Before   2.91 0.0604 Inf      2.79      3.03

Treatment = Reference:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    3.24 0.0509 Inf      3.14      3.34
 Before   2.96 0.0702 Inf      2.82      3.10

Treatment = Remediation:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After    3.08 0.0460 Inf      2.99      3.17
 Before   2.86 0.0616 Inf      2.74      2.98

Results are given on the log (not the response) scale.
Confidence level used: 0.95

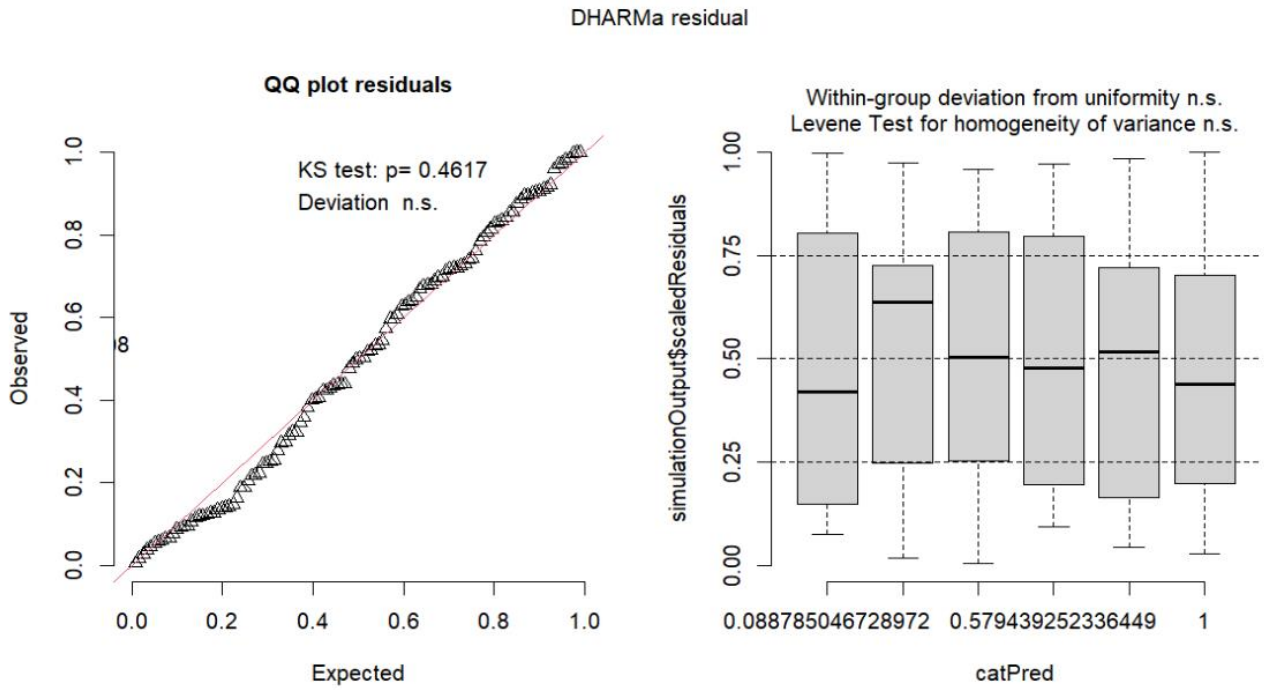
$contrasts
Treatment = Nearfield:
 contrast       estimate     SE  df z.ratio p.value
 After - Before    0.371 0.0738 Inf   5.025  <.0001

Treatment = Reference:
 contrast       estimate     SE  df z.ratio p.value
 After - Before    0.277 0.0866 Inf   3.198  0.0014

Treatment = Remediation:
 contrast       estimate     SE  df z.ratio p.value
 After - Before    0.219 0.0769 Inf   2.845  0.0044

Results are given on the log (not the response) scale.
```

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### B.3.5 Abundance

```
> mod_Abundance <- glmmTMB(Abundance ~ B.A * Treatment + (1|Eord), family =
nbinom2(), data = Diversity)
> summary(mod_Abundance)
 Family: nbinom2  ( log )
Formula:          Abundance ~ B.A * Treatment + (1 | Eord)
Data: Diversity

     AIC      BIC   logLik deviance df.resid
  1390.6   1412.9   -687.3   1374.6      112

Random effects:

Conditional model:
 Groups Name        Variance Std.Dev.
 Eord   (Intercept) 0.04472  0.2115
Number of obs: 120, groups:  Eord, 5

Dispersion parameter for nbinom2 family (): 2.66

Conditional model:
                              Estimate Std. Error z value Pr(>|z|)
(Intercept)                    5.28750    0.17099  30.923  < 2e-16 ***
B.ABefore                     -0.94783    0.27076  -3.501 0.000464 ***
TreatmentReference            -0.01508    0.19756  -0.076 0.939163
TreatmentRemediation          -0.26345    0.16868  -1.562 0.118341
B.ABefore:TreatmentReference   0.33174    0.30455   1.089 0.276038
B.ABefore:TreatmentRemediation 0.40305    0.26760   1.506 0.132031
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_Abundance)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Abundance
              Chisq Df Pr(>Chisq)
B.A         10.0494  1   0.001524 **
```

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```
Treatment      2.2738  2   0.320817
B.A:Treatment  2.4884  2   0.288171
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_Abundance, pairwise ~ B.A | Treatment)
$emmeans
Treatment = Nearfield:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After    5.29 0.171 Inf      4.95      5.62
 Before   4.34 0.210 Inf      3.93      4.75

Treatment = Reference:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After    5.27 0.196 Inf      4.89      5.66
 Before   4.66 0.234 Inf      4.20      5.11

Treatment = Remediation:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After    5.02 0.171 Inf      4.69      5.36
 Before   4.48 0.210 Inf      4.07      4.89

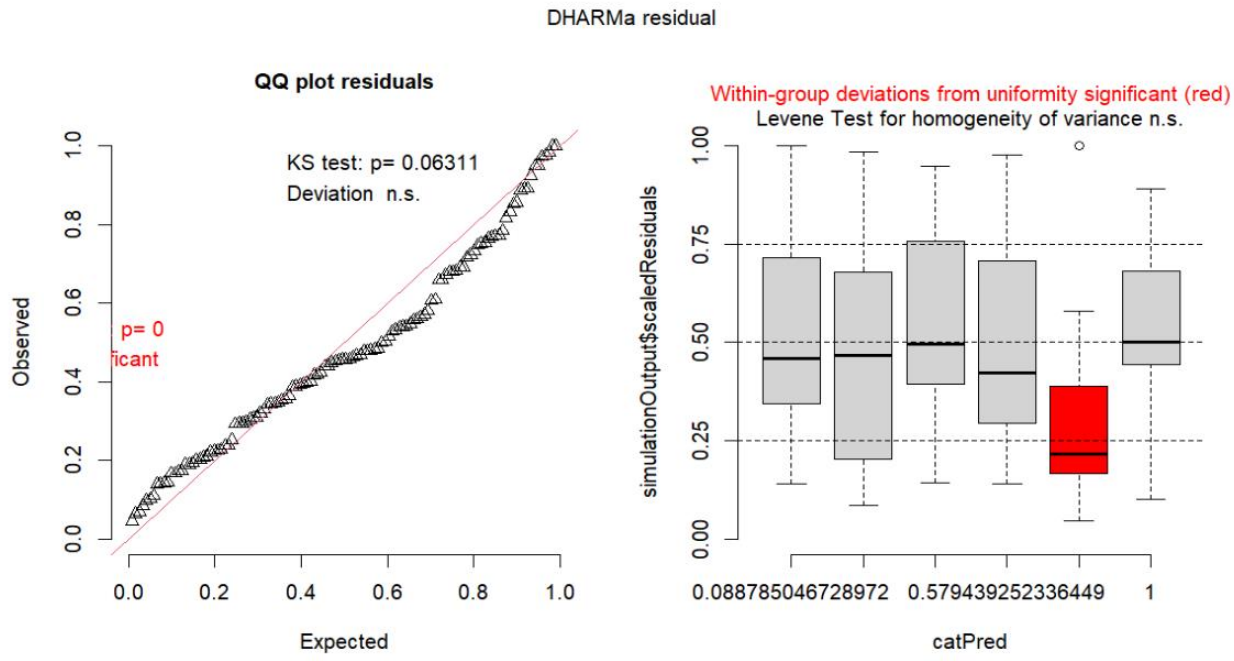
Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Treatment = Nearfield:
 contrast       estimate    SE  df z.ratio p.value
 After - Before    0.948 0.271 Inf   3.501  0.0005

Treatment = Reference:
 contrast       estimate    SE  df z.ratio p.value
 After - Before    0.616 0.305 Inf   2.022  0.0432

Treatment = Remediation:
 contrast       estimate    SE  df z.ratio p.value
 After - Before    0.545 0.270 Inf   2.015  0.0439

Results are given on the log (not the response) scale.
```




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### B.3.6 Simpsons Diversity

```
> mod_Lambda <- glmmTMB(Lambda ~ B.A * Treatment + (1|Eord), family = beta_fami
ly(), data = Diversity)
> summary(mod_Lambda)
 Family: beta  ( logit )
Formula:          Lambda ~ B.A * Treatment + (1 | Eord)
Data: Diversity

     AIC      BIC   logLik deviance df.resid
  -184.1   -161.8    100.1   -200.1      112

Random effects:

Conditional model:
 Groups Name        Variance Std.Dev.
 Eord   (Intercept) 8.8e-11  9.381e-06
Number of obs: 120, groups:  Eord, 5

Dispersion parameter for beta family (): 11.1

Conditional model:
                              Estimate Std. Error z value Pr(>|z|)
(Intercept)                    1.28673    0.12967   9.923   <2e-16 ***
B.ABefore                      0.30387    0.21128   1.438    0.150
TreatmentReference             0.21702    0.20872   1.040    0.298
TreatmentRemediation           0.03546    0.18213   0.195    0.846
B.ABefore:TreatmentReference  -0.46254    0.33125  -1.396    0.163
B.ABefore:TreatmentRemediation -0.25686    0.29477  -0.871    0.384
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_Lambda)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Lambda
              Chisq Df Pr(>Chisq)
B.A          0.4887  1     0.4845
Treatment    0.3808  2     0.8266
B.A:Treatment 2.0183  2     0.3645
> emmeans(mod_Lambda, pairwise ~ B.A | Treatment)
$emmeans
Treatment = Nearfield:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After    1.29 0.130 Inf     1.033      1.54
 Before   1.59 0.170 Inf     1.258      1.92

Treatment = Reference:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After    1.50 0.166 Inf     1.178      1.83
 Before   1.35 0.196 Inf     0.961      1.73

Treatment = Remediation:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After    1.32 0.131 Inf     1.066      1.58
 Before   1.37 0.161 Inf     1.053      1.69

Results are given on the logit (not the response) scale.
Confidence level used: 0.95

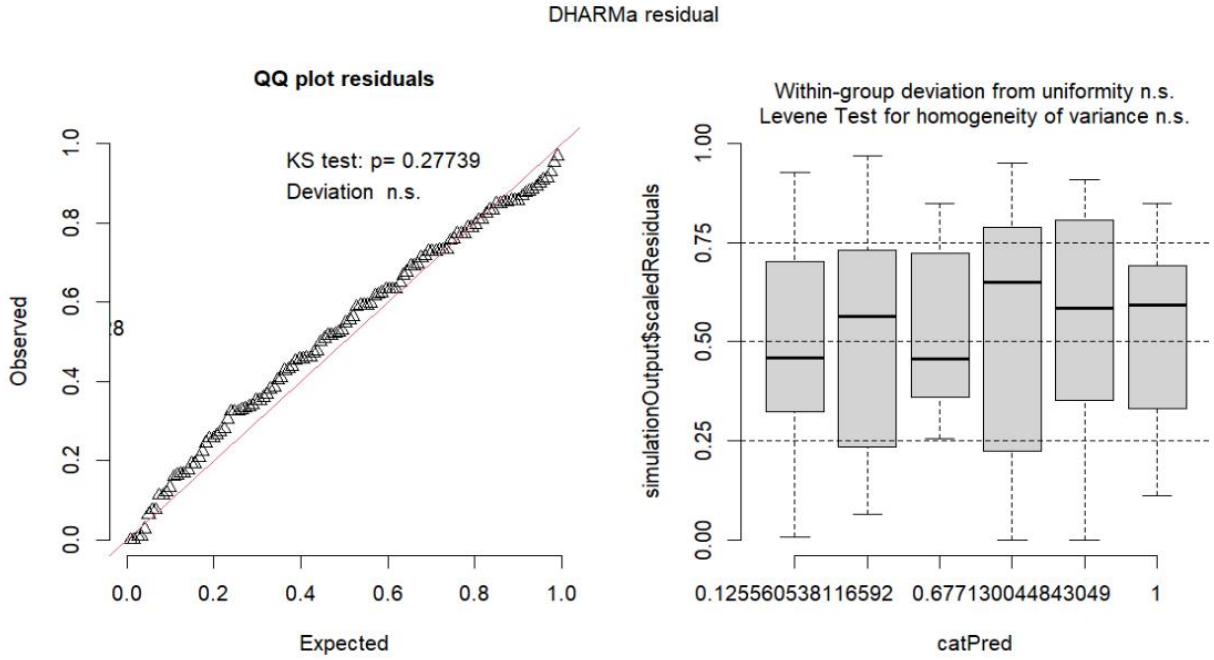
$contrasts
Treatment = Nearfield:
 contrast       estimate    SE  df z.ratio p.value
 After - Before   -0.304 0.211 Inf  -1.438  0.1504

Treatment = Reference:
 contrast       estimate    SE  df z.ratio p.value
 After - Before    0.159 0.255 Inf   0.622  0.5338
```

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```
Treatment = Remediation:
 contrast       estimate    SE  df z.ratio p.value
 After - Before   -0.047 0.206 Inf  -0.229  0.8191

Results are given on the log odds ratio (not the response) scale.
```




### B.3.7 Herbivore Richness

```
> Herbivore_Richness <- glmmTMB(Richness ~ B.A * Treatment + (1|Eord), family =
poisson(), data = Herbivore)
> summary(Herbivore_Richness)
 Family: poisson  ( log )
Formula:          Richness ~ B.A * Treatment + (1 | Eord)
Data: Herbivore

     AIC      BIC   logLik deviance df.resid
   494.5    514.1   -240.3    480.5      113

Random effects:

Conditional model:
 Groups Name        Variance  Std.Dev.
 Eord   (Intercept) 7.814e-10 2.795e-05
Number of obs: 120, groups:  Eord, 5

Conditional model:
                              Estimate Std. Error z value Pr(>|z|)
(Intercept)                    1.63142    0.08513  19.165  < 2e-16 ***
B.ABefore                     -0.53280    0.16051  -3.319 0.000902 ***
TreatmentReference            -0.36291    0.15123  -2.400 0.016411 *
TreatmentRemediation          -0.80012    0.15289  -5.233 1.67e-07 ***
B.ABefore:TreatmentReference   0.30575    0.26609   1.149 0.250534
B.ABefore:TreatmentRemediation 0.39465    0.26395   1.495 0.134872
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

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```
> Anova(Herbivore_Richness)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Richness
               Chisq Df Pr(>Chisq)
B.A           9.9453  1   0.001613 **
Treatment    29.1981  2  4.568e-07 ***
B.A:Treatment  2.6523  2   0.265500
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(Herbivore_Richness, pairwise ~ B.A | Treatment)
$emmeans
Treatment = Nearfield:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After   1.631 0.0851 Inf     1.465      1.80
 Before  1.099 0.1361 Inf     0.832      1.37

Treatment = Reference:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After   1.269 0.1250 Inf     1.024      1.51
 Before  1.041 0.1715 Inf     0.705      1.38

Treatment = Remediation:
 B.A    emmean     SE  df asymp.LCL asymp.UCL
 After   0.831 0.1270 Inf     0.582      1.08
 Before  0.693 0.1667 Inf     0.366      1.02

Results are given on the log (not the response) scale.
Confidence level used: 0.95

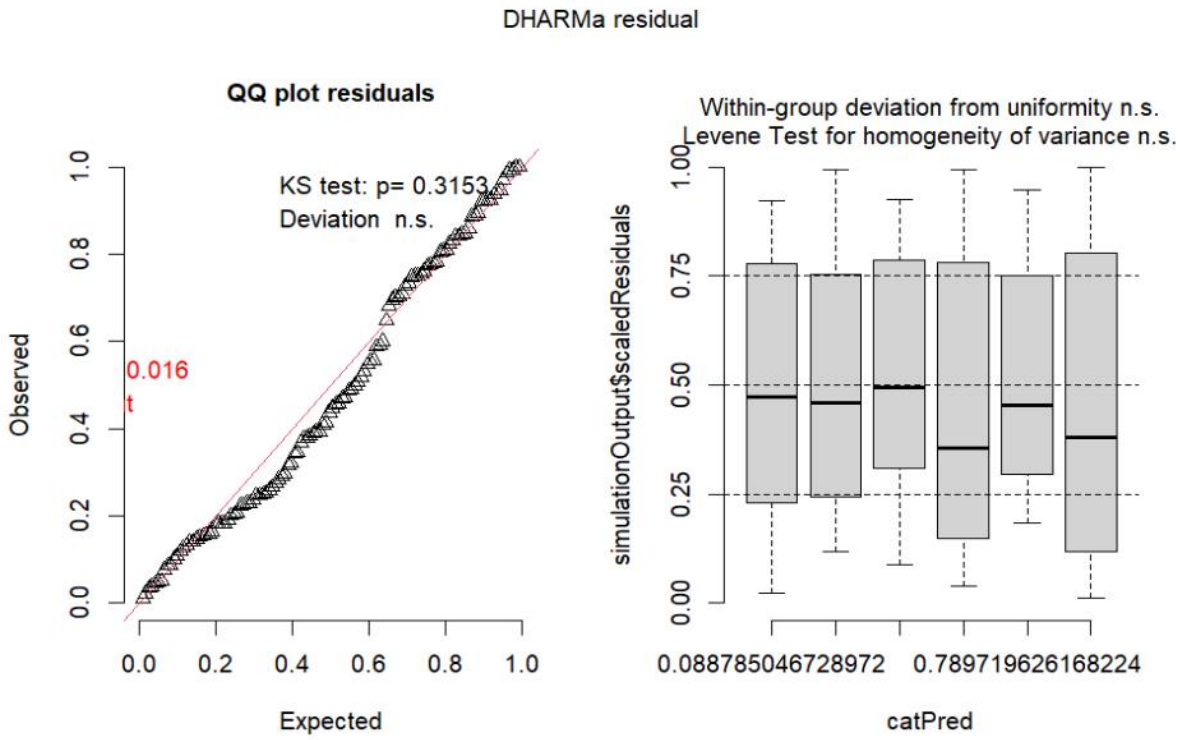
$contrasts
Treatment = Nearfield:
 contrast       estimate    SE  df z.ratio p.value
 After - Before    0.533 0.161 Inf   3.319  0.0009

Treatment = Reference:
 contrast       estimate    SE  df z.ratio p.value
 After - Before    0.227 0.212 Inf   1.070  0.2847

Treatment = Remediation:
 contrast       estimate    SE  df z.ratio p.value
 After - Before    0.138 0.210 Inf   0.659  0.5097

Results are given on the log (not the response) scale.
```

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### B.3.8 Herbivore Abundance

```
Herbivore_Abundance <- glmmTMB(Abundance ~ B.A * Treatment + (1|Eord), family =
nbinom2(), data = Herbivore)
> summary(Herbivore_Abundance)
 Family: nbinom2  ( log )
Formula:          Abundance ~ B.A * Treatment + (1 | Eord)
Data: Herbivore

     AIC      BIC   logLik deviance df.resid
   819.2    841.5   -401.6    803.2      112

Random effects:

Conditional model:
 Groups Name        Variance  Std.Dev.
 Eord   (Intercept) 3.008e-09 5.484e-05
Number of obs: 120, groups:  Eord, 5

Dispersion parameter for nbinom2 family (): 1.49

Conditional model:
                              Estimate Std. Error z value Pr(>|z|)
(Intercept)                     2.8717     0.1644  17.472  < 2e-16 ***
B.ABefore                      -0.6030     0.2648  -2.277   0.0228 *
TreatmentReference              0.2830     0.2584   1.095   0.2735
TreatmentRemediation           -1.1839     0.2425  -4.883 1.04e-06 ***
B.ABefore:TreatmentReference    0.3058     0.4132   0.740   0.4593
B.ABefore:TreatmentRemediation  0.2145     0.3930   0.546   0.5852
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(Herbivore_Abundance)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Abundance
               Chisq Df Pr(>Chisq)
B.A           7.2418  1   0.007123 **
Treatment    58.0913  2   2.43e-13 ***
```

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```
B.A:Treatment  0.6106  2   0.736918
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(Herbivore_Abundance, pairwise ~ B.A | Treatment)
$emmeans
Treatment = Nearfield:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After    2.87 0.164 Inf      2.55      3.19
 Before   2.27 0.208 Inf      1.86      2.68

Treatment = Reference:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After    3.15 0.199 Inf      2.76      3.55
 Before   2.86 0.247 Inf      2.37      3.34

Treatment = Remediation:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 After    1.69 0.178 Inf      1.34      2.04
 Before   1.30 0.229 Inf      0.85      1.75

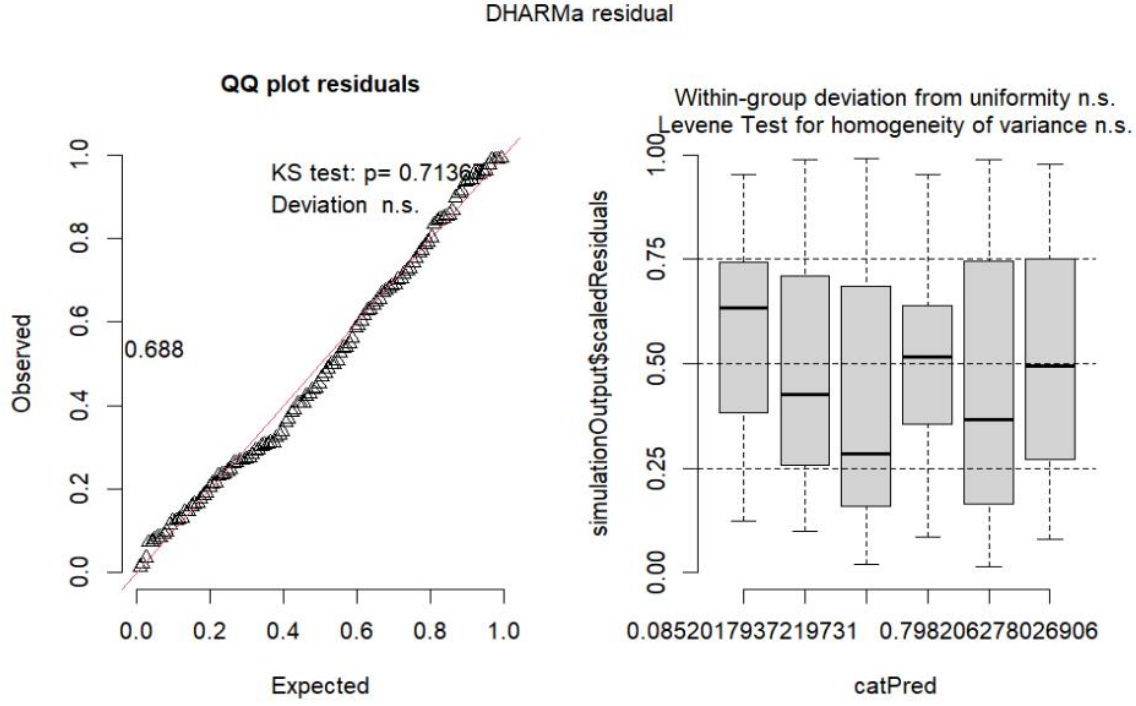
Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Treatment = Nearfield:
 contrast       estimate    SE  df z.ratio p.value
 After - Before    0.603 0.265 Inf   2.277  0.0228

Treatment = Reference:
 contrast       estimate    SE  df z.ratio p.value
 After - Before    0.297 0.317 Inf   0.937  0.3487

Treatment = Remediation:
 contrast       estimate    SE  df z.ratio p.value
 After - Before    0.388 0.290 Inf   1.338  0.1809

Results are given on the log (not the response) scale.
```




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## B.3.9 BRUV Multivariate Tests

# PERMANOVA
# Permutational MANOVA

Resemblance worksheet
Name: Resem4
Data type: Similarity
Selection: All
Transform: Fourth root
Resemblance: S17 Bray-Curtis similarity

Sums of squares type: Type III (partial)
Fixed effects sum to zero for mixed terms
Permutation method: Permutation of residuals under a reduced model
Number of permutations: 999

Factors

| Name | Abbrev. | Type | Levels |
|---|---|---|---|
| B..A | B. | Fixed | 2 |
| Treatment | Tr | Fixed | 3 |
| Location | Lo | Random | 9 |

PERMANOVA table of results

| Source | df | SS | MS | Pseudo-F | P(perm) | Unique perms |
|---|---|---|---|---|---|---|
| B. | 1 | 19429 | 19429 | 9.6789 | 0.003 | 999 |
| Tr | 2 | 131936596.6 | | 1.9592 | 0.044 | 816 |
| Lo(Tr) | 6 | 240684011.4 | | 2.8681 | 0.001 | 994 |
| B.xTr | 2 | 3997 | 1998.5 | 0.99255 | 0.487 | 998 |
| B.xLo(Tr)** | 5 | 101442028.8 | | 1.4506 | 0.003 | 992 |
| Res | 101 | 1.4126E+05 | | 1398.6 | | |
| Total | 117 | 2.3075E+05 | | | | |

** Term has one or more empty cells

Details of the expected mean squares (EMS) for the model

| Source | EMS |
|---|---|
| B. | 1*V(Res) + 6.7787*V(B.xLo(Tr)) + 52.293*S(B.) |
| Tr | 1*V(Res) + 8.9829*V(Lo(Tr)) + 26.949*S(Tr) |
| Lo(Tr) | 1*V(Res) + 11.923*V(Lo(Tr)) |
| B.xTr | 1*V(Res) + 6.8469*V(B.xLo(Tr)) + 18.106*S(B.xTr) |
| B.xLo(Tr) | 1*V(Res) + 7.0176*V(B.xLo(Tr)) |
| Res | 1*V(Res) |

Construction of Pseudo-F ratio(s) from mean squares

| Source | Numerator | Denominator | Num.df | Den.df | |
|---|---|---|---|---|---|
| B. | 1*B. | 0.96596*B.xLo(Tr) + 0.034042*Res | 1 | 5.25 | |
| Tr | 1*Tr | 0.75339*Lo(Tr) + 0.24661*Res | 2 | 7.44 | |
| Lo(Tr) | 1*Lo(Tr) | 1*Res | 6 | 101 | |
| B.xTr | 1*B.xTr | 0.97567*B.xLo(Tr) + 0.02433*Res | 2 | 5.17 | |
| B.xLo(Tr) | 1*B.xLo(Tr) | 1*Res | 5 | 101 | |

Estimates of components of variation

| Source | Estimate | Sq.root |
|---|---|---|

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| | | |
|---|---|---|
| S(B.) | 333.16 | 18.253 |
| S(Tr) | 119.84 | 10.947 |
| V(Lo(Tr)) | 219.13 | 14.803 |
| S(B.xTr) | -0.82801 | -0.90995 |
| V(B.xLo(Tr)) | 89.803 | 9.4764 |
| V(Res) | 1398.6 | 37.398 |

## B.4 Biotic Contamination

### B.4.1 Fish Biota

```
mod_FishCopper <- glmmTMB(Copper_norm ~ B.A * Location +(1|Eord), family=tweedi
e(), data=Fish_norm)
> summary(mod_FishCopper)
 Family: tweedie  ( log )
Formula:          Copper_norm ~ B.A * Location + (1 | Eord)
Data: Fish_norm

     AIC      BIC   logLik deviance df.resid
  -910.4   -851.9    474.2   -948.4      141

Random effects:

Conditional model:
 Groups Name        Variance  Std.Dev.
 Eord   (Intercept) 2.705e-09 5.201e-05
Number of obs: 160, groups:  Eord, 4

Dispersion parameter for tweedie family (): 0.477

Conditional model:
                      Estimate Std. Error z value Pr(>|z|)
(Intercept)           -3.899787   0.269314 -14.480  < 2e-16 ***
B.Abefore              0.752182   0.373392   2.014  0.04396 *
Locationm_B           -1.281203   0.394688  -3.246  0.00117 **
Locationm_C           -0.923070   0.390681  -2.363  0.01814 *
Locationm_D           -0.324382   0.384234  -0.844  0.39854
Locationm_E           -0.185028   0.382776  -0.483  0.62882
Locationm_G            2.087853   0.361204   5.780 7.46e-09 ***
Locationm_H           -0.055570   0.381437  -0.146  0.88417
Locationm_I           -0.640503   0.387600  -1.652  0.09844 .
B.Abefore:Locationm_B  0.343994   0.544663   0.632  0.52767
B.Abefore:Locationm_C -0.006042   0.541708  -0.011  0.99110
B.Abefore:Locationm_D -0.167516   0.533905  -0.314  0.75371
B.Abefore:Locationm_E -0.979399   0.537800  -1.821  0.06859 .
B.Abefore:Locationm_G -2.819967   0.519359  -5.430 5.64e-08 ***
B.Abefore:Locationm_H -0.351490   0.531293  -0.662  0.50824
B.Abefore:Locationm_I  0.396441   0.534600   0.742  0.45835
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_FishCopper)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Copper_norm
              Chisq Df Pr(>Chisq)
B.A          3.8139  1    0.05083 .
Location    70.5938  7  1.121e-12 ***
B.A:Location 57.1412  7  5.604e-10 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_FishCopper, pairwise ~ B.A | Location)
$emmeans
```

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```
Location = m_A:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -3.90 0.269 Inf     -4.43     -3.37
 before  -3.15 0.259 Inf     -3.65     -2.64

Location = m_B:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -5.18 0.289 Inf     -5.75     -4.62
 before  -4.08 0.272 Inf     -4.62     -3.55

Location = m_C:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -4.82 0.283 Inf     -5.38     -4.27
 before  -4.08 0.272 Inf     -4.61     -3.54

Location = m_D:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -4.22 0.274 Inf     -4.76     -3.69
 before  -3.64 0.266 Inf     -4.16     -3.12

Location = m_E:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -4.08 0.272 Inf     -4.62     -3.55
 before  -4.31 0.275 Inf     -4.85     -3.77

Location = m_G:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -1.81 0.241 Inf     -2.28     -1.34
 before  -3.88 0.269 Inf     -4.41     -3.35

Location = m_H:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -3.96 0.270 Inf     -4.48     -3.43
 before  -3.55 0.264 Inf     -4.07     -3.04

Location = m_I:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -4.54 0.279 Inf     -5.09     -3.99
 before  -3.39 0.262 Inf     -3.91     -2.88

Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Location = m_A:
 contrast       estimate    SE  df z.ratio p.value
 after - before   -0.752 0.373 Inf  -2.014  0.0440

Location = m_B:
 contrast       estimate    SE  df z.ratio p.value
 after - before   -1.096 0.397 Inf  -2.764  0.0057

Location = m_C:
 contrast       estimate    SE  df z.ratio p.value
 after - before   -0.746 0.392 Inf  -1.901  0.0573

Location = m_D:
 contrast       estimate    SE  df z.ratio p.value
 after - before   -0.585 0.382 Inf  -1.532  0.1255

Location = m_E:
 contrast       estimate    SE  df z.ratio p.value
 after - before    0.227 0.387 Inf   0.587  0.5572

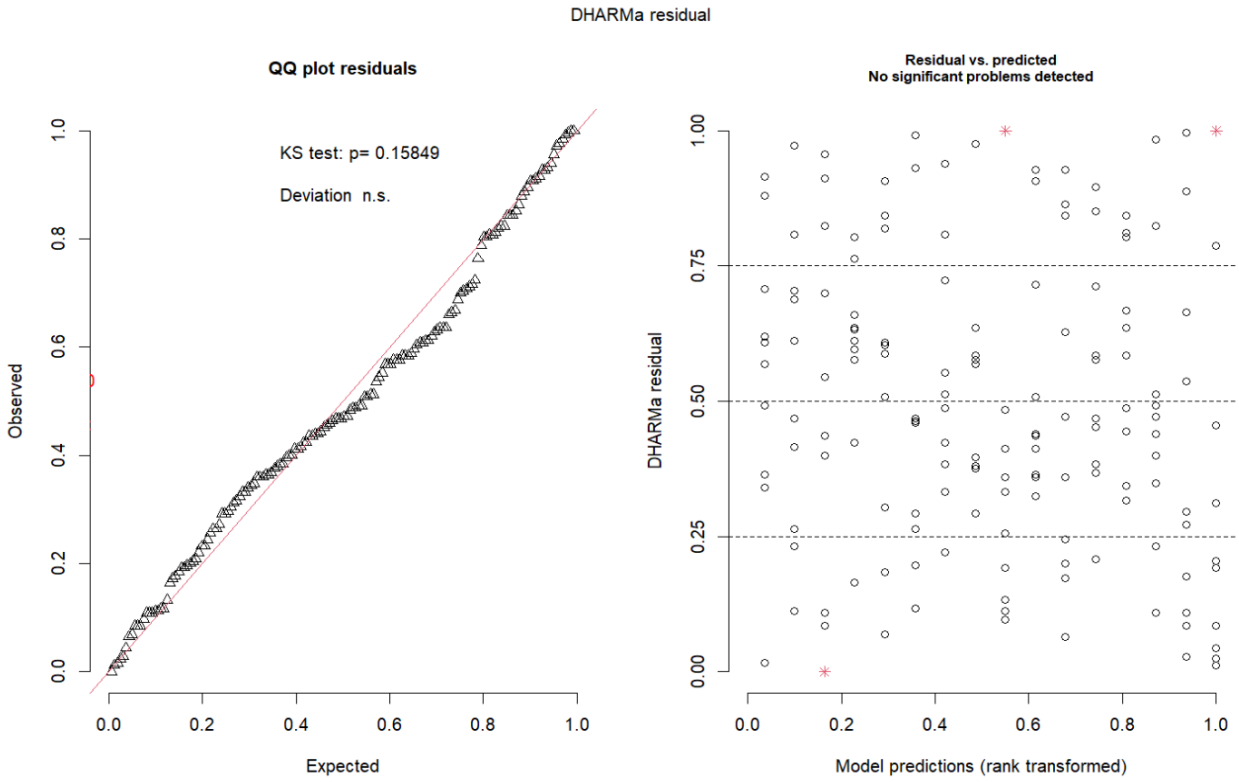
Location = m_G:
 contrast       estimate    SE  df z.ratio p.value
 after - before    2.068 0.361 Inf   5.728  <.0001
```

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```
Location = m_H:
 contrast       estimate    SE  df z.ratio p.value
 after - before   -0.401 0.378 Inf  -1.060  0.2891

Location = m_I:
 contrast       estimate    SE  df z.ratio p.value
 after - before   -1.149 0.383 Inf  -3.002  0.0027

Results are given on the log (not the response) scale.
```




```
> mod_FishZinc <- glmmTMB(Zinc_norm ~ B.A * Location + (1|Eord), family=tweedie
(), data=Fish_norm)
> summary(mod_FishZinc)
 Family: tweedie  ( log )
Formula:          Zinc_norm ~ B.A * Location + (1 | Eord)
Data: Fish_norm

     AIC      BIC   logLik deviance df.resid
  -319.4   -261.0    178.7   -357.4      141

Random effects:

Conditional model:
 Groups Name        Variance Std.Dev.
 Eord   (Intercept) 0.03617  0.1902
Number of obs: 160, groups:  Eord, 4

Dispersion parameter for tweedie family (): 0.333

Conditional model:
                  Estimate Std. Error z value Pr(>|z|)
(Intercept)        -1.61614    0.25374  -6.369  1.9e-10 ***
B.Abefore          -0.12304    0.35944  -0.342 0.732118
Locationm_B        -0.56341    0.31440  -1.792 0.073126 .
Locationm_C        -0.92203    0.31694  -2.909 0.003624 **
Locationm_D        -0.66505    0.31425  -2.116 0.034322 *
```

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```
Locationm_E            -0.50032    0.31252  -1.601 0.109393
Locationm_G             0.93925    0.28931   3.247 0.001168 **
Locationm_H            -0.56175    0.31452  -1.786 0.074091 .
Locationm_I            -0.63125    0.31181  -2.024 0.042920 *
B.Abefore:Locationm_B -0.03305    0.44534  -0.074 0.940846
B.Abefore:Locationm_C  1.09573    0.43854   2.499 0.012470 *
B.Abefore:Locationm_D  0.50986    0.44147   1.155 0.248127
B.Abefore:Locationm_E  0.33906    0.43883   0.773 0.439736
B.Abefore:Locationm_G -1.42343    0.42675  -3.336 0.000851 ***
B.Abefore:Locationm_H  0.18494    0.44367   0.417 0.676793
B.Abefore:Locationm_I  0.41100    0.43899   0.936 0.349144
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_FishZinc)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Zinc_norm
              Chisq Df Pr(>Chisq)
B.A          0.0011  1  0.9732556
Location    26.1081  7  0.0004817 ***
B.A:Location 39.2313  7  1.766e-06 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_FishZinc, pairwise ~ B.A | Location)
$emmeans
Location = m_A:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after  -1.616 0.254 Inf     -2.11    -1.119
 before -1.739 0.255 Inf     -2.24    -1.240

Location = m_B:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after  -2.180 0.264 Inf     -2.70    -1.663
 before -2.336 0.266 Inf     -2.86    -1.815

Location = m_C:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after  -2.538 0.270 Inf     -3.07    -2.009
 before -1.565 0.252 Inf     -2.06    -1.072

Location = m_D:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after  -2.281 0.265 Inf     -2.80    -1.762
 before -1.894 0.259 Inf     -2.40    -1.387

Location = m_E:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after  -2.116 0.262 Inf     -2.63    -1.603
 before -1.900 0.258 Inf     -2.41    -1.394

Location = m_G:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after  -0.677 0.239 Inf     -1.15    -0.208
 before -2.223 0.264 Inf     -2.74    -1.705

Location = m_H:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after  -2.178 0.264 Inf     -2.69    -1.661
 before -2.116 0.262 Inf     -2.63    -1.602

Location = m_I:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after  -2.247 0.265 Inf     -2.77    -1.728
 before -1.959 0.259 Inf     -2.47    -1.453

Results are given on the log (not the response) scale.
Confidence level used: 0.95
```

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```
$contrasts
Location = m_A:
 contrast       estimate    SE  df z.ratio p.value
 after - before   0.1230 0.359 Inf   0.342  0.7321

Location = m_B:
 contrast       estimate    SE  df z.ratio p.value
 after - before   0.1561 0.375 Inf   0.417  0.6769

Location = m_C:
 contrast       estimate    SE  df z.ratio p.value
 after - before  -0.9727 0.369 Inf  -2.637  0.0084

Location = m_D:
 contrast       estimate    SE  df z.ratio p.value
 after - before  -0.3868 0.371 Inf  -1.044  0.2966

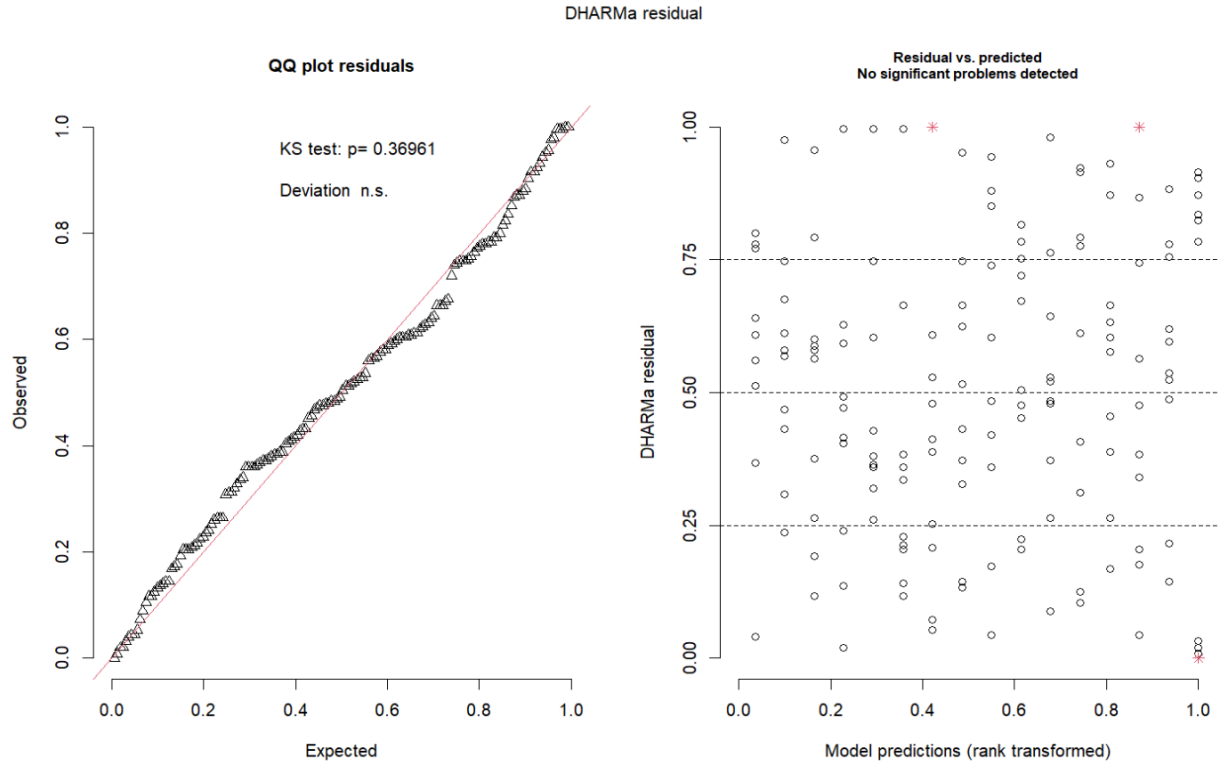
Location = m_E:
 contrast       estimate    SE  df z.ratio p.value
 after - before  -0.2160 0.368 Inf  -0.588  0.5568

Location = m_G:
 contrast       estimate    SE  df z.ratio p.value
 after - before   1.5465 0.356 Inf   4.344  <.0001

Location = m_H:
 contrast       estimate    SE  df z.ratio p.value
 after - before  -0.0619 0.372 Inf  -0.166  0.8680

Location = m_I:
 contrast       estimate    SE  df z.ratio p.value
 after - before  -0.2880 0.370 Inf  -0.777  0.4369

Results are given on the log (not the response) scale.
```




```
mod_FishCopper <- glmmTMB(Copper_norm ~ B.A * Treatment +(1|Eord), family=tweed
ie(), data=Fish_norm)
```

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```
> summary(mod_FishCopper)
 Family: tweedie  ( log )
Formula:          Copper_norm ~ B.A * Treatment + (1 | Eord)
Data: Fish_norm

     AIC      BIC   logLik deviance df.resid
  -848.8   -821.1    433.4   -866.8      151

Random effects:

Conditional model:
 Groups Name        Variance Std.Dev.
 Eord   (Intercept) 0.009259 0.09622
Number of obs: 160, groups:  Eord, 4

Dispersion parameter for tweedie family (): 0.91

Conditional model:
                              Estimate Std. Error z value Pr(>|z|)
(Intercept)                    -2.8037     0.2005 -13.984  < 2e-16 ***
B.Abefore                      -1.0427     0.2872  -3.631 0.000282 ***
TreatmentReference             -1.4134     0.3027  -4.669 3.03e-06 ***
TreatmentRemediation           -1.3983     0.2700  -5.178 2.24e-07 ***
B.Abefore:TreatmentReference    1.7928     0.4279   4.190 2.79e-05 ***
B.Abefore:TreatmentRemediation  1.5248     0.3858   3.953 7.73e-05 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_FishCopper)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Copper_norm
               Chisq Df Pr(>Chisq)
B.A           0.0248  1   0.874913
Treatment    12.6428  2   0.001797 **
B.A:Treatment 23.1117  2   9.58e-06 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_FishCopper, pairwise ~ B.A | Treatment)
$emmeans
Treatment = Nearfield:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -2.80 0.200 Inf     -3.20     -2.41
 before  -3.85 0.204 Inf     -4.25     -3.45

Treatment = Reference:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -4.22 0.249 Inf     -4.70     -3.73
 before  -3.47 0.243 Inf     -3.94     -2.99

Treatment = Remediation:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -4.20 0.206 Inf     -4.61     -3.80
 before  -3.72 0.205 Inf     -4.12     -3.32

Results are given on the log (not the response) scale.
Confidence level used: 0.95

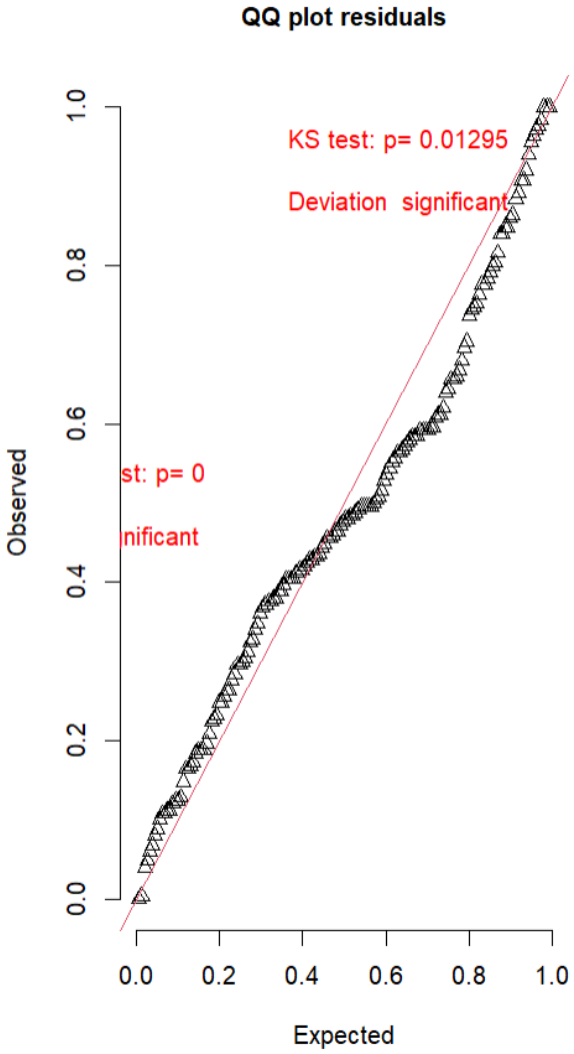
$contrasts
Treatment = Nearfield:
 contrast       estimate    SE  df z.ratio p.value
 after - before    1.043 0.287 Inf   3.631  0.0003

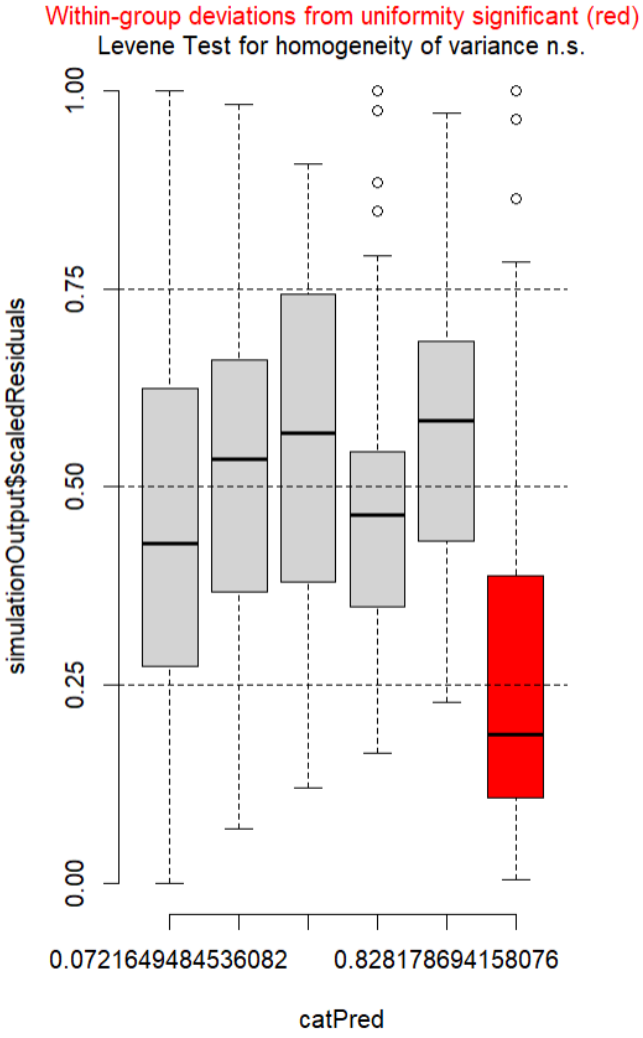
Treatment = Reference:
 contrast       estimate    SE  df z.ratio p.value
 after - before   -0.750 0.348 Inf  -2.154  0.0313

Treatment = Remediation:
 contrast       estimate    SE  df z.ratio p.value
```

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```
 after - before   -0.482 0.290 Inf  -1.661  0.0967
Results are given on the log (not the response) scale.
```




```
> mod_FishZinc <- glmmTMB(Zinc_norm ~ B.A * Treatment + (1|Eord), family=tweedi
e(), data=Fish_norm)
> summary(mod_FishZinc)
 Family: tweedie  ( log )
Formula:          Zinc_norm ~ B.A * Treatment + (1 | Eord)
Data: Fish_norm

     AIC      BIC   logLik deviance df.resid
  -296.2   -268.5    157.1   -314.2      151

Random effects:

Conditional model:
 Groups Name        Variance Std.Dev.
 Eord   (Intercept) 0.05936  0.2436
Number of obs: 160, groups:  Eord, 4

Dispersion parameter for tweedie family (): 0.463

Conditional model:
                            Estimate Std. Error z value Pr(>|z|)
(Intercept)                  -1.4422     0.2217  -6.506 7.71e-11 ***
```

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```
B.Abefore                        -0.6967     0.3171  -2.197 0.027992 *
TreatmentReference               -0.7647     0.2281  -3.353 0.000799 ***
TreatmentRemediation             -0.5862     0.2007  -2.921 0.003485 **
B.Abefore:TreatmentReference      0.8679     0.3239   2.679 0.007374 **
B.Abefore:TreatmentRemediation    1.0035     0.2871   3.495 0.000473 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_FishZinc)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Zinc_norm
               Chisq Df Pr(>Chisq)
B.A           0.1479  1  0.7005562
Treatment     4.6212  2  0.0992028 .
B.A:Treatment 13.8260  2  0.0009948 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_FishZinc, pairwise ~ B.A | Treatment)
$emmeans
Treatment = Nearfield:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -1.44 0.222 Inf     -1.88     -1.01
 before  -2.14 0.227 Inf     -2.58     -1.69

Treatment = Reference:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -2.21 0.249 Inf     -2.70     -1.72
 before  -2.04 0.248 Inf     -2.52     -1.55

Treatment = Remediation:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -2.03 0.225 Inf     -2.47     -1.59
 before  -1.72 0.223 Inf     -2.16     -1.28

Results are given on the log (not the response) scale.
Confidence level used: 0.95

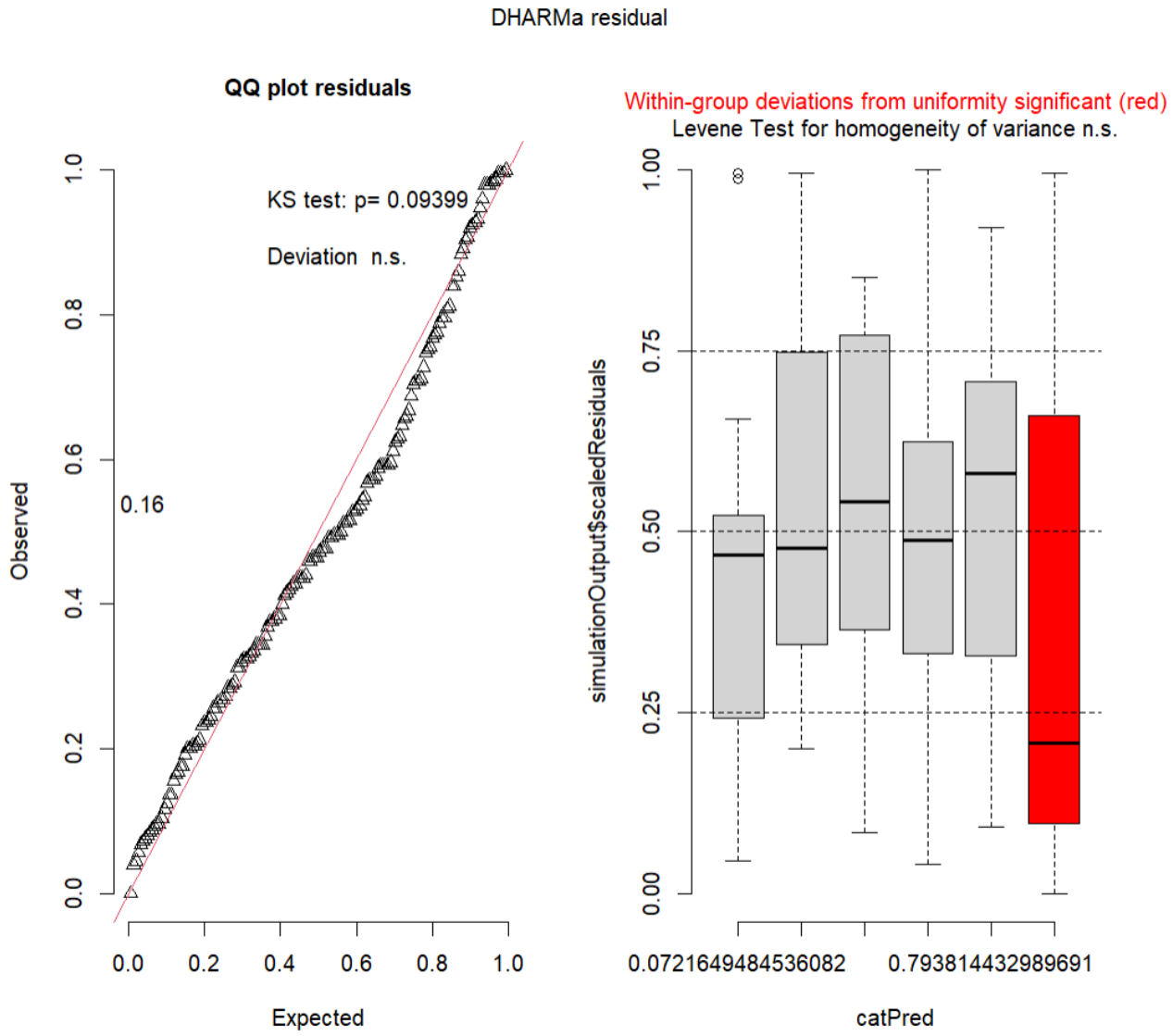
$contrasts
Treatment = Nearfield:
 contrast       estimate    SE  df z.ratio p.value
 after - before    0.697 0.317 Inf   2.197  0.0280

Treatment = Reference:
 contrast       estimate    SE  df z.ratio p.value
 after - before   -0.171 0.351 Inf  -0.487  0.6260

Treatment = Remediation:
 contrast       estimate    SE  df z.ratio p.value
 after - before   -0.307 0.317 Inf  -0.968  0.3332

Results are given on the log (not the response) scale.
```

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## B.4.2 Ascidian Biota

```
> mod_AscidanCopper <- glmmTMB(Copper_norm ~ B.A * Location + (1|Eord), family=
tweedie(), data=Ascidian_norm)
> summary(mod_AscidanCopper)
 Family: tweedie  ( log )
Formula:          Copper_norm ~ B.A * Location + (1 | Eord)
Data: Ascidian_norm

     AIC      BIC   logLik deviance df.resid
  -604.7   -546.3    321.4   -642.7      141

Random effects:

Conditional model:
 Groups Name        Variance Std.Dev.
 Eord   (Intercept) 0.4053   0.6367
Number of obs: 160, groups:  Eord, 4

Dispersion parameter for tweedie family (): 0.28

Conditional model:
                     Estimate Std. Error z value Pr(>|z|)
```

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```
(Intercept)           -2.24982    0.49831  -4.515 6.33e-06 ***
B.Abefore              0.27457    0.70471   0.390  0.69682
Locationm_B           -0.11099    0.30414  -0.365  0.71516
Locationm_C            0.12450    0.30002   0.415  0.67816
Locationm_D           -0.03431    0.30378  -0.113  0.91008
Locationm_E           -0.24330    0.30671  -0.793  0.42762
Locationm_G           -0.18098    0.30567  -0.592  0.55379
Locationm_H           -0.04102    0.30286  -0.135  0.89227
Locationm_I            0.11182    0.30183   0.370  0.71103
B.Abefore:Locationm_B -0.96403    0.44239  -2.179  0.02932 *
B.Abefore:Locationm_C -1.29773    0.43805  -2.963  0.00305 **
B.Abefore:Locationm_D -1.15237    0.44198  -2.607  0.00913 **
B.Abefore:Locationm_E -0.70214    0.44061  -1.594  0.11103
B.Abefore:Locationm_G -0.96416    0.44188  -2.182  0.02911 *
B.Abefore:Locationm_H -1.41995    0.44619  -3.182  0.00146 **
B.Abefore:Locationm_I -1.32085    0.44055  -2.998  0.00272 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_AscidanCopper)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Copper_norm
               Chisq Df Pr(>Chisq)
B.A           1.1128  1    0.29148
Location     14.7844  7    0.03886 *
B.A:Location 15.4487  7    0.03066 *
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_AscidanCopper, pairwise ~ B.A | Location)
$emmeans
Location = m_A:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -2.25 0.498 Inf     -3.23    -1.273
 before  -1.98 0.498 Inf     -2.95    -0.999

Location = m_B:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -2.36 0.500 Inf     -3.34    -1.382
 before  -3.05 0.509 Inf     -4.05    -2.054

Location = m_C:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -2.13 0.497 Inf     -3.10    -1.151
 before  -3.15 0.510 Inf     -4.15    -2.150

Location = m_D:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -2.28 0.499 Inf     -3.26    -1.305
 before  -3.16 0.510 Inf     -4.16    -2.163

Location = m_E:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -2.49 0.501 Inf     -3.48    -1.511
 before  -2.92 0.507 Inf     -3.91    -1.928

Location = m_G:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -2.43 0.501 Inf     -3.41    -1.450
 before  -3.12 0.509 Inf     -4.12    -2.123

Location = m_H:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -2.29 0.499 Inf     -3.27    -1.313
 before  -3.44 0.513 Inf     -4.44    -2.430

Location = m_I:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -2.14 0.498 Inf     -3.11    -1.161
```

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```
 before  -3.18 0.510 Inf     -4.18    -2.185

Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Location = m_A:
 contrast       estimate    SE  df z.ratio p.value
 after - before   -0.275 0.705 Inf  -0.390  0.6968

Location = m_B:
 contrast       estimate    SE  df z.ratio p.value
 after - before    0.689 0.713 Inf   0.967  0.3335

Location = m_C:
 contrast       estimate    SE  df z.ratio p.value
 after - before    1.023 0.712 Inf   1.437  0.1506

Location = m_D:
 contrast       estimate    SE  df z.ratio p.value
 after - before    0.878 0.714 Inf   1.230  0.2186

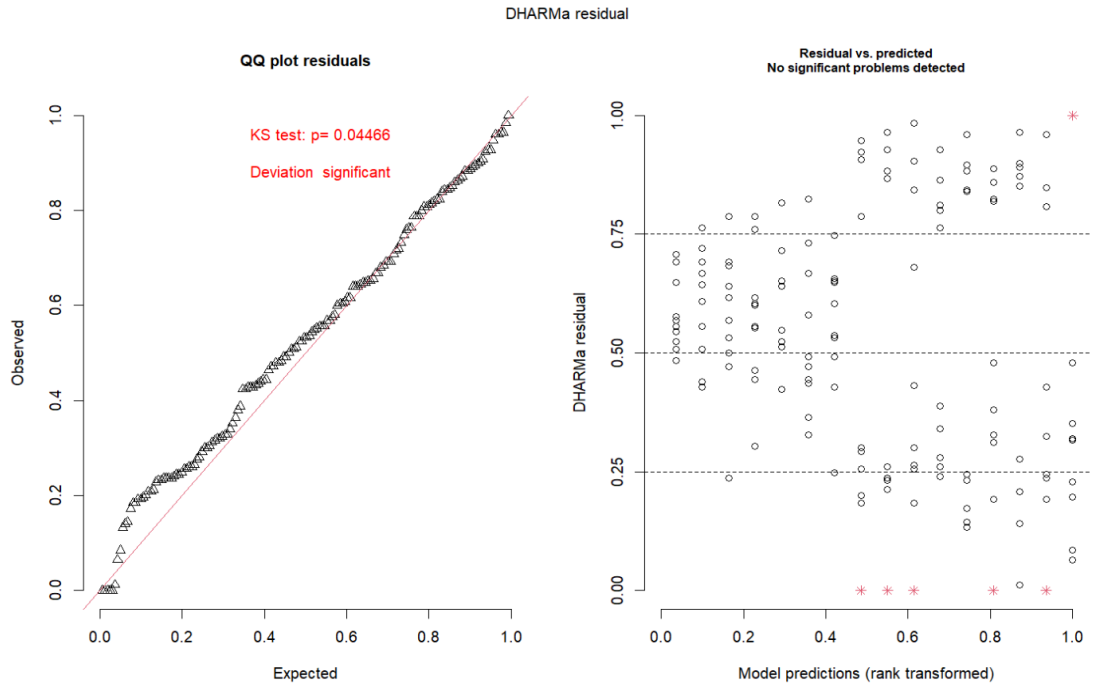
Location = m_E:
 contrast       estimate    SE  df z.ratio p.value
 after - before    0.428 0.713 Inf   0.600  0.5485

Location = m_G:
 contrast       estimate    SE  df z.ratio p.value
 after - before    0.690 0.714 Inf   0.966  0.3341

Location = m_H:
 contrast       estimate    SE  df z.ratio p.value
 after - before    1.145 0.716 Inf   1.600  0.1095

Location = m_I:
 contrast       estimate    SE  df z.ratio p.value
 after - before    1.046 0.713 Inf   1.468  0.1422

Results are given on the log (not the response) scale.
```




```
> mod_AscidianZinc <- glmmTMB(Zinc_norm ~ B.A * Location + (1|Eord), family=twe
edie(), data=Ascidian_norm)
```

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```
> summary(mod_AscidianZinc)
 Family: tweedie  ( log )
Formula:          Zinc_norm ~ B.A * Location + (1 | Eord)
Data: Ascidian_norm

     AIC      BIC   logLik deviance df.resid
  -644.3   -585.8    341.1   -682.3      141

Random effects:

Conditional model:
 Groups Name        Variance Std.Dev.
 Eord   (Intercept) 0.2769   0.5262
Number of obs: 160, groups:  Eord, 4

Dispersion parameter for tweedie family (): 0.27

Conditional model:
                     Estimate Std. Error z value Pr(>|z|)
(Intercept)           -1.31817    0.41737  -3.158 0.001587 **
B.Abefore             -2.10408    0.60885  -3.456 0.000549 ***
Locationm_B           -0.47248    0.27556  -1.715 0.086415 .
Locationm_C           -0.33767    0.27321  -1.236 0.216478
Locationm_D           -0.40649    0.27588  -1.473 0.140626
Locationm_E           -0.56309    0.27740  -2.030 0.042367 *
Locationm_G           -0.59999    0.27687  -2.167 0.030232 *
Locationm_H           -0.45589    0.27475  -1.659 0.097051 .
Locationm_I           -0.57090    0.27677  -2.063 0.039139 *
B.Abefore:Locationm_B  0.14218    0.44343   0.321 0.748479
B.Abefore:Locationm_C  0.01560    0.44181   0.035 0.971836
B.Abefore:Locationm_D  0.13821    0.44222   0.313 0.754634
B.Abefore:Locationm_E  0.19312    0.44505   0.434 0.664344
B.Abefore:Locationm_G  0.03936    0.44733   0.088 0.929888
B.Abefore:Locationm_H -0.10796    0.44633  -0.242 0.808874
B.Abefore:Locationm_I  0.04315    0.44675   0.097 0.923060
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_AscidianZinc)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Zinc_norm
              Chisq Df Pr(>Chisq)
B.A         14.4539  1  0.0001436 ***
Location    10.5048  7  0.1617248
B.A:Location  0.6289  7  0.9988247
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_AscidianZinc, pairwise ~ B.A | Location)
$emmeans
Location = m_A:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -1.32 0.417 Inf     -2.14    -0.500
 before  -3.42 0.443 Inf     -4.29    -2.553

Location = m_B:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -1.79 0.422 Inf     -2.62    -0.963
 before  -3.75 0.448 Inf     -4.63    -2.874

Location = m_C:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -1.66 0.421 Inf     -2.48    -0.831
 before  -3.74 0.448 Inf     -4.62    -2.866

Location = m_D:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -1.72 0.422 Inf     -2.55    -0.897
 before  -3.69 0.447 Inf     -4.57    -2.814
```

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```
Location = m_E:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -1.88 0.424 Inf     -2.71    -1.051
 before  -3.79 0.449 Inf     -4.67    -2.913

Location = m_G:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -1.92 0.423 Inf     -2.75    -1.088
 before  -3.98 0.452 Inf     -4.87    -3.097

Location = m_H:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -1.77 0.422 Inf     -2.60    -0.947
 before  -3.99 0.452 Inf     -4.87    -3.101

Location = m_I:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -1.89 0.423 Inf     -2.72    -1.059
 before  -3.95 0.451 Inf     -4.83    -3.066

Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Location = m_A:
 contrast       estimate    SE  df z.ratio p.value
 after - before     2.10 0.609 Inf   3.456  0.0005

Location = m_B:
 contrast       estimate    SE  df z.ratio p.value
 after - before     1.96 0.616 Inf   3.186  0.0014

Location = m_C:
 contrast       estimate    SE  df z.ratio p.value
 after - before     2.09 0.615 Inf   3.398  0.0007

Location = m_D:
 contrast       estimate    SE  df z.ratio p.value
 after - before     1.97 0.615 Inf   3.196  0.0014

Location = m_E:
 contrast       estimate    SE  df z.ratio p.value
 after - before     1.91 0.617 Inf   3.097  0.0020

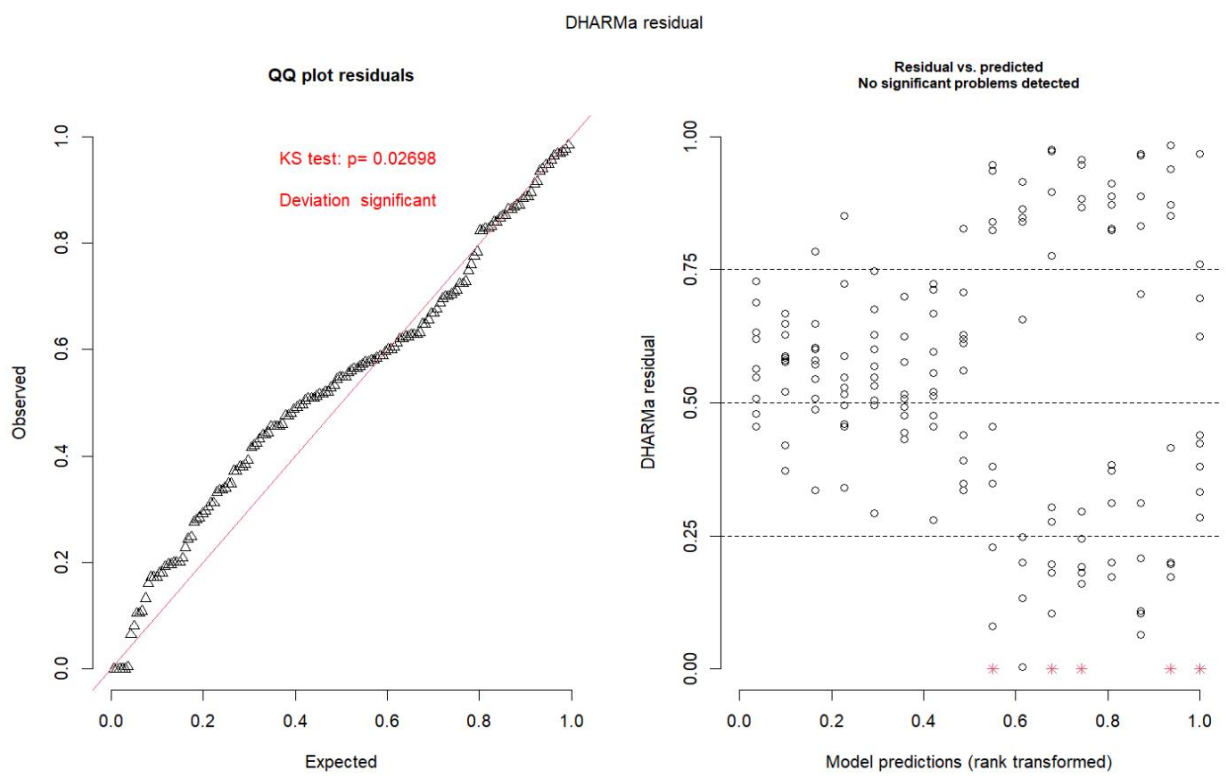
Location = m_G:
 contrast       estimate    SE  df z.ratio p.value
 after - before     2.06 0.619 Inf   3.335  0.0009

Location = m_H:
 contrast       estimate    SE  df z.ratio p.value
 after - before     2.21 0.618 Inf   3.578  0.0003

Location = m_I:
 contrast       estimate    SE  df z.ratio p.value
 after - before     2.06 0.619 Inf   3.331  0.0009

Results are given on the log (not the response) scale.
```

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```
> mod_AscidanCopper <- glmmTMB(Copper_norm ~ B.A * Treatment + (1|Eord), family
=tweedie(), data=Ascidian_norm)
> summary(mod_AscidanCopper)
 Family: tweedie  ( log )
Formula:          Copper_norm ~ B.A * Treatment + (1 | Eord)
Data: Ascidian_norm

     AIC      BIC   logLik deviance df.resid
  -607.0   -579.4    312.5   -625.0      151

Random effects:

Conditional model:
 Groups Name        Variance Std.Dev.
 Eord   (Intercept) 0.418    0.6465
Number of obs: 160, groups:  Eord, 4

Dispersion parameter for tweedie family (): 0.322

Conditional model:
                             Estimate Std. Error z value Pr(>|z|)
(Intercept)                  -2.35678    0.47635  -4.948 7.51e-07 ***
B.Abefore                    -0.74708    0.67591  -1.105   0.2690
TreatmentReference            0.14491    0.20703   0.700   0.4839
TreatmentRemediation          0.08036    0.18646   0.431   0.6665
B.Abefore:TreatmentReference -0.33879    0.31018  -1.092   0.2747
B.Abefore:TreatmentRemediation  0.46180    0.27455   1.682   0.0926 .
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_AscidanCopper)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Copper_norm
             Chisq Df Pr(>Chisq)
B.A         0.9684  1    0.32507
```

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```
Treatment     5.8828  2    0.05279 .
B.A:Treatment 7.1140  2    0.02852 *
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_AscidanCopper, pairwise ~ B.A | Treatment)
$emmeans
Treatment = Nearfield:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -2.36 0.476 Inf     -3.29     -1.42
 before  -3.10 0.480 Inf     -4.04     -2.16

Treatment = Reference:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -2.21 0.485 Inf     -3.16     -1.26
 before  -3.30 0.492 Inf     -4.26     -2.33

Treatment = Remediation:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -2.28 0.476 Inf     -3.21     -1.34
 before  -2.56 0.478 Inf     -3.50     -1.63

Results are given on the log (not the response) scale.
Confidence level used: 0.95

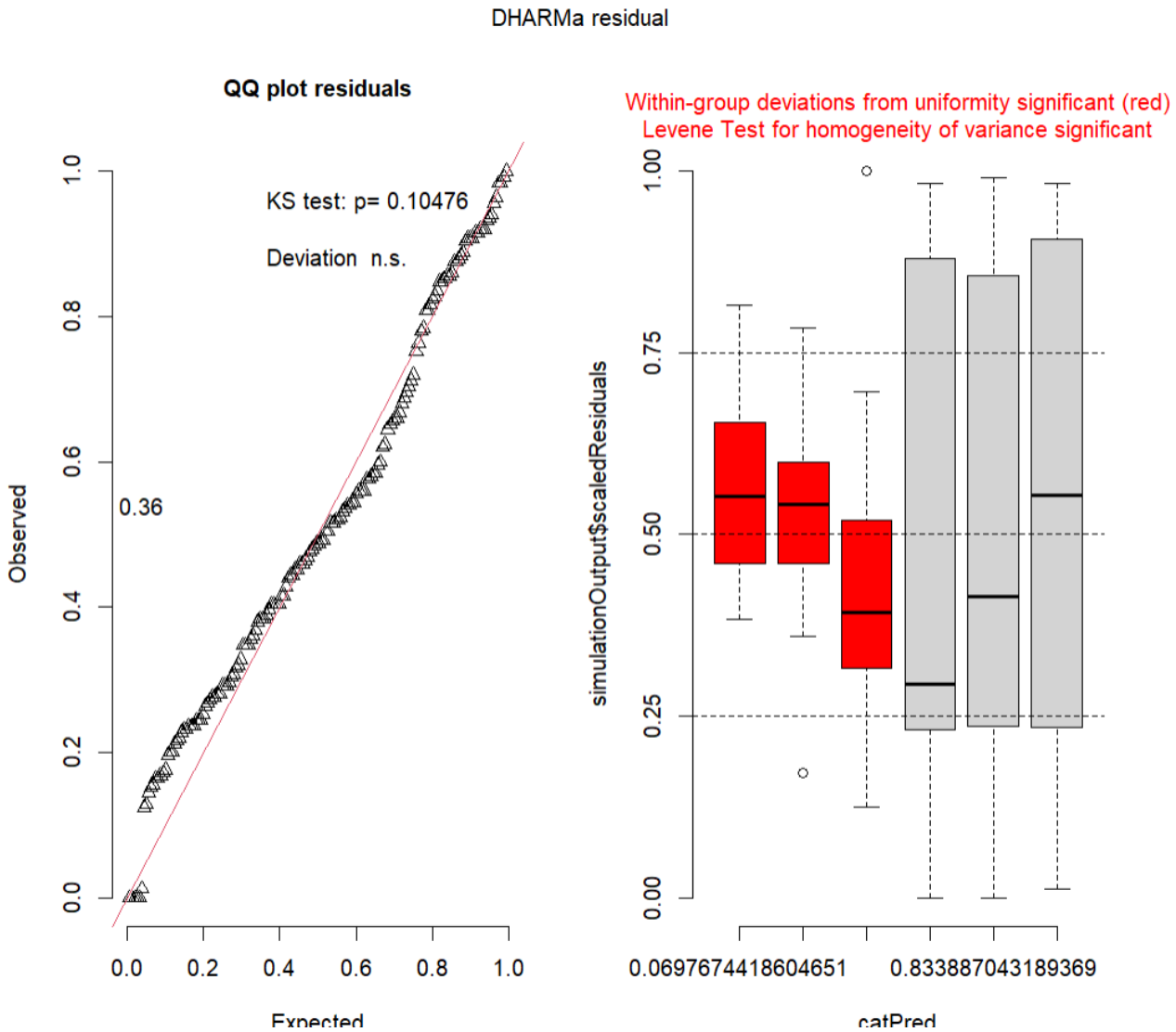
$contrasts
Treatment = Nearfield:
 contrast       estimate    SE  df z.ratio p.value
 after - before    0.747 0.676 Inf   1.105  0.2690

Treatment = Reference:
 contrast       estimate    SE  df z.ratio p.value
 after - before    1.086 0.690 Inf   1.573  0.1157

Treatment = Remediation:
 contrast       estimate    SE  df z.ratio p.value
 after - before    0.285 0.674 Inf   0.423  0.6722

Results are given on the log (not the response) scale.
```

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```
> mod_AscidianZinc <- glmmTMB(Zinc_norm ~ B.A * Treatment + (1|Eord), family=tw
eedie(), data=Ascidian_norm)
> summary(mod_AscidianZinc)
 Family: tweedie  ( log )
Formula:          Zinc_norm ~ B.A * Treatment + (1 | Eord)
Data: Ascidian_norm

     AIC      BIC   logLik deviance df.resid
  -657.4   -629.7    337.7   -675.4      151

Random effects:

Conditional model:
 Groups Name        Variance Std.Dev.
 Eord   (Intercept) 0.2685   0.5182
Number of obs: 160, groups:  Eord, 4

Dispersion parameter for tweedie family (): 0.284

Conditional model:
                           Estimate Std. Error z value Pr(>|z|)
(Intercept)                -1.80499    0.38538  -4.684 2.82e-06 ***
B.Abefore                  -1.99573    0.55189  -3.616 0.000299 ***
TreatmentReference         -0.02282    0.18688  -0.122 0.902824
TreatmentRemediation        0.21533    0.16521   1.303 0.192450
```

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```
B.Abefore:TreatmentReference   -0.14434    0.30111  -0.479 0.631687
B.Abefore:TreatmentRemediation -0.05349    0.26485  -0.202 0.839949
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_AscidianZinc)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Zinc_norm
                Chisq Df Pr(>Chisq)
B.A           14.9262  1  0.0001118 ***
Treatment      4.1138  2  0.1278506
B.A:Treatment  0.2300  2  0.8913666
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_AscidianZinc, pairwise ~ B.A | Treatment)
$emmeans
Treatment = Nearfield:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -1.80 0.385 Inf     -2.56    -1.050
 before  -3.80 0.395 Inf     -4.57    -3.026

Treatment = Reference:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -1.83 0.394 Inf     -2.60    -1.055
 before  -3.97 0.410 Inf     -4.77    -3.164

Treatment = Remediation:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -1.59 0.384 Inf     -2.34    -0.837
 before  -3.64 0.394 Inf     -4.41    -2.866

Results are given on the log (not the response) scale.
Confidence level used: 0.95

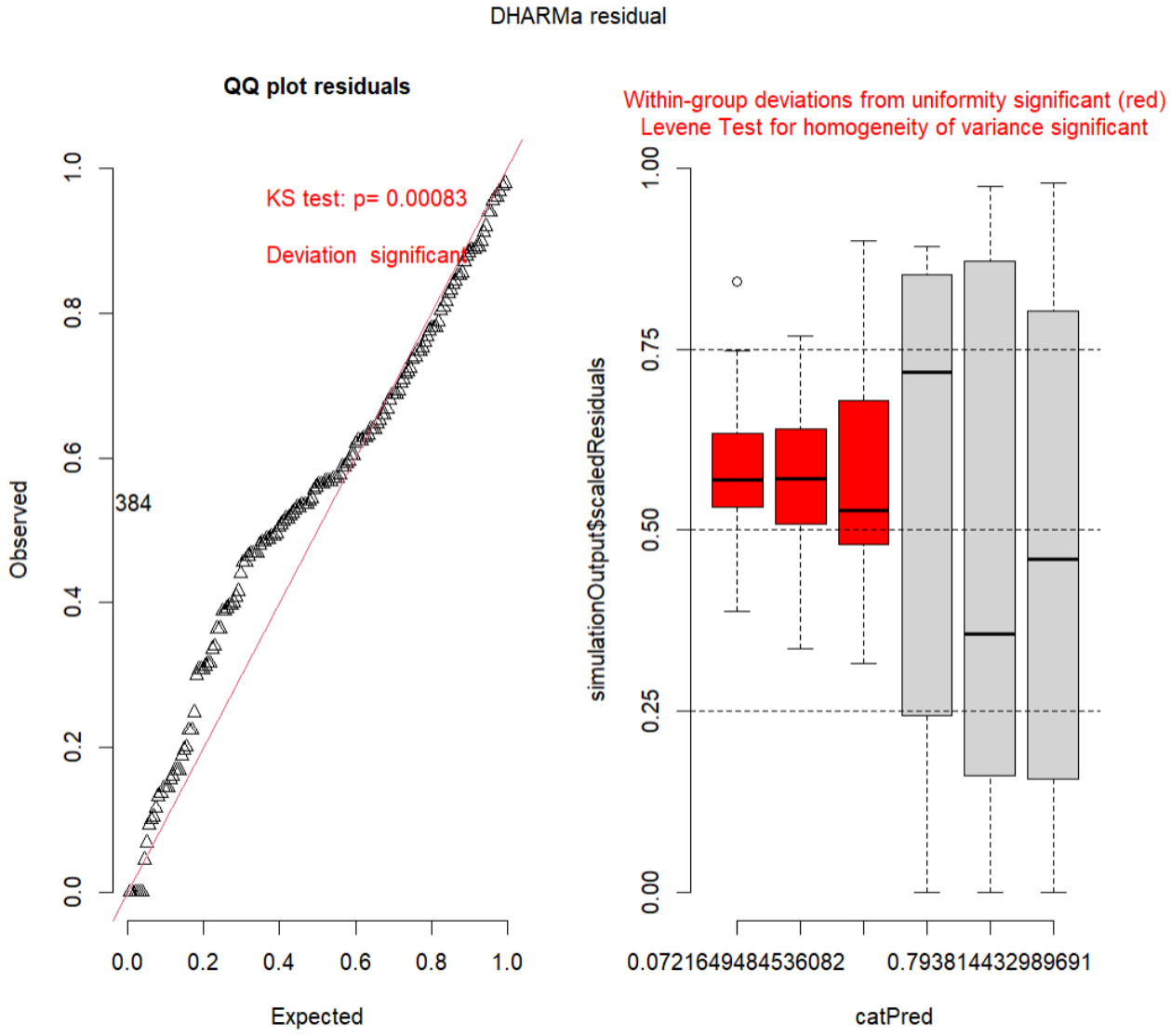
$contrasts
Treatment = Nearfield:
 contrast       estimate    SE  df z.ratio p.value
 after - before     2.00 0.552 Inf   3.616  0.0003

Treatment = Reference:
 contrast       estimate    SE  df z.ratio p.value
 after - before     2.14 0.569 Inf   3.762  0.0002

Treatment = Remediation:
 contrast       estimate    SE  df z.ratio p.value
 after - before     2.05 0.550 Inf   3.723  0.0002

Results are given on the log (not the response) scale.
```

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Algal Biota

```
> mod_AlgaeCopper <- glmmTMB(Copper_norm ~ B.A * Location + (1|Eord), family=tw
eedie(), data=Algae_norm)
> summary(mod_AlgaeCopper)
 Family: tweedie  ( log )
Formula:          Copper_norm ~ B.A * Location + (1 | Eord)
Data: Algae_norm

     AIC      BIC   logLik deviance df.resid
  -735.4   -678.1    386.7   -773.4      132

Random effects:

Conditional model:
 Groups Name        Variance Std.Dev.
 Eord   (Intercept) 0.7218   0.8496
Number of obs: 151, groups:  Eord, 4

Dispersion parameter for tweedie family (): 0.613
```

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```
Conditional model:
                     Estimate Std. Error z value Pr(>|z|)
(Intercept)           -2.6768     0.6700  -3.995 6.46e-05 ***
B.Abefore              0.2945     0.9498   0.310  0.75653
Locationm_B           -0.8838     0.9836  -0.898  0.36893
Locationm_C           -0.7459     0.4248  -1.756  0.07913 .
Locationm_D           -0.6130     0.4257  -1.440  0.14987
Locationm_E           -0.9333     0.4318  -2.162  0.03064 *
Locationm_G           -0.8019     0.4300  -1.865  0.06221 .
Locationm_H           -0.0867     0.4377  -0.198  0.84298
Locationm_I           -1.3551     0.4483  -3.023  0.00250 **
B.Abefore:Locationm_B -0.3015     1.0709  -0.282  0.77829
B.Abefore:Locationm_C -0.4260     0.6034  -0.706  0.48020
B.Abefore:Locationm_D -0.8620     0.6158  -1.400  0.16161
B.Abefore:Locationm_E -0.8782     0.6184  -1.420  0.15554
B.Abefore:Locationm_G -1.6315     0.6189  -2.636  0.00838 **
B.Abefore:Locationm_H  0.6180     0.6273   0.985  0.32448
B.Abefore:Locationm_I -0.8335     0.6389  -1.305  0.19205
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_AlgaeCopper)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Copper_norm
              Chisq Df Pr(>Chisq)
B.A          0.0634  1     0.8013
Location    78.3073  7  3.048e-14 ***
B.A:Location 16.9083  7     0.0180 *
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_AlgaeCopper, pairwise ~ B.A | Location)
$emmeans
Location = m_A:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -2.68 0.670 Inf     -3.99    -1.364
 before  -2.38 0.673 Inf     -3.70    -1.064

Location = m_B:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -3.56 1.109 Inf     -5.73    -1.387
 before  -3.57 0.682 Inf     -4.90    -2.232

Location = m_C:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -3.42 0.675 Inf     -4.75    -2.100
 before  -3.55 0.677 Inf     -4.88    -2.228

Location = m_D:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -3.29 0.674 Inf     -4.61    -1.970
 before  -3.86 0.679 Inf     -5.19    -2.526

Location = m_E:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -3.61 0.677 Inf     -4.94    -2.284
 before  -4.19 0.682 Inf     -5.53    -2.857

Location = m_G:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -3.48 0.675 Inf     -4.80    -2.155
 before  -4.82 0.690 Inf     -6.17    -3.463

Location = m_H:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -2.76 0.675 Inf     -4.09    -1.440
 before  -1.85 0.669 Inf     -3.16    -0.539

Location = m_I:
```

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```
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -4.03 0.684 Inf     -5.37    -2.692
 before  -4.57 0.686 Inf     -5.92    -3.226

Results are given on the log (not the response) scale.
Confidence level used: 0.95

$contrasts
Location = m_A:
 contrast       estimate    SE  df z.ratio p.value
 after - before -0.29448 0.950 Inf  -0.310  0.7565

Location = m_B:
 contrast       estimate    SE  df z.ratio p.value
 after - before  0.00703 1.301 Inf   0.005  0.9957

Location = m_C:
 contrast       estimate    SE  df z.ratio p.value
 after - before  0.13152 0.956 Inf   0.138  0.8906

Location = m_D:
 contrast       estimate    SE  df z.ratio p.value
 after - before  0.56748 0.957 Inf   0.593  0.5531

Location = m_E:
 contrast       estimate    SE  df z.ratio p.value
 after - before  0.58377 0.961 Inf   0.608  0.5435

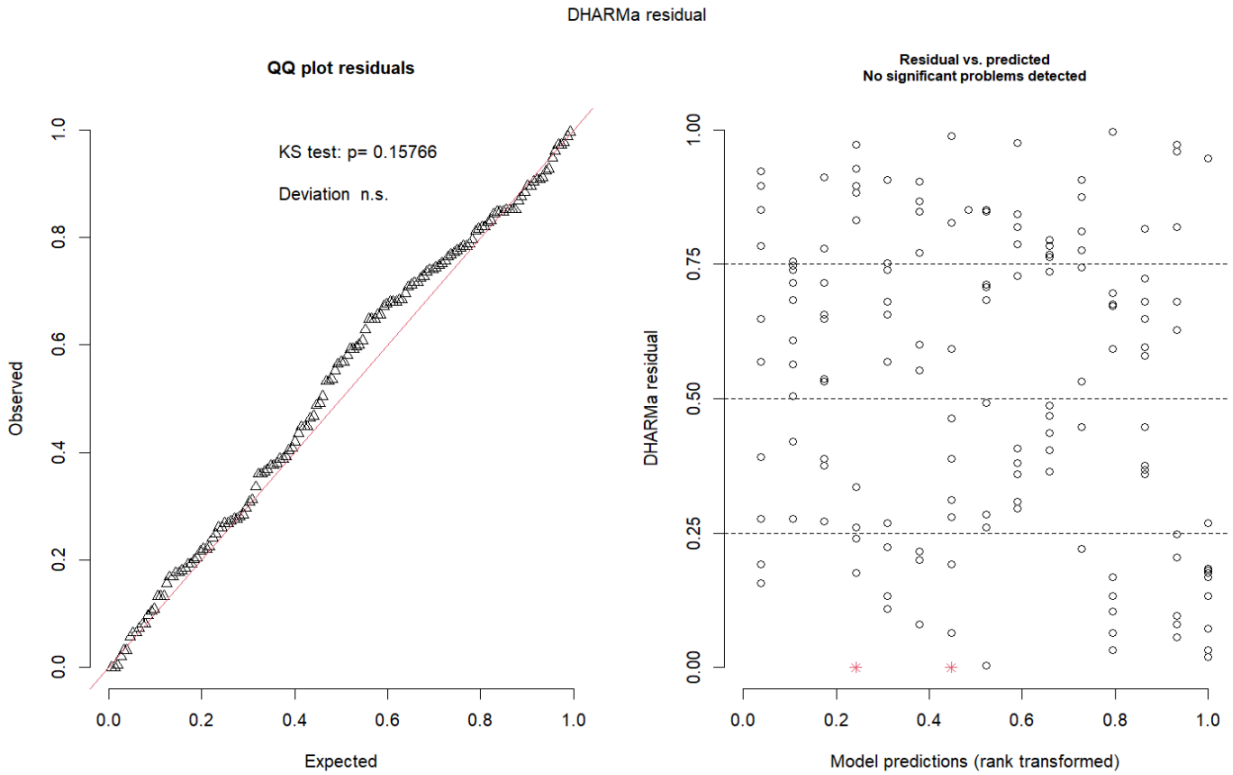
Location = m_G:
 contrast       estimate    SE  df z.ratio p.value
 after - before  1.33702 0.966 Inf   1.384  0.1662

Location = m_H:
 contrast       estimate    SE  df z.ratio p.value
 after - before -0.91252 0.952 Inf  -0.959  0.3376

Location = m_I:
 contrast       estimate    SE  df z.ratio p.value
 after - before  0.53899 0.969 Inf   0.556  0.5780

Results are given on the log (not the response) scale.
```

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```
> mod_AlgaeZinc <- glmmTMB(Zinc_norm ~ B.A * Location + (1|Eord), family=beta_f
amily(), data=Algae_norm)
> summary(mod_AlgaeZinc)
 Family: beta  ( logit )
Formula:          Zinc_norm ~ B.A * Location + (1 | Eord)
Data: Algae_norm

     AIC      BIC   logLik deviance df.resid
  -280.3   -226.0    158.1   -316.3      133

Random effects:

Conditional model:
 Groups Name        Variance Std.Dev.
 Eord   (Intercept) 0.9268   0.9627
Number of obs: 151, groups:  Eord, 4

Dispersion parameter for beta family (): 9.01

Conditional model:
                     Estimate Std. Error z value Pr(>|z|)
(Intercept)           -0.8665     0.7283  -1.190 0.234155
B.Abefore             -0.6533     1.0239  -0.638 0.523454
Locationm_B           -0.6209     0.6855  -0.906 0.365046
Locationm_C           -0.7892     0.3620  -2.180 0.029243 *
Locationm_D           -0.7530     0.3627  -2.076 0.037867 *
Locationm_E           -0.4696     0.3640  -1.290 0.197017
Locationm_G           -0.5114     0.3536  -1.446 0.148106
Locationm_H            1.2386     0.3004   4.123 3.74e-05 ***
Locationm_I           -0.7281     0.3500  -2.080 0.037507 *
B.Abefore:Locationm_B  0.3555     0.7671   0.463 0.643073
B.Abefore:Locationm_C -0.4198     0.5185  -0.810 0.418145
B.Abefore:Locationm_D  0.3601     0.5043   0.714 0.475227
B.Abefore:Locationm_E -0.1882     0.5088  -0.370 0.711514
B.Abefore:Locationm_G -0.1862     0.5035  -0.370 0.711556
B.Abefore:Locationm_H -1.7688     0.4648  -3.805 0.000142 ***
```

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```
B.Abefore:Locationm_I   0.4211     0.4927   0.855 0.392743
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_AlgaeZinc)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Zinc_norm
              Chisq Df Pr(>Chisq)
B.A           1.0621  1     0.3027
Location     64.1914  7  2.186e-11 ***
B.A:Location 31.2762  7  5.529e-05 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_AlgaeZinc, pairwise ~ B.A | Location)
$emmeans
Location = m_A:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after  -0.866 0.728 Inf    -2.294    0.5610
 before -1.520 0.721 Inf    -2.933   -0.1064

Location = m_B:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after  -1.487 0.938 Inf    -3.325    0.3507
 before -1.785 0.727 Inf    -3.210   -0.3605

Location = m_C:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after  -1.656 0.734 Inf    -3.095   -0.2164
 before -2.729 0.741 Inf    -4.181   -1.2760

Location = m_D:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after  -1.620 0.735 Inf    -3.060   -0.1794
 before -1.913 0.731 Inf    -3.345   -0.4805

Location = m_E:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after  -1.336 0.735 Inf    -2.777    0.1048
 before -2.178 0.733 Inf    -3.614   -0.7406

Location = m_G:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after  -1.378 0.728 Inf    -2.806    0.0499
 before -2.217 0.734 Inf    -3.657   -0.7779

Location = m_H:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   0.372 0.698 Inf    -0.996    1.7405
 before -2.050 0.731 Inf    -3.483   -0.6172

Location = m_I:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after  -1.595 0.726 Inf    -3.018   -0.1713
 before -1.827 0.728 Inf    -3.254   -0.3994

Results are given on the logit (not the response) scale.
Confidence level used: 0.95

$contrasts
Location = m_A:
 contrast       estimate   SE  df z.ratio p.value
 after - before    0.653 1.02 Inf   0.638  0.5235

Location = m_B:
 contrast       estimate   SE  df z.ratio p.value
 after - before    0.298 1.18 Inf   0.251  0.8016

Location = m_C:
```

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```
 contrast       estimate   SE  df z.ratio p.value
 after - before    1.073 1.04 Inf   1.032  0.3020

Location = m_D:
 contrast       estimate   SE  df z.ratio p.value
 after - before    0.293 1.03 Inf   0.284  0.7766

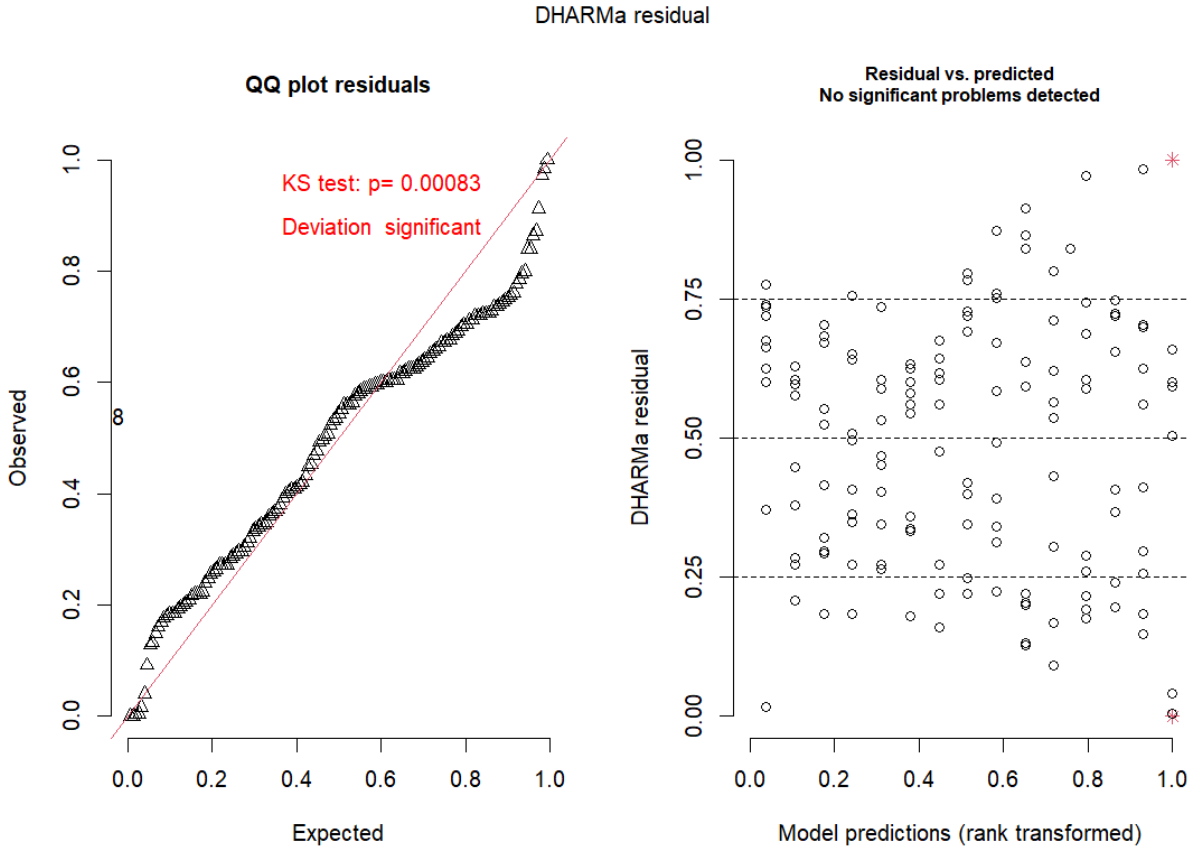
Location = m_E:
 contrast       estimate   SE  df z.ratio p.value
 after - before    0.841 1.04 Inf   0.813  0.4164

Location = m_G:
 contrast       estimate   SE  df z.ratio p.value
 after - before    0.839 1.03 Inf   0.814  0.4159

Location = m_H:
 contrast       estimate   SE  df z.ratio p.value
 after - before    2.422 1.01 Inf   2.396  0.0166

Location = m_I:
 contrast       estimate   SE  df z.ratio p.value
 after - before    0.232 1.03 Inf   0.226  0.8210

Results are given on the log odds ratio (not the response) scale.
```




```
> mod_AlgaeCopper <- glmmTMB(Copper_norm ~ B.A * Treatment + (1|Eord), family=t
weedie(), data=Algae_norm)
> summary(mod_AlgaeCopper)
 Family: tweedie  ( log )
Formula:          Copper_norm ~ B.A * Treatment + (1 | Eord)
Data: Algae_norm
```

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```
     AIC      BIC   logLik deviance df.resid
  -695.3   -668.1    356.7   -713.3      142

Random effects:

Conditional model:
 Groups Name        Variance Std.Dev.
 Eord   (Intercept) 0.713    0.8444
Number of obs: 151, groups:  Eord, 4

Dispersion parameter for tweedie family (): 0.961

Conditional model:
                             Estimate Std. Error z value Pr(>|z|)
(Intercept)                   -3.3786     0.6478  -5.216 1.83e-07 ***
B.Abefore                     -0.5854     0.9080  -0.645  0.51912
TreatmentReference             0.1770     0.3665   0.483  0.62905
TreatmentRemediation           0.2369     0.3292   0.720  0.47172
B.Abefore:TreatmentReference   1.3491     0.5197   2.596  0.00943 **
B.Abefore:TreatmentRemediation 0.6134     0.4467   1.373  0.16973
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_AlgaeCopper)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Copper_norm
              Chisq Df Pr(>Chisq)
B.A          0.0019  1   0.964929
Treatment   13.1071  2   0.001425 **
B.A:Treatment  6.8393  2   0.032724 *
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_AlgaeCopper, pairwise ~ B.A | Treatment)
$emmeans
Treatment = Nearfield:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -3.38 0.648 Inf     -4.65     -2.11
 before  -3.96 0.636 Inf     -5.21     -2.72

Treatment = Reference:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -3.20 0.658 Inf     -4.49     -1.91
 before  -2.44 0.657 Inf     -3.72     -1.15

Treatment = Remediation:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -3.14 0.633 Inf     -4.38     -1.90
 before  -3.11 0.637 Inf     -4.36     -1.86

Results are given on the log (not the response) scale.
Confidence level used: 0.95

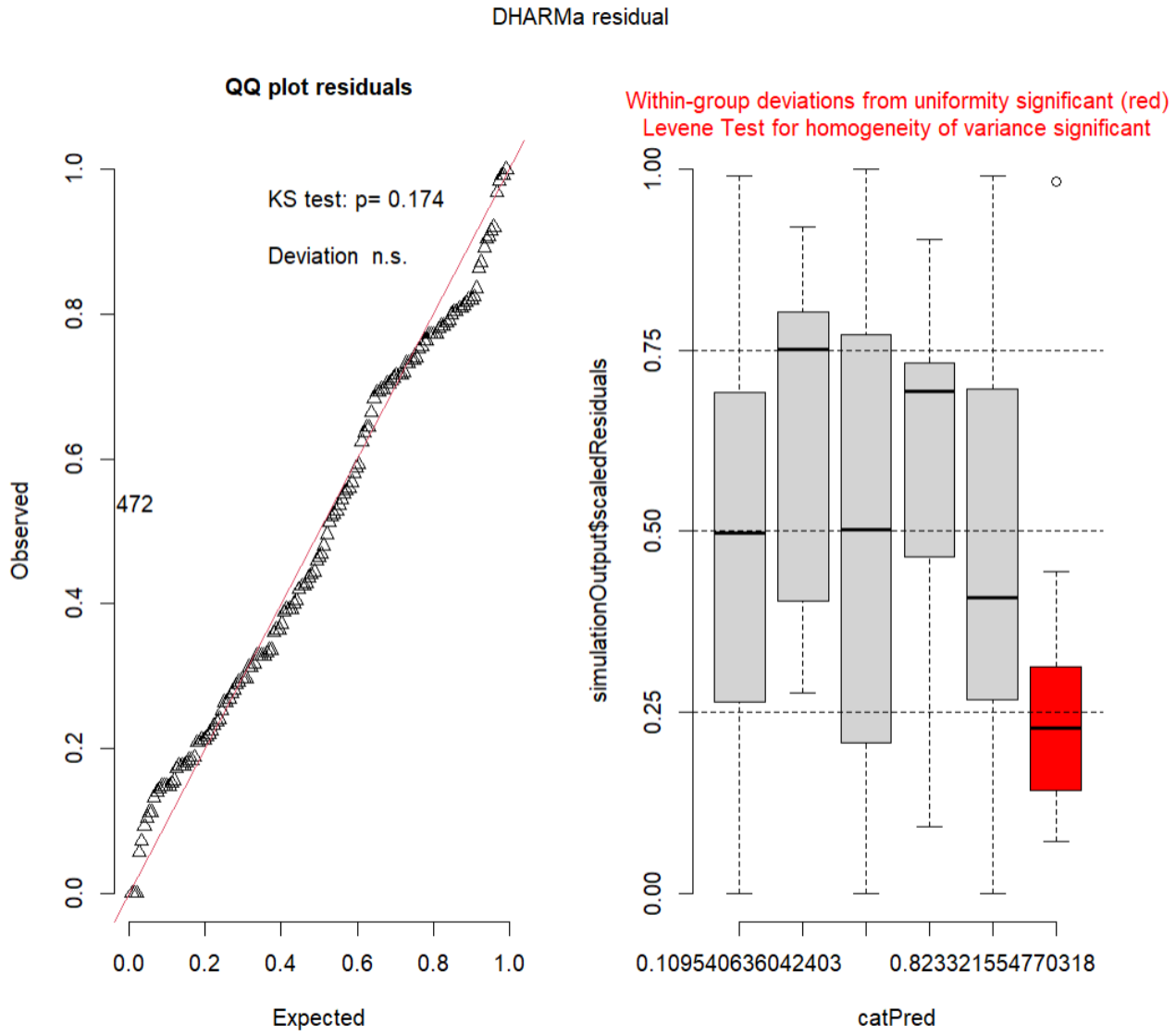
$contrasts
Treatment = Nearfield:
 contrast       estimate    SE  df z.ratio p.value
 after - before    0.585 0.908 Inf   0.645  0.5191

Treatment = Reference:
 contrast       estimate    SE  df z.ratio p.value
 after - before   -0.764 0.931 Inf  -0.821  0.4118

Treatment = Remediation:
 contrast       estimate    SE  df z.ratio p.value
 after - before   -0.028 0.899 Inf  -0.031  0.9752

Results are given on the log (not the response) scale.
```

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```
> mod_AlgaeZinc <- glmmTMB(Zinc_norm ~ B.A * Treatment + (1|Eord), family=beta_
family(), data=Algae_norm)
> summary(mod_AlgaeZinc)
 Family: beta  ( logit )
Formula:          Zinc_norm ~ B.A * Treatment + (1 | Eord)
Data: Algae_norm

     AIC      BIC   logLik deviance df.resid
  -246.3   -222.1    131.1   -262.3      143

Random effects:

Conditional model:
 Groups Name        Variance Std.Dev.
 Eord   (Intercept) 0.7712   0.8782
Number of obs: 151, groups:  Eord, 4

Dispersion parameter for beta family (): 5.78

Conditional model:
                           Estimate Std. Error z value Pr(>|z|)
(Intercept)                 -1.3156     0.6568  -2.003  0.04518 *
B.Abefore                   -0.4918     0.9176  -0.536  0.59200
TreatmentReference           1.0853     0.2612   4.155 3.26e-05 ***
```

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```
TreatmentRemediation             0.1952     0.2613   0.747  0.45492
B.Abefore:TreatmentReference    -1.0543     0.3699  -2.850  0.00437 **
B.Abefore:TreatmentRemediation  -0.4065     0.3532  -1.151  0.24982
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> Anova(mod_AlgaeZinc)
Analysis of Deviance Table (Type II Wald chisquare tests)

Response: Zinc_norm
                Chisq Df Pr(>Chisq)
B.A            1.2421  1  0.2650740
Treatment     14.4086  2  0.0007434 ***
B.A:Treatment  8.2701  2  0.0160017 *
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> emmeans(mod_AlgaeZinc, pairwise ~ B.A | Treatment)
$emmeans
Treatment = Nearfield:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -1.32 0.657 Inf     -2.60   -0.0283
 before  -1.81 0.646 Inf     -3.07   -0.5419

Treatment = Reference:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -0.23 0.639 Inf     -1.48    1.0221
 before  -1.78 0.656 Inf     -3.06   -0.4913

Treatment = Remediation:
 B.A    emmean    SE  df asymp.LCL asymp.UCL
 after   -1.12 0.648 Inf     -2.39    0.1496
 before  -2.02 0.646 Inf     -3.28   -0.7533

Results are given on the logit (not the response) scale.
Confidence level used: 0.95

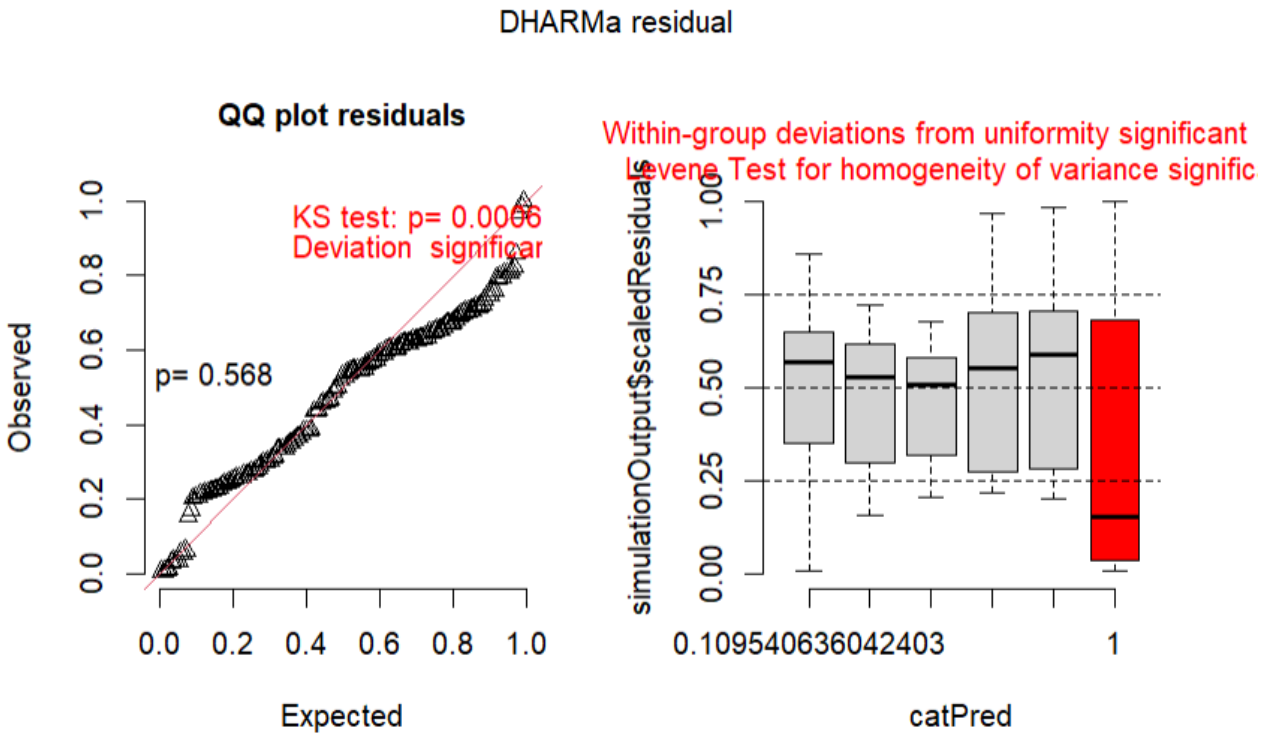
$contrasts
Treatment = Nearfield:
 contrast       estimate    SE  df z.ratio p.value
 after - before    0.492 0.918 Inf   0.536  0.5920

Treatment = Reference:
 contrast       estimate    SE  df z.ratio p.value
 after - before    1.546 0.915 Inf   1.689  0.0912

Treatment = Remediation:
 contrast       estimate    SE  df z.ratio p.value
 after - before    0.898 0.911 Inf   0.986  0.3244

Results are given on the log odds ratio (not the response) scale.
```

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DHARMa residual
QQ plot residuals
KS test: p= 0.0066
Deviation significar
p= 0.568
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Within-group deviations from uniformity significant
Levene Test for homogeneity of variance signific
simulationOutput$scaledResiduals
0.00
0.25
0.50
0.75
1.00
0.109540636042403
1
catPred

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# Annex C Tabulated Biota Contamination Results

## C.1 Tabulated Biotic Contamination

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Table C.1. Laboratory results for metal and organotin burden in biotic samples

| | | | | Organotins | | | | Total Recoverable Trace Elements by ICP | | Moisture Content |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Monobutyltin as Sn | Dibutyltin as Sn | Tributyltin as Sn | Surrogate: Tripropyltin | Copper | Zinc | Moisture |
| Samples | Type | Location | Year | ng/g | ng/g | ng/g | %REC | mg/kg | mg/kg | % |
| A1-FIS-1123 | Fish | m_A | 2023 | 0 | 0 | 0 | 104 | 0.44 | 6.2 | |
| A2-FIS-1123 | Fish | m_A | 2023 | 0 | 0 | 0 | 91 | 0.18 | 3.1 | |
| A3-FIS-1123 | Fish | m_A | 2023 | 0 | 0 | 0 | 99 | 0.28 | 9 | |
| A4-FIS-1123 | Fish | m_A | 2023 | 0 | 0 | 0 | 109 | 0.18 | 5.1 | |
| A5-FIS-1123 | Fish | m_A | 2023 | 0 | 0 | 0 | 96 | 0.18 | 4.3 | |
| B1-FIS-1123 | Fish | m_B | 2023 | 0 | 0 | 0 | 103 | 0.11 | 3 | |
| B2-FIS-1123 | Fish | m_B | 2023 | 0 | 0 | 0 | 95 | 0.13 | 3 | |
| B3-FIS-1123 | Fish | m_B | 2023 | 0 | 0 | 0 | 92 | 0.12 | 2.6 | |
| B4-FIS-1123 | Fish | m_B | 2023 | 0 | 0 | 0 | 90 | 0.13 | 2.9 | |
| B5-FIS-1123 | Fish | m_B | 2023 | 0 | 0 | 0 | 92 | 0.14 | 3.8 | |
| C1-FIS-1123 | Fish | m_C | 2023 | 0 | 0 | 0 | 126 | 0.16 | 3 | |
| C2-FIS-1123 | Fish | m_C | 2023 | 0 | 0 | 0 | 83 | 0.16 | 3.5 | |
| C3-FIS-1123 | Fish | m_C | 2023 | 0 | 0 | 0 | 71 | 0.13 | 3.5 | |
| C4-FIS-1123 | Fish | m_C | 2023 | 0 | 0 | 0 | 79 | 0.13 | 3.5 | |
| C5-FIS-1123 | Fish | m_C | 2023 | 0 | 0 | 0 | 70 | 0.15 | 3 | |
| D1-FIS-1123 | Fish | m_D | 2023 | 0 | 0 | 0 | 73 | 0.19 | 3.3 | |

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| | | | | Organotins | | | | Total Recoverable Trace Elements by ICP | | Moisture Content |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Monobutyltin as Sn | Dibutyltin as Sn | Tributyltin as Sn | Surrogate: Tripropyltin | Copper | Zinc | Moisture |
| Samples | Type | Location | Year | ng/g | ng/g | ng/g | %REC | mg/kg | mg/kg | % |
| D2-FIS-1123 | Fish | m_D | 2023 | 0 | 0 | 0 | 84 | 0.27 | 3.3 | |
| D3-FIS-1123 | Fish | m_D | 2023 | 0 | 0 | 0 | 79 | 0.17 | 3.3 | |
| D4-FIS-1123 | Fish | m_D | 2023 | 0 | 0 | 0 | 77 | 0.19 | 3.4 | |
| D5-FIS-1123 | Fish | m_D | 2023 | 0 | 0 | 0 | 81 | 0.29 | 2.9 | |
| E1-FIS-1123 | Fish | m_E | 2023 | 0 | 0 | 0 | 98 | 0.11 | 2.7 | |
| E2-FIS-1123 | Fish | m_E | 2023 | 0 | 0 | 0 | 89 | 0.12 | 3.1 | |
| E3-FIS-1123 | Fish | m_E | 2023 | 0 | 0 | 0 | 89 | 0.18 | 3.6 | |
| E4-FIS-1123 | Fish | m_E | 2023 | 0 | 0 | 0 | 107 | 0.15 | 2.9 | |
| E5-FIS-1123 | Fish | m_E | 2023 | 0 | 0 | 0 | 114 | 0.17 | 4 | |
| G1-FIS-1123 | Fish | m_G | 2023 | 0 | 0 | 0 | 81 | 0.73 | 11 | |
| G2-FIS-1123 | Fish | m_G | 2023 | 0 | 0 | 0 | 75 | 0.51 | 10 | |
| G3-FIS-1123 | Fish | m_G | 2023 | 0 | 0 | 0 | 81 | 1 | 13 | |
| G4-FIS-1123 | Fish | m_G | 2023 | 0 | 0 | 0 | 64 | 0.53 | 11 | |
| G5-FIS-1123 | Fish | m_G | 2023 | 0 | 0 | 0 | 61 | 1.8 | 12 | |
| H1-FIS-1123 | Fish | m_H | 2023 | 0 | 0 | 0 | 100 | 0.11 | 3.1 | |
| H2-FIS-1123 | Fish | m_H | 2023 | 0 | 0 | 0 | 124 | 0.16 | 2.7 | |
| H3-FIS-1123 | Fish | m_H | 2023 | 0 | 0 | 0 | 102 | 0.14 | 2.7 | |

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| | | | | Organotins | | | | Total Recoverable Trace Elements by ICP | | Moisture Content |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Monobutyltin as Sn | Dibutyltin as Sn | Tributyltin as Sn | Surrogate: Tripropyltin | Copper | Zinc | Moisture |
| Samples | Type | Location | Year | ng/g | ng/g | ng/g | %REC | mg/kg | mg/kg | % |
| H4-FIS-1123 | Fish | m_H | 2023 | 0 | 0 | 0 | 128 | 0.17 | 3.2 | |
| H5-FIS-1123 | Fish | m_H | 2023 | 0 | 0 | 0 | 101 | 0.2 | 3.5 | |
| I1-FIS-1123 | Fish | m_I | 2023 | 0 | 0 | 0 | 121 | 0.22 | 3.2 | |
| I2-FIS-1123 | Fish | m_I | 2023 | 0 | 0 | 0 | 69 | 0.25 | 7.3 | |
| I3-FIS-1123 | Fish | m_I | 2023 | 0 | 0 | 0 | 126 | 0.19 | 3 | |
| I4-FIS-1123 | Fish | m_I | 2023 | 0 | 0 | 0 | 132 | 0.14 | 3.3 | |
| I5-FIS-1123 | Fish | m_I | 2023 | 0 | 0 | 0 | 106 | 0.1 | 3 | |
| A1-CUC-1123 | Ascidian | m_A | 2023 | 4.6 | 0 | 0 | 76 | 8.9 | 35 | 79.8 |
| A2-CUC-1123 | Ascidian | m_A | 2023 | 6.5 | 0 | 0 | 92 | | | 84.5 |
| A3-CUC-1123 | Ascidian | m_A | 2023 | 5.9 | 0 | 0 | 110 | 8 | 30 | 83.9 |
| A4-CUC-1123 | Ascidian | m_A | 2023 | 1.9 | 0 | 0 | 113 | 6.9 | 26 | 90.8 |
| A5-CUC-1123 | Ascidian | m_A | 2023 | 35 | 0 | 0 | 118 | 6.9 | 86 | 89.8 |
| A1-ALG-1123 | Algae | m_A | 2023 | 0 | 0 | 0 | 115 | 3.7 | 8.2 | 83.1 |

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| | | | | Organotins | | | | Total Recoverable Trace Elements by ICP | | Moisture Content |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Monobutyltin as Sn | Dibutyltin as Sn | Tributyltin as Sn | Surrogate: Tripropyltin | Copper | Zinc | Moisture |
| Samples | Type | Location | Year | ng/g | ng/g | ng/g | %REC | mg/kg | mg/kg | % |
| A2-ALG-1123 | Algae | m_A | 2023 | 0 | 0 | 0 | 105 | 2.3 | 4 | 80.4 |
| A3-ALG-1123 | Algae | m_A | 2023 | 0 | 0 | 0 | 106 | 1.8 | 3.6 | 79.5 |
| A4-ALG-1123 | Algae | m_A | 2023 | 0 | 0 | 0 | 117 | 1.7 | 4.4 | 77.6 |
| A5-ALG-1123 | Algae | m_A | 2023 | 0 | 0 | 0 | 117 | 2.1 | 4.4 | 76.7 |
| B1-CUC-1123 | Ascidian | m_B | 2023 | 0 | 0 | 0 | 85 | | | 87.1 |
| B2-CUC-1123 | Ascidian | m_B | 2023 | 30 | 0 | 0 | 90 | 14 | 30 | 80.7 |
| B3-CUC-1123 | Ascidian | m_B | 2023 | 2.6 | 0 | 0 | 70 | 4 | 33 | 85 |
| B4-CUC-1123 | Ascidian | m_B | 2023 | 0 | 0 | 0 | 82 | 8.3 | 48 | 88.4 |
| B5- CUC-1123 | Ascidian | m_B | 2023 | 0 | 0 | 0 | 86 | 6.2 | 50 | 85.1 |
| B1-ALG-1123 | Algae | m_B | 2023 | 0 | 0 | 0 | 76 | 1.9 | 4.2 | 77.4 |

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| | | | | Organotins | | | | Total Recoverable Trace Elements by ICP | | Moisture Content |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Monobutyltin as Sn | Dibutyltin as Sn | Tributyltin as Sn | Surrogate: Tripropyltin | Copper | Zinc | Moisture |
| Samples | Type | Location | Year | ng/g | ng/g | ng/g | %REC | mg/kg | mg/kg | % |
| B2-ALG-1123 | Algae | m_B | 2023 | 0 | 0 | 0 | | | | |
| B3-ALG-1123 | Algae | m_B | 2023 | 0 | 0 | 0 | | | | |
| B4-ALG-1123 | Algae | m_B | 2023 | 0 | 0 | 0 | | | | |
| B5- ALG-1123 | Algae | m_B | 2023 | 0 | 0 | 0 | | | | |
| C1-CUC-1123 | Ascidian | m_C | 2023 | 0 | 0 | 0 | 103 | 6.8 | 43 | 80.3 |
| C2-CUC-1123 | Ascidian | m_C | 2023 | 0 | 0 | 0 | 87 | 17 | 66 | 93.4 |
| C3-CUC-1123 | Ascidian | m_C | 2023 | 0 | 0 | 0 | 94 | | | 83.1 |
| C4-CUC-1123 | Ascidian | m_C | 2023 | 0 | 0 | 0 | 133 | 8.8 | 33 | 79.8 |
| C5-CUC-1123 | Ascidian | m_C | 2023 | 0 | 0 | 0 | 87 | 6.8 | 36 | 85.8 |
| C1-ALG-1123 | Algae | m_C | 2023 | 0 | 0 | 0 | 133 | 1.6 | 3.4 | 80.6 |

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| | | | | Organotins | | | | Total Recoverable Trace Elements by ICP | | Moisture Content |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Monobutyltin as Sn | Dibutyltin as Sn | Tributyltin as Sn | Surrogate: Tripropyltin | Copper | Zinc | Moisture |
| Samples | Type | Location | Year | ng/g | ng/g | ng/g | %REC | mg/kg | mg/kg | % |
| C2-ALG-1123 | Algae | m_C | 2023 | 0 | 0 | 0 | 120 | 1.7 | 3.5 | 78.2 |
| C3-ALG-1123 | Algae | m_C | 2023 | 0 | 0 | 0 | 132 | 1.5 | 3 | 74 |
| C4-ALG-1123 | Algae | m_C | 2023 | 0 | 0 | 0 | 135 | 1.5 | 2.7 | 80.6 |
| C5-ALG-1123 | Algae | m_C | 2023 | 0 | 0 | 0 | 123 | 1.6 | 2.6 | 84.7 |
| D1-CUC-1123 | Ascidian | m_D | 2023 | 1.7 | 0 | 0 | 113 | 6.1 | 36 | 84.6 |
| D2-CUC-1123 | Ascidian | m_D | 2023 | 1.2 | 0 | 0 | 110 | 6.9 | 26 | 90.6 |
| D3-CUC-1123 | Ascidian | m_D | 2023 | 0 | 0 | 0 | 64 | 8.3 | 20 | 82.9 |
| D4-CUC-1123 | Ascidian | m_D | 2023 | 5.3 | 0 | 0 | 124 | 7.9 | 61 | 90 |
| D5-CUC-1123 | Ascidian | m_D | 2023 | 0 | 0 | 0 | 115 | 13 | 58 | 89.6 |
| D1-ALG-1123 | Algae | m_D | 2023 | 0 | 0 | 0 | 105 | 1.7 | 3.2 | 73.5 |

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| | | | | Organotins | | | | Total Recoverable Trace Elements by ICP | | Moisture Content |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Monobutyltin as Sn | Dibutyltin as Sn | Tributyltin as Sn | Surrogate: Tripropyltin | Copper | Zinc | Moisture |
| Samples | Type | Location | Year | ng/g | ng/g | ng/g | %REC | mg/kg | mg/kg | % |
| D2-ALG-1123 | Algae | m_D | 2023 | 0 | 0 | 0 | 120 | 2.7 | 3.1 | 76.3 |
| D3-ALG-1123 | Algae | m_D | 2023 | 0 | 0 | 0 | 101 | 2 | 2.7 | 71.2 |
| D4-ALG-1123 | Algae | m_D | 2023 | 0 | 0 | 0 | 100 | 1.8 | 2.2 | 74.1 |
| D5-ALG-1123 | Algae | m_D | 2023 | 0 | 0 | 0 | 107 | 3.4 | 4.4 | 75.7 |
| E1-CUC-1123 | Ascidian | m_E | 2023 | 0 | 0 | 0 | 93 | 5.3 | 22 | 81.2 |
| E2-CUC-1123 | Ascidian | m_E | 2023 | 0 | 0 | 0 | 74 | 7.4 | 55 | 87.2 |
| E3-CUC-1123 | Ascidian | m_E | 2023 | 0 | 0 | 0 | 77 | | | 82.9 |
| E4-CUC-1123 | Ascidian | m_E | 2023 | 0 | 0 | 0 | 82 | 7.8 | 27 | 80.3 |
| E5-CUC-1123 | Ascidian | m_E | 2023 | 0 | 0 | 0 | 83 | 10 | 51 | 87.3 |
| E1-ALG-1123 | Algae | m_E | 2023 | 0 | 0 | 0 | 120 | 2.3 | 3.1 | 78.6 |

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| | | | | Organotins | | | | Total Recoverable Trace Elements by ICP | | Moisture Content |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Monobutyltin as Sn | Dibutyltin as Sn | Tributyltin as Sn | Surrogate: Tripropyltin | Copper | Zinc | Moisture |
| Samples | Type | Location | Year | ng/g | ng/g | ng/g | %REC | mg/kg | mg/kg | % |
| E2-ALG-1123 | Algae | m_E | 2023 | 0 | 0 | 0 | 77 | 1.8 | 3.9 | 69.3 |
| E3-ALG-1123 | Algae | m_E | 2023 | 0 | 0 | 0 | 75 | 1.4 | 3.9 | 77.5 |
| E4-ALG-1123 | Algae | m_E | 2023 | 0 | 0 | 0 | 75 | 1.7 | 3.7 | 85 |
| E5-ALG-1123 | Algae | m_E | 2023 | 0 | 0 | 0 | 78 | 2.1 | 3.7 | 79.4 |
| H1-CUC-1123 | Ascidian | m_H | 2023 | 0 | 0 | 0 | 95 | 6.1 | 28 | 86.5 |
| H2-CUC-1123 | Ascidian | m_H | 2023 | 0 | 0 | 0 | 70 | 4.8 | 31 | 82.5 |
| H3-CUC-1123 | Ascidian | m_H | 2023 | 0 | 0 | 0 | 77 | 5.6 | 25 | 82.1 |
| H4-CUC-1123 | Ascidian | m_H | 2023 | 0 | 0 | 0 | 72 | 9.5 | 31 | 89 |
| H5-CUC-1123 | Ascidian | m_H | 2023 | 0 | 0 | 0 | 92 | 7.9 | 32 | 85.7 |
| H1-ALG-1123 | Algae | m_H | 2023 | 0 | 0 | 0 | 85 | 2.2 | 6.8 | 84.6 |

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| | | | | Organotins | | | | Total Recoverable Trace Elements by ICP | | Moisture Content |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Monobutyltin as Sn | Dibutyltin as Sn | Tributyltin as Sn | Surrogate: Tripropyltin | Copper | Zinc | Moisture |
| Samples | Type | Location | Year | ng/g | ng/g | ng/g | %REC | mg/kg | mg/kg | % |
| H2-ALG-1123 | Algae | m_H | 2023 | 0 | 0 | 0 | 69 | 2 | 6.4 | 87 |
| H3-ALG-1123 | Algae | m_H | 2023 | 0 | 0 | 0 | 56 | 1.8 | 6.8 | 87.1 |
| H4-ALG-1123 | Algae | m_H | 2023 | 0 | 0 | 0 | 64 | 2.4 | 7.1 | 83.5 |
| H5-ALG-1123 | Algae | m_H | 2023 | 0 | 0 | 0 | 57 | 24 | 9.5 | 87.7 |
| I1-CUC-1123 | Ascidian | m_I | 2023 | 0 | 0 | 0 | 85 | 9.1 | 24 | 79.9 |
| I2-CUC-1123 | Ascidian | m_I | 2023 | | | | | 16 | 26 | 84.2 |
| I3-CUC-1123 | Ascidian | m_I | 2023 | 0 | 0 | 0 | 111 | 8.4 | 30 | 84.2 |
| I4-CUC-1123 | Ascidian | m_I | 2023 | 0 | 0 | 0 | 96 | 8.6 | 29 | 81.8 |
| I5-CUC-1123 | Ascidian | m_I | 2023 | 0 | 0 | 0 | 91 | 9.6 | 27 | 86.1 |
| I1-ALG-1123 | Algae | m_I | 2023 | 0 | 0 | 0 | 81 | 2.4 | 5.3 | 78.7 |
| I2-ALG-1123 | Algae | m_I | 2023 | 0 | 0 | 0 | 74 | 1.7 | 4.2 | 80.7 |
| I3-ALG-1123 | Algae | m_I | 2023 | 0 | 0 | 0 | 89 | 1.8 | 4 | 78.9 |

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| | | | | Organotins | | | | Total Recoverable Trace Elements by ICP | | Moisture Content |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Monobutyltin as Sn | Dibutyltin as Sn | Tributyltin as Sn | Surrogate: Tripropyltin | Copper | Zinc | Moisture |
| Samples | Type | Location | Year | ng/g | ng/g | ng/g | %REC | mg/kg | mg/kg | % |
| I4-ALG-1123 | Algae | m_I | 2023 | 0 | 0 | 0 | 91 | 1.5 | 2.7 | 81.1 |
| I5-ALG-1123 | Algae | m_I | 2023 | 0 | 0 | 0 | 80 | 1.1 | 2.4 | 68.6 |
| A1-FIS-0524 | Fish | m_A | 2024 | 0 | 0 | 0 | 144 | 0.4 | 3.6 | |
| A2-FIS-0524 | Fish | m_A | 2024 | 0 | 0 | 0 | 113 | 0.18 | 3 | |
| A3-FIS-0524 | Fish | m_A | 2024 | 0 | 0 | 0 | 136 | 0.16 | 2.5 | |
| A4-FIS-0524 | Fish | m_A | 2024 | 0 | 0 | 0 | 105 | 0.21 | 3.9 | |
| A5-FIS-0524 | Fish | m_A | 2024 | 0 | 0 | 0 | 149 | 0.17 | 3.7 | |
| B1-FIS-0524 | Fish | m_B | 2024 | 0 | 0 | 0 | 119 | 0.13 | 2.5 | |
| B2-FIS-0524 | Fish | m_B | 2024 | 0 | 0 | 0 | 119 | 0.091 | 2.7 | |
| B3-FIS-0524 | Fish | m_B | 2024 | 0 | 0 | 0 | 142 | 0.18 | 2.7 | |
| B4-FIS-0524 | Fish | m_B | 2024 | 0 | 0 | 0 | 125 | 0.17 | 7.9 | |
| B5-FIS-0524 | Fish | m_B | 2024 | 0 | 0 | 0 | 92 | 0.11 | 2.7 | |
| C1-FIS-0524 | Fish | m_C | 2024 | 0 | 0 | 0 | 138 | 0.11 | 2.8 | |
| C2-FIS-0524 | Fish | m_C | 2024 | 0 | 0 | 0 | 144 | 0.19 | 3.2 | |
| C3-FIS-0524 | Fish | m_C | 2024 | 0 | 0 | 0 | 132 | 0.11 | 3 | |
| C4-FIS-0524 | Fish | m_C | 2024 | 0 | 0 | 0 | 145 | 0.25 | 2.9 | |
| C5-FIS-0524 | Fish | m_C | 2024 | 0 | 0 | 0 | 137 | 0.098 | 2.3 | |

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| | | | | Organotins | | | | Total Recoverable Trace Elements by ICP | | Moisture Content |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Monobutyltin as Sn | Dibutyltin as Sn | Tributyltin as Sn | Surrogate: Tripropyltin | Copper | Zinc | Moisture |
| Samples | Type | Location | Year | ng/g | ng/g | ng/g | %REC | mg/kg | mg/kg | % |
| D1-FIS-0524 | Fish | m_D | 2024 | 0 | 0 | 0 | 141 | 0.31 | 2.6 | |
| D2-FIS-0524 | Fish | m_D | 2024 | 0 | 0 | 0 | 143 | 0.14 | 2.7 | |
| D3-FIS-0524 | Fish | m_D | 2024 | 0 | 0 | 0 | 127 | 0.12 | 3.8 | |
| D4-FIS-0524 | Fish | m_D | 2024 | 0 | 0 | 0 | 148 | 0.1 | 2.5 | |
| D5-FIS-0524 | Fish | m_D | 2024 | 0 | 0 | 0 | 139 | 0.19 | 5.1 | |
| E1-FIS-0524 | Fish | m_E | 2024 | 0 | 0 | 0 | 131 | 0.59 | 5.7 | |
| E2-FIS-0524 | Fish | m_E | 2024 | 0 | 0 | 0 | 109 | 0.12 | 3.3 | |
| E3-FIS-0524 | Fish | m_E | 2024 | 0 | 0 | 0 | 126 | 0.38 | 3.7 | |
| E4-FIS-0524 | Fish | m_E | 2024 | 0 | 0 | 0 | 124 | 0.14 | 2.6 | |
| E5-FIS-0524 | Fish | m_E | 2024 | 0 | 0 | 0 | 124 | 0.17 | 3.1 | |
| G1-FIS-0524 | Fish | m_G | 2024 | 0 | 0 | 0 | 110 | 0.26 | 2.8 | |
| G2-FIS-0524 | Fish | m_G | 2024 | 0 | 0 | 0 | 107 | 7.4 | 3.1 | |
| G3-FIS-0524 | Fish | m_G | 2024 | 0 | 0 | 0 | 104 | 0.14 | 2.8 | |
| G4-FIS-0524 | Fish | m_G | 2024 | 0 | 0 | 0 | 100 | 0.31 | 12 | |
| G5-FIS-0524 | Fish | m_G | 2024 | 0 | 0 | 0 | 83 | 0.16 | 2.2 | |
| H1-FIS-0524 | Fish | m_H | 2024 | 0 | 0 | 0 | 123 | 0.99 | 7.6 | |
| H2-FIS-0524 | Fish | m_H | 2024 | 0 | 0 | 0 | 112 | 0.12 | 3 | |

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| | | | | Organotins | | | | Total Recoverable Trace Elements by ICP | | Moisture Content |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Monobutyltin as Sn | Dibutyltin as Sn | Tributyltin as Sn | Surrogate: Tripropyltin | Copper | Zinc | Moisture |
| Samples | Type | Location | Year | ng/g | ng/g | ng/g | %REC | mg/kg | mg/kg | % |
| H3FIS-0524 | Fish | m_H | 2024 | 0 | 0 | 0 | 125 | 0.15 | 2.5 | |
| H4-FIS-0524 | Fish | m_H | 2024 | 0 | 0 | 0 | 103 | 0.12 | 2.4 | |
| H5-FIS-0524 | Fish | m_H | 2024 | 0 | 0 | 0 | 68 | 0.14 | 3.1 | |
| I1-FIS-0524 | Fish | m_I | 2024 | 0 | 0 | 0 | 75 | 0.09 | 2.3 | |
| I2-FIS-0524 | Fish | m_I | 2024 | 0 | 0 | 0 | 85 | 0.15 | 3.1 | |
| I3-FIS-0524 | Fish | m_I | 2024 | 0 | 0 | 0 | 62 | 0.1 | 2.5 | |
| I4-FIS-0524 | Fish | m_I | 2024 | 0 | 0 | 0 | 73 | 0.14 | 2.8 | |
| I5-FIS-0524 | Fish | m_I | 2024 | 0 | 0 | 0 | 66 | 0.3 | 3.4 | |
| A1-CUC-0624 | Ascidian | m_A | 2024 | 11 | 0 | 0 | 85 | 1.4 | 18 | 84.2 |
| A2-CUC-0624 | Ascidian | m_A | 2024 | 4.8 | 1.2 | 0 | 85 | 2.5 | 13 | 81.8 |
| A3-CUC-0624 | Ascidian | m_A | 2024 | 5.9 | 0 | 0 | 87 | 1.5 | 15 | 81.8 |
| A5-CUC-0624 | Ascidian | m_A | 2024 | 5.7 | 0 | 0 | 93 | 1.2 | 13 | 81.1 |
| A4-CUC-0624 | Ascidian | m_A | 2024 | 3.5 | 0 | 0 | 89 | 1.8 | 16 | 81.6 |

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| | | | | Organotins | | | | Total Recoverable Trace Elements by ICP | | Moisture Content |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Monobutyltin as Sn | Dibutyltin as Sn | Tributyltin as Sn | Surrogate: Tripropyltin | Copper | Zinc | Moisture |
| Samples | Type | Location | Year | ng/g | ng/g | ng/g | %REC | mg/kg | mg/kg | % |
| A1-ALG-0624 | Algae | m_A | 2024 | 0 | 0 | 0 | 88 | 2.1 | 1.4 | 78.4 |
| A2-ALG-0624 | Algae | m_A | 2024 | 0 | 0 | 0 | 80 | 0.81 | 0.86 | 80.9 |
| A3-ALG-0624 | Algae | m_A | 2024 | 0 | 0 | 0 | 86 | 0.99 | 1.4 | 75.5 |
| A4-ALG-0624 | Algae | m_A | 2024 | 0 | 0 | 0 | 82 | 0.79 | 2.5 | 81.4 |
| A5-ALG-0624 | Algae | m_A | 2024 | 0 | 0 | 0 | 87 | 0.84 | 1.1 | 81.9 |
| C1-CUC-0624 | Ascidian | m_C | 2024 | 0 | 0 | 0 | 80 | 1.6 | 5.6 | 83.3 |
| C2-CUC-0624 | Ascidian | m_C | 2024 | 0 | 0 | 0 | 98 | 1.5 | 6.3 | 83.3 |
| C3-CUC-0624 | Ascidian | m_C | 2024 | 0 | 0 | 0 | 72 | 2.6 | 12 | 73 |
| C4-CUC-0624 | Ascidian | m_C | 2024 | 0 | 0 | 0 | 87 | 1.4 | 6.4 | 80 |
| C5-CUC-0624 | Ascidian | m_C | 2024 | 0 | 0 | 0 | 90 | 1.2 | 6.5 | 82.8 |

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| | | | | Organotins | | | | Total Recoverable Trace Elements by ICP | | Moisture Content |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Monobutyltin as Sn | Dibutyltin as Sn | Tributyltin as Sn | Surrogate: Tripropyltin | Copper | Zinc | Moisture |
| Samples | Type | Location | Year | ng/g | ng/g | ng/g | %REC | mg/kg | mg/kg | % |
| C1-ALG-0624 | Algae | m_C | 2024 | 0 | 0 | 0 | 103 | 0.51 | 0.98 | 76.6 |
| C2-ALG-0624 | Algae | m_C | 2024 | 0 | 0 | 0 | 84 | 0.5 | 0.62 | 82.1 |
| C3-ALG-0624 | Algae | m_C | 2024 | 0 | 0 | 0 | 98 | 0.35 | 0.71 | 78 |
| C4-ALG-0624 | Algae | m_C | 2024 | 0 | 0 | 0 | 90 | 0.57 | 0.93 | 78 |
| C5-ALG-0624 | Algae | m_C | 2024 | 0 | 0 | 0 | 83 | 0.6 | 0.85 | 78.7 |
| B1-CUC-0624 | Ascidian | m_B | 2024 | 2 | 0 | 0 | 91 | 0.9 | 5.8 | 83.7 |
| B2-CUC-0624 | Ascidian | m_B | 2024 | 0 | 0 | 0 | 78 | 1.2 | 5.5 | 77.9 |
| B3-CUC-0624 | Ascidian | m_B | 2024 | 0 | 0 | 0 | 79 | 1.8 | 7.2 | 79.6 |
| B4-CUC-0624 | Ascidian | m_B | 2024 | 0 | 0 | 0 | 91 | 1.2 | 7.1 | 82.4 |
| B5-CUC-0624 | Ascidian | m_B | 2024 | 0 | 0 | 0 | 82 | 1.1 | 4.8 | 83.9 |

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| | | | | Organotins | | | | Total Recoverable Trace Elements by ICP | | Moisture Content |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Monobutyltin as Sn | Dibutyltin as Sn | Tributyltin as Sn | Surrogate: Tripropyltin | Copper | Zinc | Moisture |
| Samples | Type | Location | Year | ng/g | ng/g | ng/g | %REC | mg/kg | mg/kg | % |
| D1-CUC-0624 | Ascidian | m_D | 2024 | 0 | 0 | 0 | 95 | 0.69 | 8.3 | 87.9 |
| D2-CUC-0624 | Ascidian | m_D | 2024 | 0 | 0 | 0 | 77 | 1.2 | 1.9 | 86.3 |
| D3-CUC-0624 | Ascidian | m_D | 2024 | 0 | 0 | 0 | 104 | 1.2 | 5.7 | 83.2 |
| D4-CUC-0624 | Ascidian | m_D | 2024 | 0 | 0 | 0 | 99 | 0.74 | 4 | 84.9 |
| D5-CUC-0624 | Ascidian | m_D | 2024 | 0 | 0 | 0 | 101 | 1 | 3.2 | 83.9 |
| D1-ALG-0624 | Algae | m_D | 2024 | 0 | 0 | 0 | 95 | 0.26 | 0.48 | 83.2 |
| D2-ALG-0624 | Algae | m_D | 2024 | 0 | 0 | 0 | 93 | 0.59 | 0.96 | 72.8 |
| D3-ALG-0624 | Algae | m_D | 2024 | 0 | 0 | 0 | 90 | 0.68 | 1.5 | 76 |
| D4-ALG-0624 | Algae | m_D | 2024 | 0 | 0 | 0 | 94 | 0.5 | 0.97 | 70.9 |
| D5-ALG-0624 | Algae | m_D | 2024 | 0 | 0 | 0 | 88 | 0.3 | 0.85 | 77.3 |

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| | | | | Organotins | | | | Total Recoverable Trace Elements by ICP | | Moisture Content |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Monobutyltin as Sn | Dibutyltin as Sn | Tributyltin as Sn | Surrogate: Tripropyltin | Copper | Zinc | Moisture |
| Samples | Type | Location | Year | ng/g | ng/g | ng/g | %REC | mg/kg | mg/kg | % |
| G1-CUC-0624 | Ascidian | m_G | 2024 | 0 | 0 | 0 | 91 | 0.93 | 9.6 | 83.7 |
| G2-CUC-0624 | Ascidian | m_G | 2024 | 0 | 0 | 0 | 86 | 0.97 | 8.3 | 83 |
| G3-CUC-0624 | Ascidian | m_G | 2024 | 0 | 0 | 0 | 77 | 0.9 | 3.3 | 80.9 |
| G4-CUC-0624 | Ascidian | m_G | 2024 | 0 | 0 | 0 | 67 | 1.1 | 7.7 | 81 |
| G5-CUC-0624 | Ascidian | m_G | 2024 | 0 | 0 | 0 | 80 | 1.2 | 5.2 | 84.1 |
| G1-ALG-0624 | Algae | m_G | 2024 | 0 | 0 | 0 | 81 | 0.28 | 0.69 | 80.5 |
| G2-ALG-0624 | Algae | m_G | 2024 | 0 | 0 | 0 | 89 | 0.4 | 0.88 | 75.1 |
| G3-ALG-0624 | Algae | m_G | 2024 | 0 | 0 | 0 | 89 | 0.34 | 0.62 | 74.9 |
| G4-ALG-0624 | Algae | m_G | 2024 | 0 | 0 | 0 | 87 | 0.45 | 0.81 | 73.2 |
| G5-ALG-0624 | Algae | m_G | 2024 | 0 | 0 | 0 | 84 | 0.39 | 0.67 | 70.2 |

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| | | | | Organotins | | | | Total Recoverable Trace Elements by ICP | | Moisture Content |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Monobutyltin as Sn | Dibutyltin as Sn | Tributyltin as Sn | Surrogate: Tripropyltin | Copper | Zinc | Moisture |
| Samples | Type | Location | Year | ng/g | ng/g | ng/g | %REC | mg/kg | mg/kg | % |
| E1-CUC-0624 | Ascidian | m_E | 2024 | 0 | 0 | 0 | 77 | 0.86 | 3.2 | 83.4 |
| E2-CUC-0624 | Ascidian | m_E | 2024 | 0 | 0 | 0 | 73 | 1.1 | 6 | 81.6 |
| E3-CUC-0624 | Ascidian | m_E | 2024 | 0 | 0 | 0 | 144 | 1.1 | 5.5 | 83.3 |
| E4-CUC-0624 | Ascidian | m_E | 2024 | 0 | 0 | 0 | 90 | 0.74 | 4.2 | 82.6 |
| E5-CUC-0624 | Ascidian | m_E | 2024 | 0 | 0 | 0 | 88 | 1.1 | 6.3 | 83.6 |
| E1-ALG-0624 | Algae | m_E | 2024 | 0 | 0 | 0 | 91 | 0.21 | 1.3 | 85.9 |
| E2-ALG-0624 | Algae | m_E | 2024 | 0 | 0 | 0 | 84 | 0.13 | 0.8 | 82.9 |
| E3-ALG-0624 | Algae | m_E | 2024 | 0 | 0 | 0 | 109 | 0.54 | 3.2 | 80.6 |
| E4-ALG-0624 | Algae | m_E | 2024 | 0 | 0 | 0 | 88 | 0.22 | 0.69 | 86.4 |
| E5-ALG-0624 | Algae | m_E | 2024 | 0 | 0 | 0 | 69 | 0.61 | 1.5 | 77.4 |

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| | | | | Organotins | | | | Total Recoverable Trace Elements by ICP | | Moisture Content |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Monobutyltin as Sn | Dibutyltin as Sn | Tributyltin as Sn | Surrogate: Tripropyltin | Copper | Zinc | Moisture |
| Samples | Type | Location | Year | ng/g | ng/g | ng/g | %REC | mg/kg | mg/kg | % |
| I1-CUC-0624 | Ascidian | m_I | 2024 | 0 | 0 | 0 | 95 | 1.1 | 4.4 | 82.4 |
| I2-CUC-0624 | Ascidian | m_I | 2024 | 0 | 0 | 0 | 98 | 0.81 | 7.4 | 81 |
| I3-CUC-0624 | Ascidian | m_I | 2024 | 0 | 0 | 0 | 95 | 1.2 | 3.7 | 84.7 |
| I4-CUC-0624 | Ascidian | m_I | 2024 | 0 | 0 | 0 | 98 | 1.6 | 15 | 81.7 |
| I5-CUC-0624 | Ascidian | m_I | 2024 | 0 | 0 | 0 | 109 | 0.13 | 0.25 | 85.4 |
| I1-ALG-0624 | Algae | m_I | 2024 | 0 | 0 | 0 | 93 | 0.2 | 0.46 | 81.8 |
| I2-ALG-0624 | Algae | m_I | 2024 | 0 | 0 | 0 | 89 | 0.2 | 0.42 | 80.2 |
| I3-ALG-0624 | Algae | m_I | 2024 | 0 | 0 | 0 | 99 | 0.24 | 0.44 | 86.9 |
| I4-ALG-0624 | Algae | m_I | 2024 | 0 | 0 | 0 | 95 | 0.11 | 0.3 | 86.1 |
| I5-ALG-0624 | Algae | m_I | 2024 | 0 | 0 | 0 | 85 | 0.16 | 0.3 | 86.3 |
| H1-CUC-0624 | Ascidian | m_H | 2024 | 0 | 0 | 0 | 94 | 1.2 | 5.2 | 79.1 |
| H2-CUC-0624 | Ascidian | m_H | 2024 | 0 | 0 | 0 | 87 | 1.2 | 7.1 | 80.5 |

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| | | | | Organotins | | | | Total Recoverable Trace Elements by ICP | | Moisture Content |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Monobutyltin as Sn | Dibutyltin as Sn | Tributyltin as Sn | Surrogate: Tripropyltin | Copper | Zinc | Moisture |
| Samples | Type | Location | Year | ng/g | ng/g | ng/g | %REC | mg/kg | mg/kg | % |
| H3-CUC-0624 | Ascidian | m_H | 2024 | 2.5 | 0 | 0 | 103 | 1.2 | 5.2 | 80.6 |
| H4-CUC-0624 | Ascidian | m_H | 2024 | 0 | 0 | 0 | 97 | 1.9 | 9.4 | 81.3 |
| H5-CUC-0624 | Ascidian | m_H | 2024 | 0 | 0 | 0 | 100 | 1.4 | 9.4 | 79.3 |
| H1-ALG-0624 | Algae | m_H | 2024 | 0 | 0 | 0 | 100 | 0.2 | 0.44 | 83.5 |
| H2-ALG-0624 | Algae | m_H | 2024 | 0 | 0 | 0 | 107 | 0.31 | 1.1 | 78.5 |
| H3-ALG-0624 | Algae | m_H | 2024 | 0 | 0 | 0 | 101 | 0.23 | 0.38 | 79.7 |
| H4-ALG-0624 | Algae | m_H | 2024 | 0 | 0 | 0 | 105 | 0.31 | 0.57 | 71.3 |
| H5-ALG-0624 | Algae | m_H | 2024 | 0 | 0 | 0 | 101 | 0.13 | 0.21 | 79.1 |

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# Annex D Laboratory Results and QA/QC

## D.1 Laboratory Results

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# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **EB2310032** | Page | : 1 of 6 |
| Client | : **BMT COMMERCIAL AUSTRALIA PTY LTD** | Laboratory | : Environmental Division Brisbane |
| Contact | : MS BETH TOKI | Contact | : Kimberly Hilton-Barber |
| Address | : PO BOX 203 SPRING HILL<br>BRISBANE QLD 4004 | Address | : 2 Byth Street Stafford QLD Australia 4053 |
| Telephone | : 07 3831 6744 | Telephone | : +61-7-3243 7222 |
| Project | : B23282 Douglas Shoal Survey 3 | Date Samples Received | : 03-Apr-2023 10:50 |
| Order number | : ---- | Date Analysis Commenced | : 04-Apr-2023 |
| C-O-C number | : ---- | Issue Date | : 17-Apr-2023 12:55 |
| Sampler | : C JONES/ A GIANNONI | | |
| Site | : ---- | | |
| Quote number | : BN/515/22 V2 | | |
| No. of samples received | : 11 | | |
| No. of samples analysed | : 11 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Kim McCabe | Senior Inorganic Chemist | Brisbane Acid Sulphate Soils, Stafford, QLD |
| Kim McCabe | Senior Inorganic Chemist | Brisbane Inorganics, Stafford, QLD |
| Timothy Creagh | Senior Chemist - Organics | Brisbane Inorganics, Stafford, QLD |
| Timothy Creagh | Senior Chemist - Organics | Brisbane Organics, Stafford, QLD |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP090 – Organotin Analysis: Sample 'A1-SED-0323' shows poor duplicate results due to sample heterogeneity. Confirmed by re-extraction and re-analysis.
- EG005SD (Total Fe and Al in Sediments by ICP-AES): A1-SED-0323 (EB2310032-001) shows poor duplicate results due to sample heterogeneity. This has been confirmed by visual inspection.

## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

| Compound | CAS Number | LOR | Unit | Sample ID | A1-SED-0323 | A2-SED-0323 | A3-SED-0323 | A4-SED-0323 | A5-SED-0323 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 27-Mar-2023 00:00 | 27-Mar-2023 00:00 | 27-Mar-2023 00:00 | 27-Mar-2023 00:00 | 27-Mar-2023 00:00 |
| | | | | | EB2310032-001 | EB2310032-002 | EB2310032-003 | EB2310032-004 | EB2310032-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | | |
| Moisture Content | ---- | 1.0 | % | | 37.6 | 22.6 | 23.0 | 34.2 | 33.3 |
| **EG005(ED093)-SD: Total Metals in Sediments by ICP-AES** | | | | | | | | | |
| Aluminium | 7429-90-5 | 50 | mg/kg | | 300 | 380 | 470 | 260 | 370 |
| Iron | 7439-89-6 | 50 | mg/kg | | 380 | 400 | 520 | 290 | 420 |
| **EG020-SD: Total Metals in Sediments by ICPMS** | | | | | | | | | |
| Antimony | 7440-36-0 | 0.50 | mg/kg | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| Arsenic | 7440-38-2 | 1.00 | mg/kg | | 1.09 | <1.00 | 1.04 | 1.02 | 1.05 |
| Cadmium | 7440-43-9 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Chromium | 7440-47-3 | 1.0 | mg/kg | | 3.9 | 4.0 | 4.7 | 3.5 | 4.0 |
| Copper | 7440-50-8 | 1.0 | mg/kg | | 9.3 | 6.8 | 4.6 | 1.6 | 2.3 |
| Cobalt | 7440-48-4 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Lead | 7439-92-1 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Manganese | 7439-96-5 | 10 | mg/kg | | 15 | 12 | 12 | 11 | 11 |
| Nickel | 7440-02-0 | 1.0 | mg/kg | | <1.0 | <1.0 | 1.3 | <1.0 | 1.0 |
| Selenium | 7782-49-2 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Silver | 7440-22-4 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Vanadium | 7440-62-2 | 2.0 | mg/kg | | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| Zinc | 7440-66-6 | 1.0 | mg/kg | | 5.6 | 4.8 | 4.8 | 1.9 | 2.4 |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| Barium | 7440-39-3 | 0.1 | mg/kg | | 5.2 | 5.0 | 4.8 | 5.1 | 5.3 |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| Mercury | 7439-97-6 | 0.01 | mg/kg | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EP003: Total Organic Carbon (TOC) in Soil** | | | | | | | | | |
| Total Organic Carbon | ---- | 0.02 | % | | 0.16 | 0.16 | 0.18 | 0.19 | 0.19 |
| **EP090: Organotin Compounds** | | | | | | | | | |
| Tributyltin | 56573-85-4 | 0.5 | µgSn/kg | | 4.9 | 1.3 | 17.6 | 1.2 | 1.1 |
| **EP090S: Organotin Surrogate** | | | | | | | | | |
| Tripropyltin | ---- | 0.5 | % | | 9.4 | 60.1 | 42.4 | 122 | 85.8 |

## Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | A6-SED-0323 | A7-SED-0323 | A8-SED-0323 | A9-SED-0323 | A10-SED-0323 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 27-Mar-2023 00:00 | 27-Mar-2023 00:00 | 27-Mar-2023 00:00 | 27-Mar-2023 00:00 | 27-Mar-2023 00:00 |
| | | | | | EB2310032-006 | EB2310032-007 | EB2310032-008 | EB2310032-009 | EB2310032-010 |
| | | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | | |
| **Moisture Content** | ---- | 1.0 | % | | **30.4** | **35.1** | **33.0** | **33.2** | **29.7** |
| **EG005(ED093)-SD: Total Metals in Sediments by ICP-AES** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 50 | mg/kg | | **750** | **260** | **170** | **190** | **310** |
| **Iron** | 7439-89-6 | 50 | mg/kg | | **750** | **310** | **200** | **220** | **340** |
| **EG020-SD: Total Metals in Sediments by ICPMS** | | | | | | | | | |
| **Antimony** | 7440-36-0 | 0.50 | mg/kg | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| **Arsenic** | 7440-38-2 | 1.00 | mg/kg | | **1.08** | <1.00 | <1.00 | **1.00** | <1.00 |
| **Cadmium** | 7440-43-9 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Chromium** | 7440-47-3 | 1.0 | mg/kg | | **7.2** | **4.4** | **2.8** | **2.8** | **3.0** |
| **Copper** | 7440-50-8 | 1.0 | mg/kg | | **5.1** | **2.9** | **1.5** | **2.7** | **3.8** |
| **Cobalt** | 7440-48-4 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **Lead** | 7439-92-1 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Manganese** | 7439-96-5 | 10 | mg/kg | | **20** | **12** | <10 | <10 | <10 |
| **Nickel** | 7440-02-0 | 1.0 | mg/kg | | **1.8** | <1.0 | <1.0 | <1.0 | <1.0 |
| **Selenium** | 7782-49-2 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Silver** | 7440-22-4 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Vanadium** | 7440-62-2 | 2.0 | mg/kg | | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| **Zinc** | 7440-66-6 | 1.0 | mg/kg | | **4.7** | **2.3** | **1.6** | **2.3** | **3.4** |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| **Barium** | 7440-39-3 | 0.1 | mg/kg | | **4.8** | **7.2** | **5.2** | **5.2** | **5.0** |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.01 | mg/kg | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EP003: Total Organic Carbon (TOC) in Soil** | | | | | | | | | |
| **Total Organic Carbon** | ---- | 0.02 | % | | **0.15** | **0.19** | **0.21** | **0.19** | **0.22** |
| **EP090: Organotin Compounds** | | | | | | | | | |
| **Tributyltin** | 56573-85-4 | 0.5 | µgSn/kg | | <0.5 | **2.8** | **1.5** | **1.0** | **2.4** |
| **EP090S: Organotin Surrogate** | | | | | | | | | |
| **Tripropyltin** | ---- | 0.5 | % | | **90.6** | **90.5** | **99.4** | **78.2** | **83.6** |

## Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | | Sample ID | QC01 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 27-Mar-2023 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | EB2310032-011 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | | |
| Moisture Content | ---- | 1.0 | % | | **18.8** | ---- | ---- | ---- | ---- |
| **EG005(ED093)-SD: Total Metals in Sediments by ICP-AES** | | | | | | | | | |
| Aluminium | 7429-90-5 | 50 | mg/kg | | **440** | ---- | ---- | ---- | ---- |
| Iron | 7439-89-6 | 50 | mg/kg | | **470** | ---- | ---- | ---- | ---- |
| **EG020-SD: Total Metals in Sediments by ICPMS** | | | | | | | | | |
| Antimony | 7440-36-0 | 0.50 | mg/kg | | <0.50 | ---- | ---- | ---- | ---- |
| Arsenic | 7440-38-2 | 1.00 | mg/kg | | **1.11** | ---- | ---- | ---- | ---- |
| Cadmium | 7440-43-9 | 0.1 | mg/kg | | <0.1 | ---- | ---- | ---- | ---- |
| Chromium | 7440-47-3 | 1.0 | mg/kg | | **5.3** | ---- | ---- | ---- | ---- |
| Copper | 7440-50-8 | 1.0 | mg/kg | | **2.6** | ---- | ---- | ---- | ---- |
| Cobalt | 7440-48-4 | 0.5 | mg/kg | | <0.5 | ---- | ---- | ---- | ---- |
| Lead | 7439-92-1 | 1.0 | mg/kg | | <1.0 | ---- | ---- | ---- | ---- |
| Manganese | 7439-96-5 | 10 | mg/kg | | **13** | ---- | ---- | ---- | ---- |
| Nickel | 7440-02-0 | 1.0 | mg/kg | | **1.2** | ---- | ---- | ---- | ---- |
| Selenium | 7782-49-2 | 0.1 | mg/kg | | <0.1 | ---- | ---- | ---- | ---- |
| Silver | 7440-22-4 | 0.1 | mg/kg | | <0.1 | ---- | ---- | ---- | ---- |
| Vanadium | 7440-62-2 | 2.0 | mg/kg | | <2.0 | ---- | ---- | ---- | ---- |
| Zinc | 7440-66-6 | 1.0 | mg/kg | | **2.3** | ---- | ---- | ---- | ---- |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| Barium | 7440-39-3 | 0.1 | mg/kg | | **5.2** | ---- | ---- | ---- | ---- |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| Mercury | 7439-97-6 | 0.01 | mg/kg | | <0.01 | ---- | ---- | ---- | ---- |
| **EP003: Total Organic Carbon (TOC) in Soil** | | | | | | | | | |
| Total Organic Carbon | ---- | 0.02 | % | | **0.18** | ---- | ---- | ---- | ---- |
| **EP090: Organotin Compounds** | | | | | | | | | |
| Tributyltin | 56573-85-4 | 0.5 | µgSn/kg | | **0.9** | ---- | ---- | ---- | ---- |
| **EP090S: Organotin Surrogate** | | | | | | | | | |
| Tripropyltin | ---- | 0.5 | % | | **71.2** | ---- | ---- | ---- | ---- |

## Surrogate Control Limits

Sub-Matrix: **SOIL**

| Compound | CAS Number | Recovery Limits (%) Low | High |
|---|---|---|---|
| **EP090S: Organotin Surrogate** | | | |
| **Tripropyltin** | ---- | 35 | 130 |

**BMT Commercial Australia Pty Ltd**
**Level 8, 200 Creek St**
**Brisbane**
**QLD 4000**

**Attention:** **Beth Toki**

**Report** **978886-S**
Project name DOUGLAS SHOAL
Project ID B23282.21
Received Date Apr 03, 2023

| **Client Sample ID** | | | **QC01A** |
|---|---|---|---|
| **Sample Matrix** | | | **Soil** |
| **Eurofins Sample No.** | | | **B23-Ap0013065** |
| **Date Sampled** | | | **Mar 27, 2023** |
| Test/Reference | LOR | Unit | |
| | | | |
| Total Organic Carbon | 0.1 | % | 11 |
| Organotins (MBT, DBT, TBT) | | | |
| **Heavy Metals** | | | |
| Aluminium | 20 | mg/kg | 760 |
| Antimony | 10 | mg/kg | < 10 |
| Arsenic | 2 | mg/kg | < 2 |
| Cadmium | 0.4 | mg/kg | < 0.4 |
| Chromium | 5 | mg/kg | 6.1 |
| Cobalt | 5 | mg/kg | < 5 |
| Copper | 5 | mg/kg | < 5 |
| Iron | 20 | mg/kg | 1900 |
| Lead | 5 | mg/kg | < 5 |
| Manganese | 5 | mg/kg | 39 |
| Mercury | 0.1 | mg/kg | < 0.1 |
| Nickel | 5 | mg/kg | < 5 |
| Selenium | 2 | mg/kg | < 2 |
| Silver | 2 | mg/kg | < 2 |
| Vanadium | 10 | mg/kg | < 10 |
| Zinc | 5 | mg/kg | 5.7 |
| **Sample Properties** | | | |
| % Moisture | 1 | % | 31 |

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## Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

| Description | Testing Site | Extracted | Holding Time |
|---|---|---|---|
| Total Organic Carbon | Melbourne | Apr 13, 2023 | 28 Days |
| - Method: LTM-INO-4060 Total Organic Carbon in water and soil | | | |
| Heavy Metals | Sydney | Apr 12, 2023 | 28 Days |
| - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS | | | |
| Metals M8 | Sydney | Apr 12, 2023 | 28 Days |
| - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS | | | |
| % Moisture | Melbourne | Apr 06, 2023 | 14 Days |
| - Method: LTM-GEN-7080 Moisture | | | |

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**Eurofins Environment Testing Australia Pty Ltd**
ABN: 50 005 085 521

| Melbourne | Geelong | Sydney | Canberra | Brisbane | Newcastle |
|---|---|---|---|---|---|
| 6 Monterey Road | 19/8 Lewalan Street | 179 Magowar Road | Unit 1,2 Dacre Street | 1/21 Smallwood Place | 1/2 Frost Drive |
| Dandenong South | Grovedale | Girraween | Mitchell | Murarrie | Mayfield West NSW 2304 |
| VIC 3175 | VIC 3216 | NSW 2145 | ACT 2911 | QLD 4172 | Tel: +61 2 4968 8448 |
| Tel: +61 3 8564 5000 | Tel: +61 3 8564 5000 | Tel: +61 2 9900 8400 | Tel: +61 2 6113 8091 | Tel: +61 7 3902 4600 | NATA# 1261 |
| NATA# 1261 Site# 1254 | NATA# 1261 Site# 25403 | NATA# 1261 Site# 18217 | NATA# 1261 Site# 25466 | NATA# 1261 Site# 20794 | Site# 25079 & 25289 |

**Eurofins ARL Pty Ltd**
ABN: 91 05 0159 898

| Perth |
|---|
| 46-48 Banksia Road |
| Welshpool |
| WA 6106 |
| Tel: +61 8 6253 4444 |
| NATA# 2377 Site# 2370 |

**Eurofins Environment Testing NZ Ltd**
NZBN: 9429046024954

| Auckland | Christchurch |
|---|---|
| 35 O'Rorke Road | 43 Detroit Drive |
| Penrose, | Rolleston, |
| Auckland 1061 | Christchurch 7675 |
| Tel: +64 9 526 45 51 | Tel: 0800 856 450 |
| IANZ# 1327 | IANZ# 1290 |

**Company Name:** BMT Commercial Australia Pty Ltd
**Address:** Level 8, 200 Creek St
Brisbane
QLD 4000

**Order No.:**
**Report #:** 978886
**Phone:** 07 3831 6744
**Fax:** 07 3832 3627

**Received:** Apr 3, 2023 3:00 PM
**Due:** Apr 12, 2023
**Priority:** 5 Day
**Contact Name:** Beth Toki

**Project Name:** DOUGLAS SHOAL
**Project ID:** B23282.21

**Eurofins Analytical Services Manager : Alana Wadsworth**

| Sample Detail | | | | | | Aluminium | Antimony | Cobalt | Iron | Manganese | Selenium | Silver | Total Organic Carbon | Vanadium | Metals M8 | Moisture Set | Organotins |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Melbourne Laboratory - NATA # 1261 Site # 1254** | | | | | | | | | | | | | X | | | X | X |
| **Sydney Laboratory - NATA # 1261 Site # 18217** | | | | | | X | X | X | X | X | X | X | | X | X | | |
| **External Laboratory** | | | | | | | | | | | | | | | | | |
| **No** | **Sample ID** | **Sample Date** | **Sampling Time** | **Matrix** | **LAB ID** | | | | | | | | | | | | |
| 1 | QC01A | Mar 27, 2023 | 12:30PM | Soil | B23-Ap0013065 | X | X | X | X | X | X | X | X | X | X | X | X |
| **Test Counts** | | | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

## Internal Quality Control Review and Glossary

### General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer that may have an impact on the results.
9. This report replaces any interim results previously issued.

### Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

### Units

**mg/kg:** milligrams per kilogram
**mg/L:** milligrams per litre
**µg/L:** micrograms per litre
**ppm:** parts per million
**ppb:** parts per billion
**%:** Percentage
**org/100 mL:** Organisms per 100 millilitres
**NTU:** Nephelometric Turbidity Units
**MPN/100 mL:** Most Probable Number of organisms per 100 millilitres
**CFU:** Colony forming unit

### Terms

| | |
|---|---|
| **APHA** | American Public Health Association |
| **COC** | Chain of Custody |
| **CP** | Client Parent - QC was performed on samples pertaining to this report |
| **CRM** | Certified Reference Material (ISO17034) - reported as percent recovery. |
| **Dry** | Where a moisture has been determined on a solid sample the result is expressed on a dry basis. |
| **Duplicate** | A second piece of analysis from the same sample and reported in the same units as the result to show comparison. |
| **LOR** | Limit of Reporting. |
| **LCS** | Laboratory Control Sample - reported as percent recovery. |
| **Method Blank** | In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water. |
| **NCP** | Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within. |
| **RPD** | Relative Percent Difference between two Duplicate pieces of analysis. |
| **SPIKE** | Addition of the analyte to the sample and reported as percentage recovery. |
| **SRA** | Sample Receipt Advice |
| **Surr - Surrogate** | The addition of a like compound to the analyte target and reported as percentage recovery. |
| **TBTO** | Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits. |
| **TCLP** | Toxicity Characteristic Leaching Procedure |
| **TEQ** | Toxic Equivalency Quotient or Total Equivalence |
| **QSM** | US Department of Defense Quality Systems Manual Version 5.4 |
| **US EPA** | United States Environmental Protection Agency |
| **WA DWER** | Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA |

### QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

### QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

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**Quality Control Results**

| Test | Units | Result 1 | | | Acceptance Limits | Pass Limits | Qualifying Code |
|---|---|---|---|---|---|---|---|
| **Method Blank** | | | | | | | |
| Total Organic Carbon | % | < 0.1 | | | 0.1 | Pass | |
| **Method Blank** | | | | | | | |
| **Heavy Metals** | | | | | | | |
| Aluminium | mg/kg | < 20 | | | 20 | Pass | |
| Antimony | mg/kg | < 10 | | | 10 | Pass | |
| Arsenic | mg/kg | < 2 | | | 2 | Pass | |
| Cadmium | mg/kg | < 0.4 | | | 0.4 | Pass | |
| Chromium | mg/kg | < 5 | | | 5 | Pass | |
| Cobalt | mg/kg | < 5 | | | 5 | Pass | |
| Copper | mg/kg | < 5 | | | 5 | Pass | |
| Iron | mg/kg | < 20 | | | 20 | Pass | |
| Lead | mg/kg | < 5 | | | 5 | Pass | |
| Manganese | mg/kg | < 5 | | | 5 | Pass | |
| Mercury | mg/kg | < 0.1 | | | 0.1 | Pass | |
| Nickel | mg/kg | < 5 | | | 5 | Pass | |
| Selenium | mg/kg | < 2 | | | 2 | Pass | |
| Silver | mg/kg | < 2 | | | 2 | Pass | |
| Vanadium | mg/kg | < 10 | | | 10 | Pass | |
| Zinc | mg/kg | < 5 | | | 5 | Pass | |
| **LCS - % Recovery** | | | | | | | |
| Total Organic Carbon | % | 93 | | | 70-130 | Pass | |
| **LCS - % Recovery** | | | | | | | |
| **Heavy Metals** | | | | | | | |
| Aluminium | % | 107 | | | 80-120 | Pass | |
| Antimony | % | 111 | | | 80-120 | Pass | |
| Arsenic | % | 99 | | | 80-120 | Pass | |
| Cadmium | % | 104 | | | 80-120 | Pass | |
| Chromium | % | 98 | | | 80-120 | Pass | |
| Cobalt | % | 101 | | | 80-120 | Pass | |
| Copper | % | 95 | | | 80-120 | Pass | |
| Iron | % | 117 | | | 80-120 | Pass | |
| Lead | % | 91 | | | 80-120 | Pass | |
| Manganese | % | 103 | | | 80-120 | Pass | |
| Mercury | % | 108 | | | 80-120 | Pass | |
| Nickel | % | 106 | | | 80-120 | Pass | |
| Selenium | % | 96 | | | 80-120 | Pass | |
| Silver | % | 113 | | | 80-120 | Pass | |
| Vanadium | % | 105 | | | 80-120 | Pass | |
| Zinc | % | 106 | | | 80-120 | Pass | |

| Test | Lab Sample ID | QA Source | Units | Result 1 | | | Acceptance Limits | Pass Limits | Qualifying Code |
|---|---|---|---|---|---|---|---|---|---|
| **Spike - % Recovery** | | | | | | | | | |
| **Heavy Metals** | | | | Result 1 | | | | | |
| Antimony | B23-Ap0013065 | CP | % | 88 | | | 75-125 | Pass | |
| Arsenic | B23-Ap0013065 | CP | % | 78 | | | 75-125 | Pass | |
| Cadmium | B23-Ap0013065 | CP | % | 88 | | | 75-125 | Pass | |
| Chromium | R23-Ap0017202 | NCP | % | 82 | | | 75-125 | Pass | |
| Cobalt | B23-Ap0013065 | CP | % | 75 | | | 75-125 | Pass | |
| Copper | S23-Ap0002633 | NCP | % | 91 | | | 75-125 | Pass | |
| Lead | B23-Ap0013065 | CP | % | 84 | | | 75-125 | Pass | |
| Manganese | S23-Ma0075636 | NCP | % | 92 | | | 75-125 | Pass | |

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| Test | Lab Sample ID | QA Source | Units | Result 1 | | | Acceptance Limits | Pass Limits | Qualifying Code |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | B23-Ap0013065 | CP | % | 95 | | | 75-125 | Pass | |
| Nickel | B23-Ap0013065 | CP | % | 82 | | | 75-125 | Pass | |
| Selenium | R23-Ap0017202 | NCP | % | 93 | | | 75-125 | Pass | |
| Silver | B23-Ap0013065 | CP | % | 84 | | | 75-125 | Pass | |
| Vanadium | S23-Ap0015365 | NCP | % | 80 | | | 75-125 | Pass | |
| Zinc | S23-Ap0002633 | NCP | % | 108 | | | 75-125 | Pass | |
| **Test** | **Lab Sample ID** | **QA Source** | **Units** | **Result 1** | | | **Acceptance Limits** | **Pass Limits** | **Qualifying Code** |
| **Duplicate** | | | | | | | | | |
| | | | | Result 1 | Result 2 | RPD | | | |
| Total Organic Carbon | S23-Ap0005654 | NCP | % | 0.3 | 0.2 | 25 | 30% | Pass | |
| **Duplicate** | | | | | | | | | |
| **Heavy Metals** | | | | Result 1 | Result 2 | RPD | | | |
| Aluminium | S23-Ap0008899 | NCP | mg/kg | 4800 | 5300 | 10 | 30% | Pass | |
| Antimony | R23-Ap0021231 | NCP | mg/kg | < 10 | < 10 | <1 | 30% | Pass | |
| Arsenic | R23-Ap0021231 | NCP | mg/kg | 4.3 | 4.3 | 1.3 | 30% | Pass | |
| Cadmium | N23-Ap0012884 | NCP | mg/kg | < 0.4 | < 0.4 | <1 | 30% | Pass | |
| Chromium | R23-Ap0021231 | NCP | mg/kg | 18 | 18 | 3.6 | 30% | Pass | |
| Copper | R23-Ap0021231 | NCP | mg/kg | 9.5 | 8.0 | 17 | 30% | Pass | |
| Iron | S23-Ap0015366 | NCP | mg/kg | 19000 | 17000 | 11 | 30% | Pass | |
| Lead | R23-Ap0021231 | NCP | mg/kg | 28 | 25 | 13 | 30% | Pass | |
| Manganese | S23-Ap0008918 | NCP | mg/kg | 870 | 930 | 4.2 | 30% | Pass | |
| Mercury | R23-Ap0021231 | NCP | mg/kg | < 0.1 | < 0.1 | <1 | 30% | Pass | |
| Nickel | R23-Ap0021231 | NCP | mg/kg | 8.5 | 6.8 | 22 | 30% | Pass | |
| Selenium | R23-Ap0021231 | NCP | mg/kg | < 2 | < 2 | <1 | 30% | Pass | |
| Silver | R23-Ap0021231 | NCP | mg/kg | < 2 | < 2 | <1 | 30% | Pass | |
| Vanadium | R23-Ap0021231 | NCP | mg/kg | 41 | 45 | 11 | 30% | Pass | |
| Zinc | R23-Ap0021231 | NCP | mg/kg | 26 | 21 | 21 | 30% | Pass | |
| **Duplicate** | | | | | | | | | |
| **Sample Properties** | | | | Result 1 | Result 2 | RPD | | | |
| % Moisture | L23-Ap0010945 | NCP | % | 1.0 | 1.2 | 17 | 30% | Pass | |

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## Comments

### Sample Integrity

| | |
|---|---|
| Custody Seals Intact (if used) | N/A |
| Attempt to Chill was evident | Yes |
| Sample correctly preserved | Yes |
| Appropriate sample containers have been used | Yes |
| Sample containers for volatile analysis received with minimal headspace | Yes |
| Samples received within HoldingTime | Yes |
| Some samples have been subcontracted | Yes |

### Authorised by:

| | |
|---|---|
| Mary Makarios | Senior Analyst-Inorganic |
| Mary Makarios | Senior Analyst-Sample Properties |
| Mickael Ros | Senior Analyst-Metal |

**Glenn Jackson**
**General Manager**

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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DRAFT

**BMT Commercial Australia Pty Ltd**
**Level 8, 200 Creek St**
**Brisbane**
**QLD 4000**

**Attention:** **Beth Toki**

**Report** **978886-S**
Project name DOUGLAS SHOAL
Project ID B23282.21
Received Date Apr 03, 2023

| **Client Sample ID** | | | **QC01A** |
|---|---|---|---|
| **Sample Matrix** | | | **Soil** |
| **Eurofins Sample No.** | | | **B23-Ap0013065** |
| **Date Sampled** | | | **Mar 27, 2023** |
| Test/Reference | LOR | Unit | |
| | | | |
| Total Organic Carbon | 0.1 | % | 11 |
| Organotins (MBT, DBT, TBT) | | | |
| **Heavy Metals** | | | |
| Aluminium | 20 | mg/kg | 760 |
| Antimony | 10 | mg/kg | < 10 |
| Arsenic | 2 | mg/kg | < 2 |
| Cadmium | 0.4 | mg/kg | < 0.4 |
| Chromium | 5 | mg/kg | 6.1 |
| Cobalt | 5 | mg/kg | < 5 |
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| Iron | 20 | mg/kg | 1900 |
| Lead | 5 | mg/kg | < 5 |
| Manganese | 5 | mg/kg | 39 |
| Mercury | 0.1 | mg/kg | < 0.1 |
| Nickel | 5 | mg/kg | < 5 |
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| Silver | 2 | mg/kg | < 2 |
| Vanadium | 10 | mg/kg | < 10 |
| Zinc | 5 | mg/kg | 5.7 |
| **Sample Properties** | | | |
| % Moisture | 1 | % | 31 |

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## Sample History

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| Description | Testing Site | Extracted | Holding Time |
|---|---|---|---|
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| - Method: LTM-INO-4060 Total Organic Carbon in water and soil | | | |
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| - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS | | | |
| Metals M8 | Sydney | Apr 12, 2023 | 28 Days |
| - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS | | | |
| % Moisture | Melbourne | Apr 06, 2023 | 14 Days |
| - Method: LTM-GEN-7080 Moisture | | | |

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email: EnviroSales@eurofins.com

**Eurofins Environment Testing Australia Pty Ltd**
ABN: 50 005 085 521

| Melbourne | Geelong | Sydney | Canberra | Brisbane | Newcastle |
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| 6 Monterey Road | 19/8 Lewalan Street | 179 Magowar Road | Unit 1,2 Dacre Street | 1/21 Smallwood Place | 1/2 Frost Drive |
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**Eurofins ARL Pty Ltd**
ABN: 91 05 0159 898

| Perth |
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| 46-48 Banksia Road |
| Welshpool |
| WA 6106 |
| Tel: +61 8 6253 4444 |
| NATA# 2377 Site# 2370 |

**Eurofins Environment Testing NZ Ltd**
NZBN: 9429046024954

| Auckland | Christchurch |
|---|---|
| 35 O'Rorke Road | 43 Detroit Drive |
| Penrose, | Rolleston, |
| Auckland 1061 | Christchurch 7675 |
| Tel: +64 9 526 45 51 | Tel: 0800 856 450 |
| IANZ# 1327 | IANZ# 1290 |

**Company Name:** BMT Commercial Australia Pty Ltd
**Address:** Level 8, 200 Creek St
Brisbane
QLD 4000

**Order No.:**
**Report #:** 978886
**Phone:** 07 3831 6744
**Fax:** 07 3832 3627

**Received:** Apr 3, 2023 3:00 PM
**Due:** Apr 12, 2023
**Priority:** 5 Day
**Contact Name:** Beth Toki

**Project Name:** DOUGLAS SHOAL
**Project ID:** B23282.21

**Eurofins Analytical Services Manager : Alana Wadsworth**

| Sample Detail | | | | | | Aluminium | Antimony | Cobalt | Iron | Manganese | Selenium | Silver | Total Organic Carbon | Vanadium | Metals M8 | Moisture Set | Organotins |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Melbourne Laboratory - NATA # 1261 Site # 1254** | | | | | | | | | | | | | X | | | X | X |
| **Sydney Laboratory - NATA # 1261 Site # 18217** | | | | | | X | X | X | X | X | X | X | | X | X | | |
| **External Laboratory** | | | | | | | | | | | | | | | | | |
| **No** | **Sample ID** | **Sample Date** | **Sampling Time** | **Matrix** | **LAB ID** | | | | | | | | | | | | |
| 1 | QC01A | Mar 27, 2023 | 12:30PM | Soil | B23-Ap0013065 | X | X | X | X | X | X | X | X | X | X | X | X |
| **Test Counts** | | | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

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| **NCP** | Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within. |
| **RPD** | Relative Percent Difference between two Duplicate pieces of analysis. |
| **SPIKE** | Addition of the analyte to the sample and reported as percentage recovery. |
| **SRA** | Sample Receipt Advice |
| **Surr - Surrogate** | The addition of a like compound to the analyte target and reported as percentage recovery. |
| **TBTO** | Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits. |
| **TCLP** | Toxicity Characteristic Leaching Procedure |
| **TEQ** | Toxic Equivalency Quotient or Total Equivalence |
| **QSM** | US Department of Defense Quality Systems Manual Version 5.4 |
| **US EPA** | United States Environmental Protection Agency |
| **WA DWER** | Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA |

### QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

### QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

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**Quality Control Results**

| Test | Units | Result 1 | | | Acceptance Limits | Pass Limits | Qualifying Code |
|---|---|---|---|---|---|---|---|
| **Method Blank** | | | | | | | |
| Total Organic Carbon | % | < 0.1 | | | 0.1 | Pass | |
| **Method Blank** | | | | | | | |
| **Heavy Metals** | | | | | | | |
| Aluminium | mg/kg | < 20 | | | 20 | Pass | |
| Antimony | mg/kg | < 10 | | | 10 | Pass | |
| Arsenic | mg/kg | < 2 | | | 2 | Pass | |
| Cadmium | mg/kg | < 0.4 | | | 0.4 | Pass | |
| Chromium | mg/kg | < 5 | | | 5 | Pass | |
| Cobalt | mg/kg | < 5 | | | 5 | Pass | |
| Copper | mg/kg | < 5 | | | 5 | Pass | |
| Iron | mg/kg | < 20 | | | 20 | Pass | |
| Lead | mg/kg | < 5 | | | 5 | Pass | |
| Manganese | mg/kg | < 5 | | | 5 | Pass | |
| Mercury | mg/kg | < 0.1 | | | 0.1 | Pass | |
| Nickel | mg/kg | < 5 | | | 5 | Pass | |
| Selenium | mg/kg | < 2 | | | 2 | Pass | |
| Silver | mg/kg | < 2 | | | 2 | Pass | |
| Vanadium | mg/kg | < 10 | | | 10 | Pass | |
| Zinc | mg/kg | < 5 | | | 5 | Pass | |
| **LCS - % Recovery** | | | | | | | |
| Total Organic Carbon | % | 93 | | | 70-130 | Pass | |
| **LCS - % Recovery** | | | | | | | |
| **Heavy Metals** | | | | | | | |
| Aluminium | % | 107 | | | 80-120 | Pass | |
| Antimony | % | 111 | | | 80-120 | Pass | |
| Arsenic | % | 99 | | | 80-120 | Pass | |
| Cadmium | % | 104 | | | 80-120 | Pass | |
| Chromium | % | 98 | | | 80-120 | Pass | |
| Cobalt | % | 101 | | | 80-120 | Pass | |
| Copper | % | 95 | | | 80-120 | Pass | |
| Iron | % | 117 | | | 80-120 | Pass | |
| Lead | % | 91 | | | 80-120 | Pass | |
| Manganese | % | 103 | | | 80-120 | Pass | |
| Mercury | % | 108 | | | 80-120 | Pass | |
| Nickel | % | 106 | | | 80-120 | Pass | |
| Selenium | % | 96 | | | 80-120 | Pass | |
| Silver | % | 113 | | | 80-120 | Pass | |
| Vanadium | % | 105 | | | 80-120 | Pass | |
| Zinc | % | 106 | | | 80-120 | Pass | |

| Test | Lab Sample ID | QA Source | Units | Result 1 | | | Acceptance Limits | Pass Limits | Qualifying Code |
|---|---|---|---|---|---|---|---|---|---|
| **Spike - % Recovery** | | | | | | | | | |
| **Heavy Metals** | | | | Result 1 | | | | | |
| Antimony | B23-Ap0013065 | CP | % | 88 | | | 75-125 | Pass | |
| Arsenic | B23-Ap0013065 | CP | % | 78 | | | 75-125 | Pass | |
| Cadmium | B23-Ap0013065 | CP | % | 88 | | | 75-125 | Pass | |
| Chromium | R23-Ap0017202 | NCP | % | 82 | | | 75-125 | Pass | |
| Cobalt | B23-Ap0013065 | CP | % | 75 | | | 75-125 | Pass | |
| Copper | S23-Ap0002633 | NCP | % | 91 | | | 75-125 | Pass | |
| Lead | B23-Ap0013065 | CP | % | 84 | | | 75-125 | Pass | |
| Manganese | S23-Ma0075636 | NCP | % | 92 | | | 75-125 | Pass | |

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| Test | Lab Sample ID | QA Source | Units | Result 1 | | | Acceptance Limits | Pass Limits | Qualifying Code |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | B23-Ap0013065 | CP | % | 95 | | | 75-125 | Pass | |
| Nickel | B23-Ap0013065 | CP | % | 82 | | | 75-125 | Pass | |
| Selenium | R23-Ap0017202 | NCP | % | 93 | | | 75-125 | Pass | |
| Silver | B23-Ap0013065 | CP | % | 84 | | | 75-125 | Pass | |
| Vanadium | S23-Ap0015365 | NCP | % | 80 | | | 75-125 | Pass | |
| Zinc | S23-Ap0002633 | NCP | % | 108 | | | 75-125 | Pass | |
| **Test** | **Lab Sample ID** | **QA Source** | **Units** | **Result 1** | | | **Acceptance Limits** | **Pass Limits** | **Qualifying Code** |
| **Duplicate** | | | | | | | | | |
| | | | | Result 1 | Result 2 | RPD | | | |
| Total Organic Carbon | S23-Ap0005654 | NCP | % | 0.3 | 0.2 | 25 | 30% | Pass | |
| **Duplicate** | | | | | | | | | |
| **Heavy Metals** | | | | Result 1 | Result 2 | RPD | | | |
| Aluminium | S23-Ap0008899 | NCP | mg/kg | 4800 | 5300 | 10 | 30% | Pass | |
| Antimony | R23-Ap0021231 | NCP | mg/kg | < 10 | < 10 | <1 | 30% | Pass | |
| Arsenic | R23-Ap0021231 | NCP | mg/kg | 4.3 | 4.3 | 1.3 | 30% | Pass | |
| Cadmium | N23-Ap0012884 | NCP | mg/kg | < 0.4 | < 0.4 | <1 | 30% | Pass | |
| Chromium | R23-Ap0021231 | NCP | mg/kg | 18 | 18 | 3.6 | 30% | Pass | |
| Copper | R23-Ap0021231 | NCP | mg/kg | 9.5 | 8.0 | 17 | 30% | Pass | |
| Iron | S23-Ap0015366 | NCP | mg/kg | 19000 | 17000 | 11 | 30% | Pass | |
| Lead | R23-Ap0021231 | NCP | mg/kg | 28 | 25 | 13 | 30% | Pass | |
| Manganese | S23-Ap0008918 | NCP | mg/kg | 870 | 930 | 4.2 | 30% | Pass | |
| Mercury | R23-Ap0021231 | NCP | mg/kg | < 0.1 | < 0.1 | <1 | 30% | Pass | |
| Nickel | R23-Ap0021231 | NCP | mg/kg | 8.5 | 6.8 | 22 | 30% | Pass | |
| Selenium | R23-Ap0021231 | NCP | mg/kg | < 2 | < 2 | <1 | 30% | Pass | |
| Silver | R23-Ap0021231 | NCP | mg/kg | < 2 | < 2 | <1 | 30% | Pass | |
| Vanadium | R23-Ap0021231 | NCP | mg/kg | 41 | 45 | 11 | 30% | Pass | |
| Zinc | R23-Ap0021231 | NCP | mg/kg | 26 | 21 | 21 | 30% | Pass | |
| **Duplicate** | | | | | | | | | |
| **Sample Properties** | | | | Result 1 | Result 2 | RPD | | | |
| % Moisture | L23-Ap0010945 | NCP | % | 1.0 | 1.2 | 17 | 30% | Pass | |

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## Comments

### Sample Integrity

| | |
|---|---|
| Custody Seals Intact (if used) | N/A |
| Attempt to Chill was evident | Yes |
| Sample correctly preserved | Yes |
| Appropriate sample containers have been used | Yes |
| Sample containers for volatile analysis received with minimal headspace | Yes |
| Samples received within HoldingTime | Yes |
| Some samples have been subcontracted | Yes |

### Authorised by:

| | |
|---|---|
| Mary Makarios | Senior Analyst-Inorganic |
| Mary Makarios | Senior Analyst-Sample Properties |
| Mickael Ros | Senior Analyst-Metal |

**Glenn Jackson**
**General Manager**

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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# REPORT OF ANALYSIS



| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/231207 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 07-DEC-2023 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N23/025768 | A1CUC-1123 | BIOTA 03/12/23 10:26 |
| N23/025772 | A3CUC-1123 | BIOTA 03/12/23 10:34 |
| N23/025774 | A4CUC-1123 | BIOTA 03/12/23 10:37 |
| N23/025776 | A5CUC-1123 | BIOTA 03/12/23 10:39 |

| Lab Reg No. | Units | N23/025768 | N23/025772 | N23/025774 | N23/025776 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | |
| Sample Reference | | A1CUC-1123 | A3CUC-1123 | A4CUC-1123 | A5CUC-1123 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | 4.6 | 5.9 | 1.9 | 35 | NR_35 |
| Dibutyltin as Sn | ng/g | <2 | <5 | <1 | <5 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <5 | <1 | <5 | NR_35 |
| Surrogate: Tripropyltin | %REC | 76 | 110 | 113 | 118 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 2-FEB-2024 | 2-FEB-2024 | 2-FEB-2024 | 2-FEB-2024 | |
| Date analysed | | 9-FEB-2024 | 9-FEB-2024 | 9-FEB-2024 | 9-FEB-2024 | |

Luke Baker, Analyst
Organics - NSW
Accreditation No. 198

27-FEB-2024

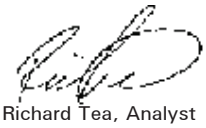
| Lab Reg No. | Units | N23/025768 | N23/025772 | N23/025774 | N23/025776 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | |
| Sample Reference | | A1CUC-1123 | A3CUC-1123 | A4CUC-1123 | A5CUC-1123 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 8.9 | 8 | 6.9 | 6.9 | NT2_46 |
| Zinc | mg/kg | 35 | 30 | 26 | 86 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 1-FEB-2024 | 1-FEB-2024 | 1-FEB-2024 | 1-FEB-2024 | |
| Date analysed | | 5-FEB-2024 | 5-FEB-2024 | 5-FEB-2024 | 5-FEB-2024 | |

# REPORT OF ANALYSIS



Report No. RN1419975

| Lab Reg No. | | N23/025768 | N23/025772 | N23/025774 | N23/025776 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | |
| Sample Reference | Units | A1CUC-1123 | A3CUC-1123 | A4CUC-1123 | A5CUC-1123 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 79.8 | 83.9 | 90.8 | 89.8 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

27-FEB-2024

# REPORT OF ANALYSIS



Report No. RN1419975

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/231207 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 07-DEC-2023 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N23/025778 | D1CUC-1123 | BIOTA 03/12/23 11:12 |
| N23/025780 | D2CUC-1123 | BIOTA 03/12/23 11:14 |
| N23/025783 | D3CUC-1123 | BIOTA 03/12/23 11:16 |
| N23/025785 | D4CUC-1123 | BIOTA 03/12/23 11:18 |

| Lab Reg No. | Units | N23/025778 | N23/025780 | N23/025783 | N23/025785 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | |
| Sample Reference | | D1CUC-1123 | D2CUC-1123 | D3CUC-1123 | D4CUC-1123 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | 1.7 | 1.2 | <1 | 5.3 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 113 | 110 | 64 | 124 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 2-FEB-2024 | 2-FEB-2024 | 2-FEB-2024 | 2-FEB-2024 | |
| Date analysed | | 9-FEB-2024 | 9-FEB-2024 | 9-FEB-2024 | 9-FEB-2024 | |



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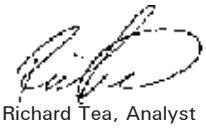
| Lab Reg No. | Units | N23/025778 | N23/025780 | N23/025783 | N23/025785 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | |
| Sample Reference | | D1CUC-1123 | D2CUC-1123 | D3CUC-1123 | D4CUC-1123 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 6.1 | 6.9 | 8.3 | 7.9 | NT2_46 |
| Zinc | mg/kg | 36 | 26 | 20 | 61 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 1-FEB-2024 | 1-FEB-2024 | 1-FEB-2024 | 1-FEB-2024 | |
| Date analysed | | 5-FEB-2024 | 5-FEB-2024 | 5-FEB-2024 | 5-FEB-2024 | |

# REPORT OF ANALYSIS



Report No. RN1419975

| Lab Reg No. | | N23/025778 | N23/025780 | N23/025783 | N23/025785 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | |
| Sample Reference | Units | D1CUC-1123 | D2CUC-1123 | D3CUC-1123 | D4CUC-1123 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 84.6 | 90.6 | 82.9 | 90.0 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

27-FEB-2024

# REPORT OF ANALYSIS



Report No. RN1419975

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/231207 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 07-DEC-2023 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N23/025787 | D5CUC-1123 | BIOTA 03/12/23 11:19 |
| N23/025789 | C1CUC-1123 | BIOTA 03/12/23 12:04 |
| N23/025791 | C2CUC-1123 | BIOTA 03/12/23 12:08 |
| N23/025796 | C4CUC-1123 | BIOTA 03/12/23 12:15 |

| Lab Reg No. | Units | N23/025787 | N23/025789 | N23/025791 | N23/025796 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | |
| Sample Reference | | D5CUC-1123 | C1CUC-1123 | C2CUC-1123 | C4CUC-1123 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <5 | <5 | <5 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <5 | <5 | <5 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <5 | <5 | <5 | NR_35 |
| Surrogate: Tripropyltin | %REC | 115 | 103 | 87 | 133 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 2-FEB-2024 | 2-FEB-2024 | 2-FEB-2024 | 2-FEB-2024 | |
| Date analysed | | 9-FEB-2024 | 9-FEB-2024 | 9-FEB-2024 | 9-FEB-2024 | |



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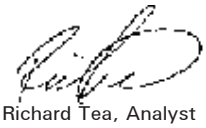
| Lab Reg No. | Units | N23/025787 | N23/025789 | N23/025791 | N23/025796 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | |
| Sample Reference | | D5CUC-1123 | C1CUC-1123 | C2CUC-1123 | C4CUC-1123 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 13 | 6.8 | 17 | 8.8 | NT2_46 |
| Zinc | mg/kg | 58 | 43 | 66 | 33 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 1-FEB-2024 | 1-FEB-2024 | 1-FEB-2024 | 1-FEB-2024 | |
| Date analysed | | 5-FEB-2024 | 5-FEB-2024 | 5-FEB-2024 | 5-FEB-2024 | |

# REPORT OF ANALYSIS



Report No. RN1419975

| Lab Reg No. | Units | N23/025787 | N23/025789 | N23/025791 | N23/025796 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | |
| Sample Reference | | D5CUC-1123 | C1CUC-1123 | C2CUC-1123 | C4CUC-1123 | |
| **Moisture Content** | | | | | | |
| Moisture | % | 89.6 | 80.3 | 93.4 | 79.8 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

27-FEB-2024

# REPORT OF ANALYSIS



Report No. RN1419975

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/231207 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 07-DEC-2023 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N23/025798 | C5CUC-1123 | BIOTA 03/12/23 12:20 |
| N23/025800 | G1CUC-1123 | BIOTA 03/12/23 13:12 |
| N23/025802 | G2CUC-1123 | BIOTA 03/12/23 13:15 |
| N23/025804 | G3CUC-1123 | BIOTA 03/12/23 13:19 |

| Lab Reg No. | Units | N23/025798 | N23/025800 | N23/025802 | N23/025804 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | |
| Sample Reference | | C5CUC-1123 | G1CUC-1123 | G2CUC-1123 | G3CUC-1123 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <5 | <5 | <1 | <5 | NR_35 |
| Dibutyltin as Sn | ng/g | <5 | <5 | <1 | <5 | NR_35 |
| Tributyltin as Sn | ng/g | <5 | <5 | <1 | <5 | NR_35 |
| Surrogate: Tripropyltin | %REC | 87 | 122 | 95 | 77 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 2-FEB-2024 | 2-FEB-2024 | 2-FEB-2024 | 2-FEB-2024 | |
| Date analysed | | 9-FEB-2024 | 9-FEB-2024 | 9-FEB-2024 | 9-FEB-2024 | |



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27-FEB-2024

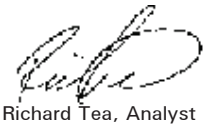
| Lab Reg No. | Units | N23/025798 | N23/025800 | N23/025802 | N23/025804 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | |
| Sample Reference | | C5CUC-1123 | G1CUC-1123 | G2CUC-1123 | G3CUC-1123 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 6.8 | 11 | 7.3 | 6.5 | NT2_46 |
| Zinc | mg/kg | 36 | 40 | 21 | 24 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 1-FEB-2024 | 1-FEB-2024 | 1-FEB-2024 | 1-FEB-2024 | |
| Date analysed | | 5-FEB-2024 | 5-FEB-2024 | 5-FEB-2024 | 5-FEB-2024 | |

# REPORT OF ANALYSIS



Report No. RN1419975

| Lab Reg No. | | N23/025798 | N23/025800 | N23/025802 | N23/025804 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | |
| Sample Reference | Units | C5CUC-1123 | G1CUC-1123 | G2CUC-1123 | G3CUC-1123 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 85.8 | 81.7 | 83.6 | 84.3 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

27-FEB-2024

# REPORT OF ANALYSIS



Report No. RN1419975

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/231207 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 07-DEC-2023 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N23/025806 | G4CUC-1123 | BIOTA 03/12/23 13:23 |
| N23/025811 | E1CUC-1123 | BIOTA 03/12/23 15:05 |
| N23/025813 | E2CUC-1123 | BIOTA 03/12/23 15:07 |
| N23/025817 | E4CUC-1123 | BIOTA 03/12/23 15:11 |

| Lab Reg No. | Units | N23/025806 | N23/025811 | N23/025813 | N23/025817 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | |
| Sample Reference | | G4CUC-1123 | E1CUC-1123 | E2CUC-1123 | E4CUC-1123 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <2 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <2 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <2 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 102 | 93 | 74 | 82 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 2-FEB-2024 | 2-FEB-2024 | 2-FEB-2024 | 2-FEB-2024 | |
| Date analysed | | 9-FEB-2024 | 9-FEB-2024 | 9-FEB-2024 | 9-FEB-2024 | |



Luke Baker, Analyst
Organics - NSW
Accreditation No. 198

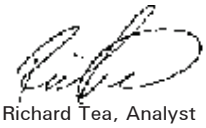
27-FEB-2024

| Lab Reg No. | Units | N23/025806 | N23/025811 | N23/025813 | N23/025817 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | |
| Sample Reference | | G4CUC-1123 | E1CUC-1123 | E2CUC-1123 | E4CUC-1123 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 8.1 | 5.3 | 7.4 | 7.8 | NT2_46 |
| Zinc | mg/kg | 34 | 22 | 55 | 27 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 1-FEB-2024 | 1-FEB-2024 | 1-FEB-2024 | 1-FEB-2024 | |
| Date analysed | | 5-FEB-2024 | 5-FEB-2024 | 5-FEB-2024 | 5-FEB-2024 | |

# REPORT OF ANALYSIS



| Lab Reg No. | | N23/025806 | N23/025811 | N23/025813 | N23/025817 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | |
| Sample Reference | Units | G4CUC-1123 | E1CUC-1123 | E2CUC-1123 | E4CUC-1123 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 83.5 | 81.2 | 87.2 | 80.3 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

27-FEB-2024

# REPORT OF ANALYSIS



Report No. RN1419975

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/231207 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 07-DEC-2023 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N23/025819 | E5CUC-1123 | BIOTA 03/12/23 15:13 |
| N23/025823 | B2CUC-1123 | BIOTA 03/12/23 16:17 |
| N23/025824 | B3 CUC-1123 | BIOTA 03/12/23 16:20 |
| N23/025825 | B4CUC-1123 | BIOTA 03/12/23 16:25 |

| Lab Reg No. | Units | N23/025819 | N23/025823 | N23/025824 | N23/025825 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | |
| Sample Reference | | E5CUC-1123 | B2CUC-1123 | B3 CUC-1123 | B4CUC-1123 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | 30 | 2.6 | <2 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <5 | <1 | <2 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <5 | <1 | <2 | NR_35 |
| Surrogate: Tripropyltin | %REC | 83 | 90 | 70 | 82 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 2-FEB-2024 | 2-FEB-2024 | 2-FEB-2024 | 2-FEB-2024 | |
| Date analysed | | 9-FEB-2024 | 9-FEB-2024 | 9-FEB-2024 | 9-FEB-2024 | |



Luke Baker, Analyst
Organics - NSW
Accreditation No. 198

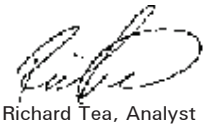
27-FEB-2024

| Lab Reg No. | Units | N23/025819 | N23/025823 | N23/025824 | N23/025825 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | |
| Sample Reference | | E5CUC-1123 | B2CUC-1123 | B3 CUC-1123 | B4CUC-1123 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 10 | 14 | 4 | 8.3 | NT2_46 |
| Zinc | mg/kg | 51 | 30 | 33 | 48 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 1-FEB-2024 | 1-FEB-2024 | 1-FEB-2024 | 1-FEB-2024 | |
| Date analysed | | 5-FEB-2024 | 5-FEB-2024 | 5-FEB-2024 | 5-FEB-2024 | |

# REPORT OF ANALYSIS



| Lab Reg No. | | N23/025819 | N23/025823 | N23/025824 | N23/025825 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | |
| Sample Reference | Units | E5CUC-1123 | B2CUC-1123 | B3 CUC-1123 | B4CUC-1123 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 87.3 | 80.7 | 85.0 | 88.4 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

27-FEB-2024

# REPORT OF ANALYSIS



Report No. RN1419975

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/231207 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 07-DEC-2023 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N23/025826 | B5 CUC-1123 | BIOTA 03/12/23 16:27 |
| N23/025827 | I1CUC-1123 | BIOTA 04/12/23 09:10 |
| N23/025831 | I3CUC-1123 | BIOTA 04/12/23 09:16 |
| N23/025833 | I4CUC-1123 | BIOTA 04/12/23 09:22 |

| Lab Reg No. | Units | N23/025826 | N23/025827 | N23/025831 | N23/025833 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 03-DEC-2023 | 04-DEC-2023 | 04-DEC-2023 | 04-DEC-2023 | |
| Sample Reference | | B5 CUC-1123 | I1CUC-1123 | I3CUC-1123 | I4CUC-1123 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <5 | <1 | <5 | <2 | NR_35 |
| Dibutyltin as Sn | ng/g | <5 | <1 | <5 | <2 | NR_35 |
| Tributyltin as Sn | ng/g | <5 | <1 | <5 | <2 | NR_35 |
| Surrogate: Tripropyltin | %REC | 86 | 85 | 111 | 96 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 2-FEB-2024 | 2-FEB-2024 | 2-FEB-2024 | 2-FEB-2024 | |
| Date analysed | | 9-FEB-2024 | 9-FEB-2024 | 9-FEB-2024 | 9-FEB-2024 | |



Luke Baker, Analyst
Organics - NSW
Accreditation No. 198

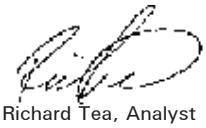
27-FEB-2024

| Lab Reg No. | Units | N23/025826 | N23/025827 | N23/025831 | N23/025833 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 03-DEC-2023 | 04-DEC-2023 | 04-DEC-2023 | 04-DEC-2023 | |
| Sample Reference | | B5 CUC-1123 | I1CUC-1123 | I3CUC-1123 | I4CUC-1123 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 6.2 | 9.1 | 8.4 | 8.6 | NT2_46 |
| Zinc | mg/kg | 50 | 24 | 30 | 29 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 1-FEB-2024 | 1-FEB-2024 | 1-FEB-2024 | 1-FEB-2024 | |
| Date analysed | | 5-FEB-2024 | 5-FEB-2024 | 5-FEB-2024 | 5-FEB-2024 | |

# REPORT OF ANALYSIS



| Lab Reg No. | | N23/025826 | N23/025827 | N23/025831 | N23/025833 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 03-DEC-2023 | 04-DEC-2023 | 04-DEC-2023 | 04-DEC-2023 | |
| Sample Reference | Units | B5 CUC-1123 | I1CUC-1123 | I3CUC-1123 | I4CUC-1123 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 85.1 | 79.9 | 84.2 | 81.8 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

27-FEB-2024

# REPORT OF ANALYSIS



Report No. RN1419975

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/231207 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 07-DEC-2023 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N23/025835 | I5CUC-1123 | BIOTA 04/12/23 09:24 |
| N23/025837 | H1CUC-1123 | BIOTA 04/12/23 09:40 |
| N23/025839 | H2CUC-1123 | BIOTA 04/12/23 09:41 |
| N23/025841 | H3CUC-1123 | BIOTA 04/12/23 09:42 |

| Lab Reg No. | Units | N23/025835 | N23/025837 | N23/025839 | N23/025841 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 04-DEC-2023 | 04-DEC-2023 | 04-DEC-2023 | 04-DEC-2023 | |
| Sample Reference | | I5CUC-1123 | H1CUC-1123 | H2CUC-1123 | H3CUC-1123 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <2 | <1 | <1 | <2 | NR_35 |
| Dibutyltin as Sn | ng/g | <2 | <1 | <1 | <2 | NR_35 |
| Tributyltin as Sn | ng/g | <2 | <1 | <1 | <2 | NR_35 |
| Surrogate: Tripropyltin | %REC | 91 | 95 | 70 | 77 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 2-FEB-2024 | 2-FEB-2024 | 2-FEB-2024 | 2-FEB-2024 | |
| Date analysed | | 9-FEB-2024 | 9-FEB-2024 | 9-FEB-2024 | 9-FEB-2024 | |



Luke Baker, Analyst
Organics - NSW
Accreditation No. 198

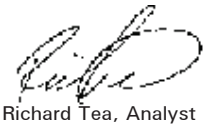
27-FEB-2024

| Lab Reg No. | Units | N23/025835 | N23/025837 | N23/025839 | N23/025841 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 04-DEC-2023 | 04-DEC-2023 | 04-DEC-2023 | 04-DEC-2023 | |
| Sample Reference | | I5CUC-1123 | H1CUC-1123 | H2CUC-1123 | H3CUC-1123 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 9.6 | 6.1 | 4.8 | 5.6 | NT2_46 |
| Zinc | mg/kg | 27 | 28 | 31 | 25 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 1-FEB-2024 | 1-FEB-2024 | 1-FEB-2024 | 1-FEB-2024 | |
| Date analysed | | 5-FEB-2024 | 5-FEB-2024 | 5-FEB-2024 | 5-FEB-2024 | |

# REPORT OF ANALYSIS



| Lab Reg No. | | N23/025835 | N23/025837 | N23/025839 | N23/025841 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 04-DEC-2023 | 04-DEC-2023 | 04-DEC-2023 | 04-DEC-2023 | |
| Sample Reference | Units | I5CUC-1123 | H1CUC-1123 | H2CUC-1123 | H3CUC-1123 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 86.1 | 86.5 | 82.5 | 82.1 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

27-FEB-2024

# REPORT OF ANALYSIS



Report No. RN1419975

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/231207 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 07-DEC-2023 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N23/025843 | H4CUC-1123 | BIOTA 04/12/23 09:43 |
| N23/025845 | H5CUC-1123 | BIOTA 04/12/23 09:44 |
| N23/025847 | G1FIS-1123 | BIOTA 04/12/23 14:45 |
| N23/025848 | G2FIS-1123 | BIOTA 04/12/23 14:55 |

| Lab Reg No. | | N23/025843 | N23/025845 | N23/025847 | N23/025848 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 04-DEC-2023 | 04-DEC-2023 | 04-DEC-2023 | 04-DEC-2023 | |
| Sample Reference | Units | H4CUC-1123 | H5CUC-1123 | G1FIS-1123 | G2FIS-1123 | Method |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <2 | <5 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <2 | <5 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <2 | <5 | <5 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 72 | 92 | 81 | 75 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 2-FEB-2024 | 2-FEB-2024 | 2-FEB-2024 | 2-FEB-2024 | |
| Date analysed | | 9-FEB-2024 | 9-FEB-2024 | 9-FEB-2024 | 9-FEB-2024 | |

Luke Baker, Analyst
Organics - NSW
Accreditation No. 198

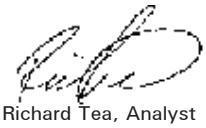
27-FEB-2024

| Lab Reg No. | | N23/025843 | N23/025845 | N23/025847 | N23/025848 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 04-DEC-2023 | 04-DEC-2023 | 04-DEC-2023 | 04-DEC-2023 | |
| Sample Reference | Units | H4CUC-1123 | H5CUC-1123 | G1FIS-1123 | G2FIS-1123 | Method |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 9.5 | 7.9 | 0.73 | 0.51 | NT2_46 |
| Zinc | mg/kg | 31 | 32 | 11 | 10 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 1-FEB-2024 | 1-FEB-2024 | 1-FEB-2024 | 1-FEB-2024 | |
| Date analysed | | 5-FEB-2024 | 5-FEB-2024 | 5-FEB-2024 | 5-FEB-2024 | |

# REPORT OF ANALYSIS



| Lab Reg No. | | N23/025843 | N23/025845 | N23/025847 | N23/025848 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 04-DEC-2023 | 04-DEC-2023 | 04-DEC-2023 | 04-DEC-2023 | |
| Sample Reference | Units | H4CUC-1123 | H5CUC-1123 | G1FIS-1123 | G2FIS-1123 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 89.0 | 85.7 | 78.1 | 79.8 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

27-FEB-2024

All results are expressed on a dry weight basis.

# REPORT OF ANALYSIS



Report No. RN1419975

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/231207 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 07-DEC-2023 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N23/025770 | A2CUC-1123 | BIOTA 03/12/23 10:31 |
| N23/025793 | C3CUC-1123 | BIOTA 03/12/23 12:11 |
| N23/025808 | G5CUC-1123 | BIOTA 03/12/23 13:29 |
| N23/025815 | E3CUC-1123 | BIOTA 03/12/23 15:09 |

| Lab Reg No. | | Units | N23/025770 | N23/025793 | N23/025808 | N23/025815 | Method |
|---|---|---|---|---|---|---|---|
| Date Sampled | | | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | |
| Sample Reference | | | A2CUC-1123 | C3CUC-1123 | G5CUC-1123 | E3CUC-1123 | |
| **Organotins** | | | | | | | |
| Monobutyltin as Sn | | ng/g | 6.5 | <5 | <5 | <5 | NR_35 |
| Dibutyltin as Sn | | ng/g | <5 | <5 | <5 | <5 | NR_35 |
| Tributyltin as Sn | | ng/g | <5 | <5 | <5 | <5 | NR_35 |
| Surrogate: Tripropyltin | | %REC | 92 | 94 | 119 | 77 | NR_35 |
| **Dates** | | | | | | | |
| Date extracted | | | 2-FEB-2024 | 2-FEB-2024 | 2-FEB-2024 | 2-FEB-2024 | |
| Date analysed | | | 9-FEB-2024 | 9-FEB-2024 | 9-FEB-2024 | 9-FEB-2024 | |

Luke Baker, Analyst
Organics - NSW
Accreditation No. 198

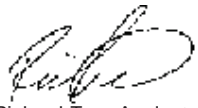
27-FEB-2024

| Lab Reg No. | | Units | N23/025770 | N23/025793 | N23/025808 | N23/025815 | Method |
|---|---|---|---|---|---|---|---|
| Date Sampled | | | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | |
| Sample Reference | | | A2CUC-1123 | C3CUC-1123 | G5CUC-1123 | E3CUC-1123 | |
| Date extracted | | | 1-FEB-2024 | 1-FEB-2024 | 1-FEB-2024 | 1-FEB-2024 | |
| Date analysed | | | 5-FEB-2024 | 5-FEB-2024 | 5-FEB-2024 | 5-FEB-2024 | |
| **Moisture Content** | | | | | | | |
| Moisture | | % | 84.5 | 83.1 | 96.5 | 82.9 | NT2_49 |

# REPORT OF ANALYSIS



| Lab Reg No. | | | N23/025770 | N23/025793 | N23/025808 | N23/025815 | |
|---|---|---|---|---|---|---|---|
| Date Sampled | | | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | 03-DEC-2023 | |
| Sample Reference | | Units | A2CUC-1123 | C3CUC-1123 | G5CUC-1123 | E3CUC-1123 | Method |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

27-FEB-2024

# REPORT OF ANALYSIS



Report No. RN1419975

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/231207 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 07-DEC-2023 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N23/025821 | B1CUC-1123 | BIOTA 03/12/23 16:15 |

| Lab Reg No. | | | N23/025821 | | | | |
|---|---|---|---|---|---|---|---|
| Date Sampled | | | 03-DEC-2023 | | | | |
| Sample Reference | | Units | B1CUC-1123 | | | | Method |
| **Organotins** | | | | | | | |
| Monobutyltin as Sn | | ng/g | <5 | | | | NR_35 |
| Dibutyltin as Sn | | ng/g | <5 | | | | NR_35 |
| Tributyltin as Sn | | ng/g | <5 | | | | NR_35 |
| Surrogate: Tripropyltin | | %REC | 85 | | | | NR_35 |
| **Dates** | | | | | | | |
| Date extracted | | | 2-FEB-2024 | | | | |
| Date analysed | | | 9-FEB-2024 | | | | |

Luke Baker, Analyst
Organics - NSW
Accreditation No. 198

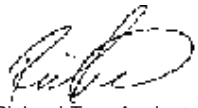
27-FEB-2024

| Lab Reg No. | | | N23/025821 | | | | |
|---|---|---|---|---|---|---|---|
| Date Sampled | | | 03-DEC-2023 | | | | |
| Sample Reference | | Units | B1CUC-1123 | | | | Method |
| Date extracted | | | 1-FEB-2024 | | | | |
| Date analysed | | | 5-FEB-2024 | | | | |
| **Moisture Content** | | | | | | | |
| Moisture | | % | 87.1 | | | | NT2_49 |

# REPORT OF ANALYSIS



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Lab Reg No.** | | | **N23/025821** | | | | |
| **Date Sampled** | | | **03-DEC-2023** | | | | |
| **Sample Reference** | | **Units** | **B1CUC-1123** | | | | **Method** |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

27-FEB-2024

All results are expressed on a dry weight basis.

# REPORT OF ANALYSIS

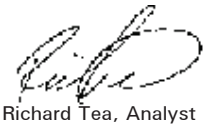


Report No. RN1419975

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/231207 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 07-DEC-2023 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N23/025829 | I2CUC-1123 | BIOTA 04/12/23 09:12 |

| Lab Reg No. | | | N23/025829 | | | | |
|---|---|---|---|---|---|---|---|
| Date Sampled | | | 04-DEC-2023 | | | | |
| Sample Reference | | Units | I2CUC-1123 | | | | Method |
| **Total Recoverable Trace Elements by ICP** | | | | | | | |
| Copper | | mg/kg | 16 | | | | NT2_46 |
| Zinc | | mg/kg | 26 | | | | NT2_46 |
| **Dates** | | | | | | | |
| Date extracted | | | 1-FEB-2024 | | | | |
| Date analysed | | | 5-FEB-2024 | | | | |
| **Moisture Content** | | | | | | | |
| Moisture | | % | 84.2 | | | | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

27-FEB-2024

All results are expressed on a dry weight basis.

NATA
WORLD RECOGNISED
ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) as received and tested.

* Denotes the analyte or test method is not within our ISO/IEC 17025 scope of accreditation.
This Report supersedes reports: *RN1419699*

Measurement Uncertainty is available upon request.
The testing was undertaken at: 105 Delhi Road, North Ryde, NSW, 2113

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **EB2420000** | Page | : 1 of 43 |
| **Amendment** | : **1** | | |
| Client | : **BMT COMMERCIAL AUSTRALIA PTY LTD** | Laboratory | : Environmental Division Brisbane |
| Contact | : MR CONOR JONES | Contact | : Nathan King |
| Address | : PO BOX 203 SPRING HILL<br>BRISBANE QLD 4004 | Address | : 2 Byth Street Stafford QLD Australia 4053 |
| Telephone | : ---- | Telephone | : +61-7-3243 7222 |
| Project | : B23282 Douglas Shoal | Date Samples Received | : 13-Jun-2024 10:00 |
| Order number | : 214 | Date Analysis Commenced | : 14-Jun-2024 |
| C-O-C number | : ---- | Issue Date | : 03-Jul-2024 15:41 |
| Sampler | : CONOR JONES | | |
| Site | : ---- | | |
| Quote number | : EB24BMTWBM0001 | | |
| No. of samples received | : 100 | | |
| No. of samples analysed | : 100 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Beatriz Llarinas | Senior Chemist - Inorganics | Brisbane Inorganics, Stafford, QLD |
| Franco Lentini | LCMS Coordinator | Sydney Organics, Smithfield, NSW |
| Matt Frost | Assistant Laboratory Manager | Brisbane Organics, Stafford, QLD |
| Timothy Creagh | Senior Chemist - Organics | Brisbane Organics, Stafford, QLD |
| Timothy Creagh | Senior Chemist - Organics | Brisbane Soil Preparation, Stafford, QLD |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- **Diuron analysis is conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Amendment (03/07/2024): This report has been amended and re-released to allow the reporting of additional analytical data, specifically method "EP090 - Organotin Compounds" for sample EB2420000 (BMTWBM).
- EP090-Organotin: Particular samples show poor surrogate recovery due to matrix interference. Confirmed by re-extraction and re-analysis.
- EP090-Organotin: Sample 'A11-SED-0624' (EB2420000-011) shows poor duplicate results due to sample heterogeneity. Confirmed by re-extraction and re-analysis.
- EP090-Organotin: Particular samples required dilution due to sample matrix. Surrogate recoveries were not determined.
- EP090-Organotin : The LOR for 'Monobutyltin' has been raised for particular samples due to possible Laboratory contamination.
- EP090-Organotin: Sample 'D3-SED-0624' (EB2420000-042) shows poor matrix spike recovery due to matrix interference.
- EP090-Organotin: The LOR for 'Monobutyltin' has been raised on Blank and samples due to laboratory contamination.(instument run : 9074393)
- EP090-Organotin: The LOR for Tributyltin has been raised in sample 'E2-SED-0624' (EB2420000-059) due to insufficient sample provided for standard extraction.
- EP090-Organotin: Matrix spike recovery for sample 'E5-SED-0624'(EB2420000-062) not determined due to laboratory contamination.
- EG020T (Total Metals by ICP-MS): G7-SED-0624 (EB2420000-071) shows poor duplicate results due to sample heterogeneity. This has been confirmed by visual inspection.
- EG020SD (Total Metals in Sediments by ICP-MS): A1-SED-0624 (EB2420000-001) shows poor duplicate results due to sample heterogeneity. This has been confirmed by visual inspection.
- EG005SD (Total Fe and Al in Sediments by ICP-AES): A11-SED-0624 (EB2420000-011) shows poor duplicate results due to sample heterogeneity. This has been confirmed by visual inspection.
- EG005SD (Total Fe and Al in Sediments by ICP-AES): E4-SED-0624 (EB2420000-061) shows poor duplicate results due to sample heterogeneity. This has been confirmed by visual inspection.

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | A1-SED-0624 | A2-SED-0624 | A3-SED-0624 | A4-SED-0624 | A5-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 06-Jun-2024 09:57 | 06-Jun-2024 10:05 | 06-Jun-2024 10:11 | 06-Jun-2024 10:59 | 06-Jun-2024 10:20 |
| | | | | | EB2420000-001 | EB2420000-002 | EB2420000-003 | EB2420000-004 | EB2420000-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | | |
| **Moisture Content** | ---- | 1.0 | % | | **18.6** | **24.0** | **33.7** | **23.1** | **19.5** |
| **EG005(ED093)-SD: Total Metals in Sediments by ICP-AES** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 50 | mg/kg | | **1040** | **1030** | **1600** | **1190** | **570** |
| **Iron** | 7439-89-6 | 50 | mg/kg | | **660** | **620** | **1140** | **770** | **380** |
| **EG020-SD: Total Metals in Sediments by ICPMS** | | | | | | | | | |
| **Antimony** | 7440-36-0 | 0.50 | mg/kg | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| **Arsenic** | 7440-38-2 | 1.00 | mg/kg | | <1.00 | <1.00 | **1.38** | **1.03** | <1.00 |
| **Cadmium** | 7440-43-9 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Chromium** | 7440-47-3 | 1.0 | mg/kg | | **5.2** | **5.1** | **10.5** | **5.8** | **3.5** |
| **Copper** | 7440-50-8 | 1.0 | mg/kg | | **70.9** | **5.3** | **10.8** | **6.2** | **12.4** |
| **Cobalt** | 7440-48-4 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **Lead** | 7439-92-1 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Manganese** | 7439-96-5 | 10 | mg/kg | | **15** | **17** | **25** | **18** | **16** |
| **Nickel** | 7440-02-0 | 1.0 | mg/kg | | **1.3** | **1.6** | **2.0** | **1.3** | <1.0 |
| **Selenium** | 7782-49-2 | 0.1 | mg/kg | | **0.1** | <0.1 | **0.1** | **0.1** | <0.1 |
| **Silver** | 7440-22-4 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Vanadium** | 7440-62-2 | 2.0 | mg/kg | | **2.1** | <2.0 | **3.1** | **2.0** | <2.0 |
| **Zinc** | 7440-66-6 | 1.0 | mg/kg | | **9.1** | **4.9** | **8.0** | **4.4** | **9.7** |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| **Barium** | 7440-39-3 | 0.1 | mg/kg | | **6.1** | **4.3** | **5.9** | **5.6** | **4.2** |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.01 | mg/kg | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EP090: Organotin Compounds** | | | | | | | | | |
| **Monobutyltin** | 78763-54-9 | 1 | µgSn/kg | | <1 | **1** | <1 | **1** | <1 |
| **Dibutyltin** | 1002-53-5 | 1 | µgSn/kg | | <1 | <1 | <1 | <1 | **1** |
| **Tributyltin** | 56573-85-4 | 0.5 | µgSn/kg | | **6.3** | **2.2** | **15.0** | **1.6** | **39.8** |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: SEDIMENT (Matrix: SOIL) | | | | Sample ID | A1-SED-0624 | A2-SED-0624 | A3-SED-0624 | A4-SED-0624 | A5-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 06-Jun-2024 09:57 | 06-Jun-2024 10:05 | 06-Jun-2024 10:11 | 06-Jun-2024 10:59 | 06-Jun-2024 10:20 |
| Compound | CAS Number | LOR | Unit | | EB2420000-001 | EB2420000-002 | EB2420000-003 | EB2420000-004 | EB2420000-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides - Continued** | | | | | | | | | |
| **Diuron** | 330-54-1 | 0.001 | mg/kg | | **0.002** | <0.001 | <0.001 | <0.001 | <0.001 |
| **EP090S: Organotin Surrogate** | | | | | | | | | |
| **Tripropyltin** | ---- | 0.5 | % | | **22.7** | **70.2** | **22.3** | **62.3** | **13.2** |

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | A6-SED-0624 | A7-SED-0624 | A8-SED-0624 | A9-SED-0624 | A10-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 06-Jun-2024 11:00 | 06-Jun-2024 11:01 | 06-Jun-2024 11:04 | 06-Jun-2024 11:06 | 06-Jun-2024 11:00 |
| | | | | | EB2420000-006 | EB2420000-007 | EB2420000-008 | EB2420000-009 | EB2420000-010 |
| | | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | | |
| **Moisture Content** | ---- | 1.0 | % | | **34.5** | **33.8** | **22.8** | **30.8** | **24.2** |
| **EG005(ED093)-SD: Total Metals in Sediments by ICP-AES** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 50 | mg/kg | | **1900** | **380** | **490** | **760** | **200** |
| **Iron** | 7439-89-6 | 50 | mg/kg | | **1040** | **260** | **350** | **440** | **150** |
| **EG020-SD: Total Metals in Sediments by ICPMS** | | | | | | | | | |
| **Antimony** | 7440-36-0 | 0.50 | mg/kg | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| **Arsenic** | 7440-38-2 | 1.00 | mg/kg | | **1.26** | <1.00 | <1.00 | <1.00 | <1.00 |
| **Cadmium** | 7440-43-9 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Chromium** | 7440-47-3 | 1.0 | mg/kg | | **7.2** | **3.4** | **3.8** | **4.4** | **2.8** |
| **Copper** | 7440-50-8 | 1.0 | mg/kg | | **11.5** | <1.0 | **8.0** | **25.5** | <1.0 |
| **Cobalt** | 7440-48-4 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **Lead** | 7439-92-1 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Manganese** | 7439-96-5 | 10 | mg/kg | | **16** | **10** | **12** | **13** | <10 |
| **Nickel** | 7440-02-0 | 1.0 | mg/kg | | **1.8** | <1.0 | <1.0 | <1.0 | <1.0 |
| **Selenium** | 7782-49-2 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Silver** | 7440-22-4 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Vanadium** | 7440-62-2 | 2.0 | mg/kg | | **2.3** | <2.0 | <2.0 | <2.0 | <2.0 |
| **Zinc** | 7440-66-6 | 1.0 | mg/kg | | **7.9** | **1.2** | **7.2** | **17.7** | <1.0 |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| **Barium** | 7440-39-3 | 0.1 | mg/kg | | **4.9** | **5.0** | **5.1** | **5.3** | **5.6** |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.01 | mg/kg | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EP090: Organotin Compounds** | | | | | | | | | |
| **Monobutyltin** | 78763-54-9 | 1 | µgSn/kg | | <1 | **1** | **21** | **30** | <1 |
| **Dibutyltin** | 1002-53-5 | 1 | µgSn/kg | | <1 | <1 | **84** | **83** | <1 |
| **Tributyltin** | 56573-85-4 | 0.5 | µgSn/kg | | **17.6** | **0.9** | **995** | **1490** | **1.0** |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: SEDIMENT (Matrix: SOIL) | | | | Sample ID | A6-SED-0624 | A7-SED-0624 | A8-SED-0624 | A9-SED-0624 | A10-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 06-Jun-2024 11:00 | 06-Jun-2024 11:01 | 06-Jun-2024 11:04 | 06-Jun-2024 11:06 | 06-Jun-2024 11:00 |
| Compound | CAS Number | LOR | Unit | | EB2420000-006 | EB2420000-007 | EB2420000-008 | EB2420000-009 | EB2420000-010 |
| | | | | | Result | Result | Result | Result | Result |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides - Continued** | | | | | | | | | |
| **Diuron** | 330-54-1 | 0.001 | mg/kg | | <0.001 | <0.001 | **0.002** | <0.001 | <0.001 |
| **EP090S: Organotin Surrogate** | | | | | | | | | |
| **Tripropyltin** | ---- | 0.5 | % | | **15.7** | **69.7** | **Not Determined** | **Not Determined** | **67.0** |

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | A11-SED-0624 | A13-SED-0624 | C13-SED-0624 | C14-SED-0624 | B1-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 06-Jun-2024 11:00 | 06-Jun-2024 11:09 | 06-Jun-2024 13:18 | 06-Jun-2024 13:19 | 06-Jun-2024 14:58 |
| | | | | | EB2420000-011 | EB2420000-012 | EB2420000-013 | EB2420000-014 | EB2420000-015 |
| | | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | | |
| **Moisture Content** | ---- | 1.0 | % | | **22.6** | **32.4** | **21.8** | **32.6** | **36.2** |
| **EG005(ED093)-SD: Total Metals in Sediments by ICP-AES** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 50 | mg/kg | | **1100** | **670** | **380** | **1280** | **270** |
| **Iron** | 7439-89-6 | 50 | mg/kg | | **680** | **420** | **370** | **800** | **190** |
| **EG020-SD: Total Metals in Sediments by ICPMS** | | | | | | | | | |
| **Antimony** | 7440-36-0 | 0.50 | mg/kg | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| **Arsenic** | 7440-38-2 | 1.00 | mg/kg | | **1.04** | <1.00 | **1.24** | **2.01** | <1.00 |
| **Cadmium** | 7440-43-9 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Chromium** | 7440-47-3 | 1.0 | mg/kg | | **5.7** | **4.4** | **4.7** | **7.5** | **3.5** |
| **Copper** | 7440-50-8 | 1.0 | mg/kg | | **12.8** | **14.7** | <1.0 | <1.0 | <1.0 |
| **Cobalt** | 7440-48-4 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **Lead** | 7439-92-1 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Manganese** | 7439-96-5 | 10 | mg/kg | | **19** | **13** | **23** | **15** | <10 |
| **Nickel** | 7440-02-0 | 1.0 | mg/kg | | **1.4** | <1.0 | **1.2** | **1.6** | <1.0 |
| **Selenium** | 7782-49-2 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | **0.1** | **0.1** |
| **Silver** | 7440-22-4 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Vanadium** | 7440-62-2 | 2.0 | mg/kg | | **2.0** | <2.0 | <2.0 | **2.3** | <2.0 |
| **Zinc** | 7440-66-6 | 1.0 | mg/kg | | **5.8** | **15.0** | **1.2** | **1.6** | <1.0 |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| **Barium** | 7440-39-3 | 0.1 | mg/kg | | **6.4** | **5.6** | **6.1** | **5.7** | **7.0** |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.01 | mg/kg | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EP090: Organotin Compounds** | | | | | | | | | |
| **Monobutyltin** | 78763-54-9 | 1 | µgSn/kg | | **4** | <1 | <1 | <1 | <1 |
| **Dibutyltin** | 1002-53-5 | 1 | µgSn/kg | | **3** | <1 | <1 | <1 | <1 |
| **Tributyltin** | 56573-85-4 | 0.5 | µgSn/kg | | **91.3** | **3.9** | <0.5 | <0.5 | <0.5 |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: SEDIMENT (Matrix: SOIL) | | | | Sample ID | A11-SED-0624 | A13-SED-0624 | C13-SED-0624 | C14-SED-0624 | B1-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 06-Jun-2024 11:00 | 06-Jun-2024 11:09 | 06-Jun-2024 13:18 | 06-Jun-2024 13:19 | 06-Jun-2024 14:58 |
| Compound | CAS Number | LOR | Unit | | EB2420000-011 | EB2420000-012 | EB2420000-013 | EB2420000-014 | EB2420000-015 |
| | | | | | Result | Result | Result | Result | Result |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides - Continued** | | | | | | | | | |
| **Diuron** | 330-54-1 | 0.001 | mg/kg | | <0.001 | **0.008** | <0.001 | <0.001 | <0.001 |
| **EP090S: Organotin Surrogate** | | | | | | | | | |
| **Tripropyltin** | ---- | 0.5 | % | | **80.5** | **60.2** | **75.9** | **77.3** | **71.9** |

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | B2-SED-0624 | B3-SED-0624 | B4-SED-0624 | B5-SED-0624 | B6-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 06-Jun-2024 14:12 | 06-Jun-2024 14:15 | 06-Jun-2024 14:19 | 06-Jun-2024 14:22 | 06-Jun-2024 15:02 |
| | | | | | EB2420000-016 | EB2420000-017 | EB2420000-018 | EB2420000-019 | EB2420000-020 |
| | | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | | |
| **Moisture Content** | ---- | 1.0 | % | | **19.1** | **37.8** | **36.9** | **32.8** | **34.4** |
| **EG005(ED093)-SD: Total Metals in Sediments by ICP-AES** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 50 | mg/kg | | **150** | **210** | **220** | **170** | **190** |
| **Iron** | 7439-89-6 | 50 | mg/kg | | **140** | **180** | **200** | **160** | **190** |
| **EG020-SD: Total Metals in Sediments by ICPMS** | | | | | | | | | |
| **Antimony** | 7440-36-0 | 0.50 | mg/kg | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| **Arsenic** | 7440-38-2 | 1.00 | mg/kg | | <1.00 | <1.00 | <1.00 | <1.00 | <1.00 |
| **Cadmium** | 7440-43-9 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Chromium** | 7440-47-3 | 1.0 | mg/kg | | **2.8** | **3.3** | **3.4** | **3.2** | **2.5** |
| **Copper** | 7440-50-8 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Cobalt** | 7440-48-4 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **Lead** | 7439-92-1 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Manganese** | 7439-96-5 | 10 | mg/kg | | **11** | **11** | **10** | **10** | <10 |
| **Nickel** | 7440-02-0 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Selenium** | 7782-49-2 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Silver** | 7440-22-4 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Vanadium** | 7440-62-2 | 2.0 | mg/kg | | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| **Zinc** | 7440-66-6 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| **Barium** | 7440-39-3 | 0.1 | mg/kg | | **5.4** | **5.6** | **5.1** | **4.8** | **6.7** |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.01 | mg/kg | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EP090: Organotin Compounds** | | | | | | | | | |
| **Monobutyltin** | 78763-54-9 | 1 | µgSn/kg | | <1 | <1 | <1 | <1 | <1 |
| **Dibutyltin** | 1002-53-5 | 1 | µgSn/kg | | <1 | <1 | <1 | <1 | <1 |
| **Tributyltin** | 56573-85-4 | 0.5 | µgSn/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: SEDIMENT (Matrix: SOIL) | | | | Sample ID | B2-SED-0624 | B3-SED-0624 | B4-SED-0624 | B5-SED-0624 | B6-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 06-Jun-2024 14:12 | 06-Jun-2024 14:15 | 06-Jun-2024 14:19 | 06-Jun-2024 14:22 | 06-Jun-2024 15:02 |
| Compound | CAS Number | LOR | Unit | | EB2420000-016 | EB2420000-017 | EB2420000-018 | EB2420000-019 | EB2420000-020 |
| | | | | | Result | Result | Result | Result | Result |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides - Continued** | | | | | | | | | |
| **Diuron** | 330-54-1 | 0.001 | mg/kg | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **EP090S: Organotin Surrogate** | | | | | | | | | |
| **Tripropyltin** | ---- | 0.5 | % | | **70.6** | **67.2** | **76.0** | **75.2** | **69.5** |

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | B7-SED-0624 | B8-SED-0624 | B9-SED-0624 | B10-SED-0624 | A14-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 06-Jun-2024 15:04 | 06-Jun-2024 15:08 | 06-Jun-2024 15:15 | 06-Jun-2024 15:20 | 06-Jun-2024 11:09 |
| | | | | | EB2420000-021 | EB2420000-022 | EB2420000-023 | EB2420000-024 | EB2420000-025 |
| | | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | | |
| **Moisture Content** | ---- | 1.0 | % | | **31.9** | **34.9** | **35.4** | **26.3** | **32.7** |
| **EG005(ED093)-SD: Total Metals in Sediments by ICP-AES** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 50 | mg/kg | | **260** | **300** | **300** | **200** | **410** |
| **Iron** | 7439-89-6 | 50 | mg/kg | | **210** | **260** | **250** | **180** | **290** |
| **EG020-SD: Total Metals in Sediments by ICPMS** | | | | | | | | | |
| **Antimony** | 7440-36-0 | 0.50 | mg/kg | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| **Arsenic** | 7440-38-2 | 1.00 | mg/kg | | <1.00 | **1.02** | <1.00 | <1.00 | <1.00 |
| **Cadmium** | 7440-43-9 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Chromium** | 7440-47-3 | 1.0 | mg/kg | | **2.9** | **3.6** | **3.0** | **3.4** | **3.2** |
| **Copper** | 7440-50-8 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | **10.5** |
| **Cobalt** | 7440-48-4 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **Lead** | 7439-92-1 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Manganese** | 7439-96-5 | 10 | mg/kg | | **12** | **11** | **10** | **11** | **17** |
| **Nickel** | 7440-02-0 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Selenium** | 7782-49-2 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Silver** | 7440-22-4 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Vanadium** | 7440-62-2 | 2.0 | mg/kg | | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| **Zinc** | 7440-66-6 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | **9.2** |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| **Barium** | 7440-39-3 | 0.1 | mg/kg | | **5.5** | **6.1** | **5.0** | **5.8** | **5.9** |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.01 | mg/kg | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EP090: Organotin Compounds** | | | | | | | | | |
| **Monobutyltin** | 78763-54-9 | 1 | µgSn/kg | | <1 | <1 | <1 | <1 | <1 |
| **Dibutyltin** | 1002-53-5 | 1 | µgSn/kg | | <1 | <1 | <1 | <1 | **2** |
| **Tributyltin** | 56573-85-4 | 0.5 | µgSn/kg | | <0.5 | <0.5 | <0.5 | <0.5 | **35.1** |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: SEDIMENT (Matrix: SOIL) | | | | Sample ID | B7-SED-0624 | B8-SED-0624 | B9-SED-0624 | B10-SED-0624 | A14-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 06-Jun-2024 15:04 | 06-Jun-2024 15:08 | 06-Jun-2024 15:15 | 06-Jun-2024 15:20 | 06-Jun-2024 11:09 |
| Compound | CAS Number | LOR | Unit | | EB2420000-021 | EB2420000-022 | EB2420000-023 | EB2420000-024 | EB2420000-025 |
| | | | | | Result | Result | Result | Result | Result |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides - Continued** | | | | | | | | | |
| **Diuron** | 330-54-1 | 0.001 | mg/kg | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **EP090S: Organotin Surrogate** | | | | | | | | | |
| **Tripropyltin** | ---- | 0.5 | % | | **82.0** | **74.0** | **72.4** | **73.6** | **29.6** |

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | C1-SED-0624 | C2-SED-0624 | C3-SED-0624 | C4-SED-0624 | C5-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 06-Jun-2024 12:18 | 06-Jun-2024 12:21 | 06-Jun-2024 12:24 | 06-Jun-2024 12:27 | 06-Jun-2024 12:29 |
| | | | | | EB2420000-026 | EB2420000-027 | EB2420000-028 | EB2420000-029 | EB2420000-030 |
| | | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | | |
| **Moisture Content** | ---- | 1.0 | % | | **36.3** | **36.5** | **38.3** | **31.4** | **34.1** |
| **EG005(ED093)-SD: Total Metals in Sediments by ICP-AES** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 50 | mg/kg | | **530** | **420** | **350** | **420** | **440** |
| **Iron** | 7439-89-6 | 50 | mg/kg | | **360** | **300** | **270** | **290** | **330** |
| **EG020-SD: Total Metals in Sediments by ICPMS** | | | | | | | | | |
| **Antimony** | 7440-36-0 | 0.50 | mg/kg | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| **Arsenic** | 7440-38-2 | 1.00 | mg/kg | | **1.06** | <1.00 | <1.00 | **1.01** | **1.03** |
| **Cadmium** | 7440-43-9 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Chromium** | 7440-47-3 | 1.0 | mg/kg | | **4.4** | **3.8** | **3.6** | **3.8** | **4.1** |
| **Copper** | 7440-50-8 | 1.0 | mg/kg | | **1.0** | <1.0 | <1.0 | <1.0 | <1.0 |
| **Cobalt** | 7440-48-4 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **Lead** | 7439-92-1 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Manganese** | 7439-96-5 | 10 | mg/kg | | **12** | **12** | **11** | **12** | **12** |
| **Nickel** | 7440-02-0 | 1.0 | mg/kg | | **1.2** | <1.0 | <1.0 | <1.0 | **1.0** |
| **Selenium** | 7782-49-2 | 0.1 | mg/kg | | **0.1** | <0.1 | <0.1 | <0.1 | **0.1** |
| **Silver** | 7440-22-4 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Vanadium** | 7440-62-2 | 2.0 | mg/kg | | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| **Zinc** | 7440-66-6 | 1.0 | mg/kg | | **1.2** | **1.2** | **1.1** | **1.1** | **1.0** |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| **Barium** | 7440-39-3 | 0.1 | mg/kg | | **5.0** | **5.1** | **4.8** | **5.8** | **5.9** |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.01 | mg/kg | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EP090: Organotin Compounds** | | | | | | | | | |
| **Monobutyltin** | 78763-54-9 | 1 | µgSn/kg | | <1 | <1 | <1 | <1 | <1 |
| **Dibutyltin** | 1002-53-5 | 1 | µgSn/kg | | <1 | <1 | <1 | <1 | <1 |
| **Tributyltin** | 56573-85-4 | 0.5 | µgSn/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: SEDIMENT (Matrix: SOIL) | | | | Sample ID | C1-SED-0624 | C2-SED-0624 | C3-SED-0624 | C4-SED-0624 | C5-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 06-Jun-2024 12:18 | 06-Jun-2024 12:21 | 06-Jun-2024 12:24 | 06-Jun-2024 12:27 | 06-Jun-2024 12:29 |
| Compound | CAS Number | LOR | Unit | | EB2420000-026 | EB2420000-027 | EB2420000-028 | EB2420000-029 | EB2420000-030 |
| | | | | | Result | Result | Result | Result | Result |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides - Continued** | | | | | | | | | |
| **Diuron** | 330-54-1 | 0.001 | mg/kg | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **EP090S: Organotin Surrogate** | | | | | | | | | |
| **Tripropyltin** | ---- | 0.5 | % | | **68.0** | **75.6** | **71.9** | **72.6** | **63.7** |

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | C6-SED-0624 | C7-SED-0624 | C8-SED-0624 | C9-SED-0624 | C10-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 06-Jun-2024 13:18 | 06-Jun-2024 13:20 | 06-Jun-2024 13:21 | 06-Jun-2024 13:22 | 06-Jun-2024 13:29 |
| | | | | | EB2420000-031 | EB2420000-032 | EB2420000-033 | EB2420000-034 | EB2420000-035 |
| | | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | | |
| **Moisture Content** | ---- | 1.0 | % | | **33.3** | **33.4** | **23.6** | **29.9** | **27.2** |
| **EG005(ED093)-SD: Total Metals in Sediments by ICP-AES** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 50 | mg/kg | | **660** | **870** | **1130** | **1040** | **600** |
| **Iron** | 7439-89-6 | 50 | mg/kg | | **480** | **630** | **780** | **860** | **440** |
| **EG020-SD: Total Metals in Sediments by ICPMS** | | | | | | | | | |
| **Antimony** | 7440-36-0 | 0.50 | mg/kg | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| **Arsenic** | 7440-38-2 | 1.00 | mg/kg | | **1.52** | **1.72** | **1.46** | **1.86** | **1.10** |
| **Cadmium** | 7440-43-9 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Chromium** | 7440-47-3 | 1.0 | mg/kg | | **4.6** | **5.5** | **6.9** | **8.0** | **4.0** |
| **Copper** | 7440-50-8 | 1.0 | mg/kg | | <1.0 | **1.0** | **2.3** | **2.3** | <1.0 |
| **Cobalt** | 7440-48-4 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **Lead** | 7439-92-1 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Manganese** | 7439-96-5 | 10 | mg/kg | | **14** | **14** | **16** | **16** | **11** |
| **Nickel** | 7440-02-0 | 1.0 | mg/kg | | **1.3** | **1.3** | **2.0** | **1.5** | **1.1** |
| **Selenium** | 7782-49-2 | 0.1 | mg/kg | | <0.1 | <0.1 | **0.1** | **0.1** | <0.1 |
| **Silver** | 7440-22-4 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Vanadium** | 7440-62-2 | 2.0 | mg/kg | | <2.0 | <2.0 | **2.2** | **2.6** | <2.0 |
| **Zinc** | 7440-66-6 | 1.0 | mg/kg | | **1.1** | **1.5** | **2.6** | **1.9** | **1.0** |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| **Barium** | 7440-39-3 | 0.1 | mg/kg | | **5.7** | **5.7** | **5.5** | **6.2** | **5.6** |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.01 | mg/kg | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EP090: Organotin Compounds** | | | | | | | | | |
| **Monobutyltin** | 78763-54-9 | 1 | µgSn/kg | | **2** | <1 | <1 | <1 | <1 |
| **Dibutyltin** | 1002-53-5 | 1 | µgSn/kg | | <1 | <1 | <1 | <1 | <1 |
| **Tributyltin** | 56573-85-4 | 0.5 | µgSn/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: SEDIMENT (Matrix: SOIL) | | | | Sample ID | C6-SED-0624 | C7-SED-0624 | C8-SED-0624 | C9-SED-0624 | C10-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 06-Jun-2024 13:18 | 06-Jun-2024 13:20 | 06-Jun-2024 13:21 | 06-Jun-2024 13:22 | 06-Jun-2024 13:29 |
| Compound | CAS Number | LOR | Unit | | EB2420000-031 | EB2420000-032 | EB2420000-033 | EB2420000-034 | EB2420000-035 |
| | | | | | Result | Result | Result | Result | Result |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides - Continued** | | | | | | | | | |
| **Diuron** | 330-54-1 | 0.001 | mg/kg | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **EP090S: Organotin Surrogate** | | | | | | | | | |
| **Tripropyltin** | ---- | 0.5 | % | | **66.5** | **84.3** | **67.5** | **66.3** | **85.5** |

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | C11-SED-0624 | B11-SED-0624 | B13-SED-0624 | B14-SED-0624 | D1-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 06-Jun-2024 12:21 | 06-Jun-2024 14:21 | 06-Jun-2024 15:20 | 06-Jun-2024 15:22 | 07-Jun-2024 09:45 |
| | | | | | EB2420000-036 | EB2420000-037 | EB2420000-038 | EB2420000-039 | EB2420000-040 |
| | | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | | |
| **Moisture Content** | ---- | 1.0 | % | | **36.0** | **19.4** | **22.8** | **26.7** | **15.8** |
| **EG005(ED093)-SD: Total Metals in Sediments by ICP-AES** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 50 | mg/kg | | **500** | **180** | **170** | **260** | **250** |
| **Iron** | 7439-89-6 | 50 | mg/kg | | **330** | **160** | **170** | **230** | **170** |
| **EG020-SD: Total Metals in Sediments by ICPMS** | | | | | | | | | |
| **Antimony** | 7440-36-0 | 0.50 | mg/kg | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| **Arsenic** | 7440-38-2 | 1.00 | mg/kg | | **1.00** | <1.00 | <1.00 | <1.00 | **1.01** |
| **Cadmium** | 7440-43-9 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Chromium** | 7440-47-3 | 1.0 | mg/kg | | **4.0** | **2.6** | **2.6** | **3.6** | **3.0** |
| **Copper** | 7440-50-8 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Cobalt** | 7440-48-4 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **Lead** | 7439-92-1 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Manganese** | 7439-96-5 | 10 | mg/kg | | **12** | **12** | <10 | **13** | <10 |
| **Nickel** | 7440-02-0 | 1.0 | mg/kg | | **1.1** | <1.0 | <1.0 | <1.0 | <1.0 |
| **Selenium** | 7782-49-2 | 0.1 | mg/kg | | **0.1** | <0.1 | <0.1 | <0.1 | <0.1 |
| **Silver** | 7440-22-4 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Vanadium** | 7440-62-2 | 2.0 | mg/kg | | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| **Zinc** | 7440-66-6 | 1.0 | mg/kg | | **1.0** | <1.0 | <1.0 | <1.0 | <1.0 |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| **Barium** | 7440-39-3 | 0.1 | mg/kg | | **6.1** | **4.9** | **5.0** | **5.3** | **5.8** |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.01 | mg/kg | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EP090: Organotin Compounds** | | | | | | | | | |
| **Monobutyltin** | 78763-54-9 | 1 | µgSn/kg | | <1 | <1 | <1 | <1 | <1 |
| **Dibutyltin** | 1002-53-5 | 1 | µgSn/kg | | <1 | <1 | <1 | <1 | <1 |
| **Tributyltin** | 56573-85-4 | 0.5 | µgSn/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: SEDIMENT (Matrix: SOIL) | | | | Sample ID | C11-SED-0624 | B11-SED-0624 | B13-SED-0624 | B14-SED-0624 | D1-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 06-Jun-2024 12:21 | 06-Jun-2024 14:21 | 06-Jun-2024 15:20 | 06-Jun-2024 15:22 | 07-Jun-2024 09:45 |
| Compound | CAS Number | LOR | Unit | | EB2420000-036 | EB2420000-037 | EB2420000-038 | EB2420000-039 | EB2420000-040 |
| | | | | | Result | Result | Result | Result | Result |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides - Continued** | | | | | | | | | |
| **Diuron** | 330-54-1 | 0.001 | mg/kg | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **EP090S: Organotin Surrogate** | | | | | | | | | |
| **Tripropyltin** | ---- | 0.5 | % | | **92.2** | **76.6** | **75.1** | **75.9** | **76.8** |

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | D2-SED-0624 | D3-SED-0624 | D4-SED-0624 | D5-SED-0624 | D6-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 07-Jun-2024 09:50 | 07-Jun-2024 09:52 | 07-Jun-2024 09:54 | 07-Jun-2024 09:56 | 07-Jun-2024 10:24 |
| | | | | | EB2420000-041 | EB2420000-042 | EB2420000-043 | EB2420000-044 | EB2420000-045 |
| | | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | | |
| **Moisture Content** | ---- | 1.0 | % | | **38.4** | **30.2** | **37.1** | **34.4** | **37.0** |
| **EG005(ED093)-SD: Total Metals in Sediments by ICP-AES** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 50 | mg/kg | | **170** | **180** | **260** | **470** | **290** |
| **Iron** | 7439-89-6 | 50 | mg/kg | | **190** | **210** | **240** | **380** | **260** |
| **EG020-SD: Total Metals in Sediments by ICPMS** | | | | | | | | | |
| **Antimony** | 7440-36-0 | 0.50 | mg/kg | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| **Arsenic** | 7440-38-2 | 1.00 | mg/kg | | **1.01** | <1.00 | <1.00 | **1.36** | **1.03** |
| **Cadmium** | 7440-43-9 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Chromium** | 7440-47-3 | 1.0 | mg/kg | | **3.3** | **3.1** | **3.1** | **4.6** | **3.7** |
| **Copper** | 7440-50-8 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | **1.0** | <1.0 |
| **Cobalt** | 7440-48-4 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **Lead** | 7439-92-1 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Manganese** | 7439-96-5 | 10 | mg/kg | | **12** | **12** | **10** | **13** | **11** |
| **Nickel** | 7440-02-0 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Selenium** | 7782-49-2 | 0.1 | mg/kg | | <0.1 | <0.1 | **0.1** | **0.2** | **0.1** |
| **Silver** | 7440-22-4 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Vanadium** | 7440-62-2 | 2.0 | mg/kg | | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| **Zinc** | 7440-66-6 | 1.0 | mg/kg | | <1.0 | **1.0** | <1.0 | <1.0 | <1.0 |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| **Barium** | 7440-39-3 | 0.1 | mg/kg | | **5.0** | **4.8** | **4.3** | **4.4** | **5.4** |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.01 | mg/kg | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EP090: Organotin Compounds** | | | | | | | | | |
| **Monobutyltin** | 78763-54-9 | 1 | µgSn/kg | | <3 | <3 | <2 | <2 | <1 |
| **Dibutyltin** | 1002-53-5 | 1 | µgSn/kg | | <1 | <1 | <1 | <1 | <1 |
| **Tributyltin** | 56573-85-4 | 0.5 | µgSn/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: SEDIMENT (Matrix: SOIL) | | | | Sample ID | D2-SED-0624 | D3-SED-0624 | D4-SED-0624 | D5-SED-0624 | D6-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 07-Jun-2024 09:50 | 07-Jun-2024 09:52 | 07-Jun-2024 09:54 | 07-Jun-2024 09:56 | 07-Jun-2024 10:24 |
| Compound | CAS Number | LOR | Unit | | EB2420000-041 | EB2420000-042 | EB2420000-043 | EB2420000-044 | EB2420000-045 |
| | | | | | Result | Result | Result | Result | Result |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides - Continued** | | | | | | | | | |
| **Diuron** | 330-54-1 | 0.001 | mg/kg | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **EP090S: Organotin Surrogate** | | | | | | | | | |
| **Tripropyltin** | ---- | 0.5 | % | | **Not Determined** | **Not Determined** | **Not Determined** | **77.0** | **Not Determined** |

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | D7-SED-0624 | D8-SED-0624 | D9-SED-0624 | D10-SED-0624 | D11-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 07-Jun-2024 10:50 | 07-Jun-2024 10:50 | 07-Jun-2024 10:50 | 07-Jun-2024 10:50 | 07-Jun-2024 09:47 |
| | | | | | EB2420000-046 | EB2420000-047 | EB2420000-048 | EB2420000-049 | EB2420000-050 |
| | | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | | |
| **Moisture Content** | ---- | 1.0 | % | | **38.4** | **35.8** | **32.6** | **32.2** | **27.4** |
| **EG005(ED093)-SD: Total Metals in Sediments by ICP-AES** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 50 | mg/kg | | **210** | **160** | **250** | **220** | **280** |
| **Iron** | 7439-89-6 | 50 | mg/kg | | **190** | **140** | **230** | **190** | **240** |
| **EG020-SD: Total Metals in Sediments by ICPMS** | | | | | | | | | |
| **Antimony** | 7440-36-0 | 0.50 | mg/kg | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| **Arsenic** | 7440-38-2 | 1.00 | mg/kg | | <1.00 | <1.00 | **1.18** | **1.03** | **1.15** |
| **Cadmium** | 7440-43-9 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Chromium** | 7440-47-3 | 1.0 | mg/kg | | **3.1** | **2.3** | **2.9** | **2.6** | **3.3** |
| **Copper** | 7440-50-8 | 1.0 | mg/kg | | <1.0 | <1.0 | **1.0** | **1.1** | **1.6** |
| **Cobalt** | 7440-48-4 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **Lead** | 7439-92-1 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Manganese** | 7439-96-5 | 10 | mg/kg | | **12** | **10** | **11** | <10 | **11** |
| **Nickel** | 7440-02-0 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Selenium** | 7782-49-2 | 0.1 | mg/kg | | **0.1** | **0.1** | **0.1** | **0.1** | **0.1** |
| **Silver** | 7440-22-4 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Vanadium** | 7440-62-2 | 2.0 | mg/kg | | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| **Zinc** | 7440-66-6 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| **Barium** | 7440-39-3 | 0.1 | mg/kg | | **4.9** | **5.2** | **4.1** | **5.9** | **5.2** |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.01 | mg/kg | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EP090: Organotin Compounds** | | | | | | | | | |
| **Monobutyltin** | 78763-54-9 | 1 | µgSn/kg | | <1 | <2 | <1 | <3 | <2 |
| **Dibutyltin** | 1002-53-5 | 1 | µgSn/kg | | <1 | <1 | <1 | <1 | <1 |
| **Tributyltin** | 56573-85-4 | 0.5 | µgSn/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: SEDIMENT (Matrix: SOIL) | | | | Sample ID | D7-SED-0624 | D8-SED-0624 | D9-SED-0624 | D10-SED-0624 | D11-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 07-Jun-2024 10:50 | 07-Jun-2024 10:50 | 07-Jun-2024 10:50 | 07-Jun-2024 10:50 | 07-Jun-2024 09:47 |
| Compound | CAS Number | LOR | Unit | | EB2420000-046 | EB2420000-047 | EB2420000-048 | EB2420000-049 | EB2420000-050 |
| | | | | | Result | Result | Result | Result | Result |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides - Continued** | | | | | | | | | |
| **Diuron** | 330-54-1 | 0.001 | mg/kg | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **EP090S: Organotin Surrogate** | | | | | | | | | |
| **Tripropyltin** | ---- | 0.5 | % | | **Not Determined** | **Not Determined** | **Not Determined** | **Not Determined** | **Not Determined** |

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | D13-SED-0624 | D14-SED-0624 | G1-SED-0624 | G2-SED-0624 | G3-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 07-Jun-2024 10:24 | 07-Jun-2024 10:26 | 07-Jun-2024 11:28 | 07-Jun-2024 11:31 | 07-Jun-2024 11:37 |
| | | | | | EB2420000-051 | EB2420000-052 | EB2420000-053 | EB2420000-054 | EB2420000-055 |
| | | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | | |
| **Moisture Content** | ---- | 1.0 | % | | **38.4** | **37.3** | **29.9** | **36.4** | **24.3** |
| **EG005(ED093)-SD: Total Metals in Sediments by ICP-AES** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 50 | mg/kg | | **360** | **340** | **240** | **240** | **140** |
| **Iron** | 7439-89-6 | 50 | mg/kg | | **290** | **300** | **200** | **220** | **160** |
| **EG020-SD: Total Metals in Sediments by ICPMS** | | | | | | | | | |
| **Antimony** | 7440-36-0 | 0.50 | mg/kg | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| **Arsenic** | 7440-38-2 | 1.00 | mg/kg | | **1.08** | **1.38** | <1.00 | <1.00 | <1.00 |
| **Cadmium** | 7440-43-9 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Chromium** | 7440-47-3 | 1.0 | mg/kg | | **4.6** | **4.9** | **3.4** | **3.4** | **3.0** |
| **Copper** | 7440-50-8 | 1.0 | mg/kg | | **1.5** | **1.8** | **1.8** | **2.0** | **1.9** |
| **Cobalt** | 7440-48-4 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **Lead** | 7439-92-1 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Manganese** | 7439-96-5 | 10 | mg/kg | | **14** | **14** | **11** | **12** | **14** |
| **Nickel** | 7440-02-0 | 1.0 | mg/kg | | **1.2** | **1.1** | <1.0 | <1.0 | <1.0 |
| **Selenium** | 7782-49-2 | 0.1 | mg/kg | | **0.1** | **0.1** | **0.1** | **0.1** | <0.1 |
| **Silver** | 7440-22-4 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Vanadium** | 7440-62-2 | 2.0 | mg/kg | | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| **Zinc** | 7440-66-6 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| **Barium** | 7440-39-3 | 0.1 | mg/kg | | **6.2** | **5.1** | **5.2** | **6.1** | **5.4** |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.01 | mg/kg | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EP090: Organotin Compounds** | | | | | | | | | |
| **Monobutyltin** | 78763-54-9 | 1 | µgSn/kg | | <1 | <2 | <1 | <1 | <1 |
| **Dibutyltin** | 1002-53-5 | 1 | µgSn/kg | | <1 | <1 | <1 | <1 | <1 |
| **Tributyltin** | 56573-85-4 | 0.5 | µgSn/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: SEDIMENT (Matrix: SOIL) | | | | Sample ID | D13-SED-0624 | D14-SED-0624 | G1-SED-0624 | G2-SED-0624 | G3-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 07-Jun-2024 10:24 | 07-Jun-2024 10:26 | 07-Jun-2024 11:28 | 07-Jun-2024 11:31 | 07-Jun-2024 11:37 |
| Compound | CAS Number | LOR | Unit | | EB2420000-051 | EB2420000-052 | EB2420000-053 | EB2420000-054 | EB2420000-055 |
| | | | | | Result | Result | Result | Result | Result |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides - Continued** | | | | | | | | | |
| **Diuron** | 330-54-1 | 0.001 | mg/kg | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **EP090S: Organotin Surrogate** | | | | | | | | | |
| **Tripropyltin** | ---- | 0.5 | % | | **Not Determined** | **Not Determined** | **Not Determined** | **Not Determined** | **Not Determined** |

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | G4-SED-0624 | G5-SED-0624 | E1-SED-0624 | E2-SED-0624 | E3-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 07-Jun-2024 11:42 | 07-Jun-2024 11:48 | 07-Jun-2024 13:13 | 07-Jun-2024 13:15 | 07-Jun-2024 13:17 |
| | | | | | EB2420000-056 | EB2420000-057 | EB2420000-058 | EB2420000-059 | EB2420000-060 |
| | | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | | |
| **Moisture Content** | ---- | 1.0 | % | | **33.3** | **26.6** | **21.7** | **27.1** | **17.0** |
| **EG005(ED093)-SD: Total Metals in Sediments by ICP-AES** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 50 | mg/kg | | **180** | **180** | **560** | **620** | **440** |
| **Iron** | 7439-89-6 | 50 | mg/kg | | **200** | **200** | **560** | **550** | **360** |
| **EG020-SD: Total Metals in Sediments by ICPMS** | | | | | | | | | |
| **Antimony** | 7440-36-0 | 0.50 | mg/kg | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| **Arsenic** | 7440-38-2 | 1.00 | mg/kg | | <1.00 | <1.00 | **1.89** | **1.33** | **1.07** |
| **Cadmium** | 7440-43-9 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Chromium** | 7440-47-3 | 1.0 | mg/kg | | **3.3** | **3.4** | **6.0** | **6.0** | **4.6** |
| **Copper** | 7440-50-8 | 1.0 | mg/kg | | **2.3** | **2.4** | **3.6** | **4.1** | **3.2** |
| **Cobalt** | 7440-48-4 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **Lead** | 7439-92-1 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Manganese** | 7439-96-5 | 10 | mg/kg | | **13** | **12** | **19** | **22** | **18** |
| **Nickel** | 7440-02-0 | 1.0 | mg/kg | | <1.0 | <1.0 | **1.6** | **1.6** | **1.1** |
| **Selenium** | 7782-49-2 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | **0.1** | <0.1 |
| **Silver** | 7440-22-4 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Vanadium** | 7440-62-2 | 2.0 | mg/kg | | <2.0 | <2.0 | **2.3** | **2.2** | <2.0 |
| **Zinc** | 7440-66-6 | 1.0 | mg/kg | | <1.0 | <1.0 | **1.4** | **1.8** | <1.0 |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| **Barium** | 7440-39-3 | 0.1 | mg/kg | | **5.8** | **5.3** | **5.6** | **5.9** | **5.9** |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.01 | mg/kg | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EP090: Organotin Compounds** | | | | | | | | | |
| **Monobutyltin** | 78763-54-9 | 1 | µgSn/kg | | <1 | <2 | <1 | <3 | <1 |
| **Dibutyltin** | 1002-53-5 | 1 | µgSn/kg | | <1 | <1 | <1 | <1 | <1 |
| **Tributyltin** | 56573-85-4 | 0.5 | µgSn/kg | | <0.5 | <0.5 | <0.5 | <1.1 | <0.5 |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: SEDIMENT (Matrix: SOIL) | | | | Sample ID | G4-SED-0624 | G5-SED-0624 | E1-SED-0624 | E2-SED-0624 | E3-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 07-Jun-2024 11:42 | 07-Jun-2024 11:48 | 07-Jun-2024 13:13 | 07-Jun-2024 13:15 | 07-Jun-2024 13:17 |
| Compound | CAS Number | LOR | Unit | | EB2420000-056 | EB2420000-057 | EB2420000-058 | EB2420000-059 | EB2420000-060 |
| | | | | | Result | Result | Result | Result | Result |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides - Continued** | | | | | | | | | |
| **Diuron** | 330-54-1 | 0.001 | mg/kg | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **EP090S: Organotin Surrogate** | | | | | | | | | |
| **Tripropyltin** | ---- | 0.5 | % | | **Not Determined** | **Not Determined** | **Not Determined** | **Not Determined** | **Not Determined** |

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | E4-SED-0624 | E5-SED-0624 | E6-SED-0624 | E7-SED-0624 | E8-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 07-Jun-2024 13:19 | 07-Jun-2024 13:20 | 07-Jun-2024 13:21 | 07-Jun-2024 13:22 | 07-Jun-2024 13:22 |
| | | | | | EB2420000-061 | EB2420000-062 | EB2420000-063 | EB2420000-064 | EB2420000-065 |
| | | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | | |
| **Moisture Content** | ---- | 1.0 | % | | **31.6** | **29.4** | **36.5** | **38.7** | **24.6** |
| **EG005(ED093)-SD: Total Metals in Sediments by ICP-AES** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 50 | mg/kg | | **330** | **690** | **380** | **310** | **260** |
| **Iron** | 7439-89-6 | 50 | mg/kg | | **320** | **610** | **340** | **310** | **300** |
| **EG020-SD: Total Metals in Sediments by ICPMS** | | | | | | | | | |
| **Antimony** | 7440-36-0 | 0.50 | mg/kg | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| **Arsenic** | 7440-38-2 | 1.00 | mg/kg | | **1.03** | **1.29** | **1.26** | **1.32** | **1.28** |
| **Cadmium** | 7440-43-9 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Chromium** | 7440-47-3 | 1.0 | mg/kg | | **4.1** | **7.1** | **4.4** | **4.3** | **4.7** |
| **Copper** | 7440-50-8 | 1.0 | mg/kg | | <1.0 | **1.8** | <1.0 | <1.0 | <1.0 |
| **Cobalt** | 7440-48-4 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **Lead** | 7439-92-1 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Manganese** | 7439-96-5 | 10 | mg/kg | | **16** | **23** | **17** | **18** | **19** |
| **Nickel** | 7440-02-0 | 1.0 | mg/kg | | **1.0** | **1.6** | **1.1** | **1.1** | **1.1** |
| **Selenium** | 7782-49-2 | 0.1 | mg/kg | | <0.1 | <0.1 | **0.2** | **0.1** | **0.1** |
| **Silver** | 7440-22-4 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Vanadium** | 7440-62-2 | 2.0 | mg/kg | | <2.0 | **2.2** | <2.0 | <2.0 | <2.0 |
| **Zinc** | 7440-66-6 | 1.0 | mg/kg | | <1.0 | **2.9** | <1.0 | <1.0 | <1.0 |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| **Barium** | 7440-39-3 | 0.1 | mg/kg | | **5.8** | **6.0** | **5.4** | **6.0** | **5.9** |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.01 | mg/kg | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EP090: Organotin Compounds** | | | | | | | | | |
| **Monobutyltin** | 78763-54-9 | 1 | µgSn/kg | | <2 | <1 | <1 | <2 | <4 |
| **Dibutyltin** | 1002-53-5 | 1 | µgSn/kg | | <1 | <1 | <1 | <1 | <1 |
| **Tributyltin** | 56573-85-4 | 0.5 | µgSn/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: SEDIMENT (Matrix: SOIL) | | | | Sample ID | E4-SED-0624 | E5-SED-0624 | E6-SED-0624 | E7-SED-0624 | E8-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 07-Jun-2024 13:19 | 07-Jun-2024 13:20 | 07-Jun-2024 13:21 | 07-Jun-2024 13:22 | 07-Jun-2024 13:22 |
| Compound | CAS Number | LOR | Unit | | EB2420000-061 | EB2420000-062 | EB2420000-063 | EB2420000-064 | EB2420000-065 |
| | | | | | Result | Result | Result | Result | Result |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides - Continued** | | | | | | | | | |
| **Diuron** | 330-54-1 | 0.001 | mg/kg | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **EP090S: Organotin Surrogate** | | | | | | | | | |
| **Tripropyltin** | ---- | 0.5 | % | | **71.3** | **75.7** | **52.7** | **67.8** | **91.4** |

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | E9-SED-0624 | E10-SED-0624 | E13-SED-0624 | E14-SED-0624 | G6-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 07-Jun-2024 13:22 | 07-Jun-2024 01:22 | 07-Jun-2024 13:22 | 07-Jun-2024 13:22 | 07-Jun-2024 14:09 |
| | | | | | EB2420000-066 | EB2420000-067 | EB2420000-068 | EB2420000-069 | EB2420000-070 |
| | | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | | |
| **Moisture Content** | ---- | 1.0 | % | | **33.6** | **26.9** | **35.0** | **27.7** | **36.8** |
| **EG005(ED093)-SD: Total Metals in Sediments by ICP-AES** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 50 | mg/kg | | **500** | **430** | **650** | **670** | **250** |
| **Iron** | 7439-89-6 | 50 | mg/kg | | **480** | **410** | **660** | **530** | **230** |
| **EG020-SD: Total Metals in Sediments by ICPMS** | | | | | | | | | |
| **Antimony** | 7440-36-0 | 0.50 | mg/kg | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| **Arsenic** | 7440-38-2 | 1.00 | mg/kg | | **1.54** | **1.45** | **1.97** | **1.42** | <1.00 |
| **Cadmium** | 7440-43-9 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Chromium** | 7440-47-3 | 1.0 | mg/kg | | **6.2** | **5.4** | **7.1** | **6.1** | **3.1** |
| **Copper** | 7440-50-8 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Cobalt** | 7440-48-4 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **Lead** | 7439-92-1 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Manganese** | 7439-96-5 | 10 | mg/kg | | **18** | **19** | **22** | **23** | **12** |
| **Nickel** | 7440-02-0 | 1.0 | mg/kg | | **1.4** | **1.3** | **1.9** | **1.7** | <1.0 |
| **Selenium** | 7782-49-2 | 0.1 | mg/kg | | **0.1** | **0.1** | **0.1** | **0.1** | <0.1 |
| **Silver** | 7440-22-4 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Vanadium** | 7440-62-2 | 2.0 | mg/kg | | <2.0 | <2.0 | **2.8** | **2.3** | <2.0 |
| **Zinc** | 7440-66-6 | 1.0 | mg/kg | | **1.1** | **1.1** | **1.7** | **2.4** | <1.0 |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| **Barium** | 7440-39-3 | 0.1 | mg/kg | | **5.9** | **7.2** | **7.1** | **5.5** | **5.1** |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.01 | mg/kg | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EP090: Organotin Compounds** | | | | | | | | | |
| **Monobutyltin** | 78763-54-9 | 1 | µgSn/kg | | <1 | <2 | <2 | <2 | <1 |
| **Dibutyltin** | 1002-53-5 | 1 | µgSn/kg | | <1 | <1 | <1 | <1 | <1 |
| **Tributyltin** | 56573-85-4 | 0.5 | µgSn/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: SEDIMENT (Matrix: SOIL) | | | | Sample ID | E9-SED-0624 | E10-SED-0624 | E13-SED-0624 | E14-SED-0624 | G6-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 07-Jun-2024 13:22 | 07-Jun-2024 01:22 | 07-Jun-2024 13:22 | 07-Jun-2024 13:22 | 07-Jun-2024 14:09 |
| Compound | CAS Number | LOR | Unit | | EB2420000-066 | EB2420000-067 | EB2420000-068 | EB2420000-069 | EB2420000-070 |
| | | | | | Result | Result | Result | Result | Result |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides - Continued** | | | | | | | | | |
| **Diuron** | 330-54-1 | 0.001 | mg/kg | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **EP090S: Organotin Surrogate** | | | | | | | | | |
| **Tripropyltin** | ---- | 0.5 | % | | **79.1** | **73.1** | **67.0** | **61.4** | **40.3** |

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | G7-SED-0624 | G8-SED-0624 | G9-SED-0624 | G10-SED-0624 | G13-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 07-Jun-2024 14:19 | 07-Jun-2024 14:21 | 07-Jun-2024 14:22 | 07-Jun-2024 14:28 | 07-Jun-2024 11:28 |
| | | | | | EB2420000-071 | EB2420000-072 | EB2420000-073 | EB2420000-074 | EB2420000-075 |
| | | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | | |
| **Moisture Content** | ---- | 1.0 | % | | **21.6** | **39.2** | **35.3** | **25.6** | **26.4** |
| **EG005(ED093)-SD: Total Metals in Sediments by ICP-AES** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 50 | mg/kg | | **160** | **180** | **160** | **150** | **140** |
| **Iron** | 7439-89-6 | 50 | mg/kg | | **190** | **220** | **180** | **180** | **150** |
| **EG020-SD: Total Metals in Sediments by ICPMS** | | | | | | | | | |
| **Antimony** | 7440-36-0 | 0.50 | mg/kg | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| **Arsenic** | 7440-38-2 | 1.00 | mg/kg | | **1.98** | <1.00 | **1.76** | <1.00 | <1.00 |
| **Cadmium** | 7440-43-9 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Chromium** | 7440-47-3 | 1.0 | mg/kg | | **3.1** | **3.5** | **2.4** | **3.0** | **3.3** |
| **Copper** | 7440-50-8 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Cobalt** | 7440-48-4 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **Lead** | 7439-92-1 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Manganese** | 7439-96-5 | 10 | mg/kg | | **13** | **13** | <10 | **12** | **27** |
| **Nickel** | 7440-02-0 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Selenium** | 7782-49-2 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | **0.1** |
| **Silver** | 7440-22-4 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Vanadium** | 7440-62-2 | 2.0 | mg/kg | | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| **Zinc** | 7440-66-6 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| **Barium** | 7440-39-3 | 0.1 | mg/kg | | **8.5** | **5.1** | **4.9** | **6.6** | **6.4** |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.01 | mg/kg | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EP090: Organotin Compounds** | | | | | | | | | |
| **Monobutyltin** | 78763-54-9 | 1 | µgSn/kg | | <3 | <3 | <1 | <1 | <1 |
| **Dibutyltin** | 1002-53-5 | 1 | µgSn/kg | | <1 | <1 | <1 | <1 | <1 |
| **Tributyltin** | 56573-85-4 | 0.5 | µgSn/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: SEDIMENT (Matrix: SOIL) | | | | Sample ID | G7-SED-0624 | G8-SED-0624 | G9-SED-0624 | G10-SED-0624 | G13-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 07-Jun-2024 14:19 | 07-Jun-2024 14:21 | 07-Jun-2024 14:22 | 07-Jun-2024 14:28 | 07-Jun-2024 11:28 |
| Compound | CAS Number | LOR | Unit | | EB2420000-071 | EB2420000-072 | EB2420000-073 | EB2420000-074 | EB2420000-075 |
| | | | | | Result | Result | Result | Result | Result |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides - Continued** | | | | | | | | | |
| **Diuron** | 330-54-1 | 0.001 | mg/kg | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **EP090S: Organotin Surrogate** | | | | | | | | | |
| **Tripropyltin** | ---- | 0.5 | % | | **73.8** | **76.8** | **80.4** | **84.0** | **84.8** |

## Analytical Results

| Sub-Matrix: SEDIMENT (Matrix: SOIL) | | | Sample ID | G14-SED-0624 | I1-SED-0624 | I2-SED-0624 | I3-SED-0624 | I4-SED-0624 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 07-Jun-2024 11:28 | 08-Jun-2024 12:51 | 08-Jun-2024 12:54 | 08-Jun-2024 12:57 | 08-Jun-2024 12:58 |
| Compound | CAS Number | LOR | Unit | EB2420000-076 | EB2420000-077 | EB2420000-078 | EB2420000-079 | EB2420000-080 |
| | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | |
| Moisture Content | ---- | 1.0 | % | **31.4** | **33.8** | **37.8** | **36.1** | **35.2** |
| **EG005(ED093)-SD: Total Metals in Sediments by ICP-AES** | | | | | | | | |
| Aluminium | 7429-90-5 | 50 | mg/kg | **200** | **320** | **370** | **220** | **230** |
| Iron | 7439-89-6 | 50 | mg/kg | **190** | **370** | **370** | **280** | **290** |
| **EG020-SD: Total Metals in Sediments by ICPMS** | | | | | | | | |
| Antimony | 7440-36-0 | 0.50 | mg/kg | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| Arsenic | 7440-38-2 | 1.00 | mg/kg | <1.00 | **1.76** | **1.82** | **1.38** | **1.59** |
| Cadmium | 7440-43-9 | 0.1 | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Chromium | 7440-47-3 | 1.0 | mg/kg | **3.6** | **8.0** | **8.0** | **5.8** | **5.8** |
| Copper | 7440-50-8 | 1.0 | mg/kg | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Cobalt | 7440-48-4 | 0.5 | mg/kg | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Lead | 7439-92-1 | 1.0 | mg/kg | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Manganese | 7439-96-5 | 10 | mg/kg | **18** | **24** | **22** | **19** | **19** |
| Nickel | 7440-02-0 | 1.0 | mg/kg | <1.0 | **1.0** | **1.2** | **1.0** | **1.0** |
| Selenium | 7782-49-2 | 0.1 | mg/kg | **0.1** | **0.1** | **0.1** | <0.1 | **0.1** |
| Silver | 7440-22-4 | 0.1 | mg/kg | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Vanadium | 7440-62-2 | 2.0 | mg/kg | <2.0 | **2.1** | **2.1** | <2.0 | <2.0 |
| Zinc | 7440-66-6 | 1.0 | mg/kg | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | |
| Barium | 7440-39-3 | 0.1 | mg/kg | **6.1** | **6.0** | **6.5** | **5.6** | **6.1** |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | |
| Mercury | 7439-97-6 | 0.01 | mg/kg | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EP090: Organotin Compounds** | | | | | | | | |
| Monobutyltin | 78763-54-9 | 1 | µgSn/kg | <1 | <1 | <3 | <4 | <1 |
| Dibutyltin | 1002-53-5 | 1 | µgSn/kg | <1 | <1 | <1 | <1 | <1 |
| Tributyltin | 56573-85-4 | 0.5 | µgSn/kg | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides** | | | | | | | | |

## Analytical Results

| Sub-Matrix: SEDIMENT (Matrix: SOIL) | | | | Sample ID | G14-SED-0624 | I1-SED-0624 | I2-SED-0624 | I3-SED-0624 | I4-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 07-Jun-2024 11:28 | 08-Jun-2024 12:51 | 08-Jun-2024 12:54 | 08-Jun-2024 12:57 | 08-Jun-2024 12:58 |
| Compound | CAS Number | LOR | Unit | | EB2420000-076 | EB2420000-077 | EB2420000-078 | EB2420000-079 | EB2420000-080 |
| | | | | | Result | Result | Result | Result | Result |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides - Continued** | | | | | | | | | |
| **Diuron** | 330-54-1 | 0.001 | mg/kg | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **EP090S: Organotin Surrogate** | | | | | | | | | |
| **Tripropyltin** | ---- | 0.5 | % | | **63.7** | **35.4** | **57.5** | **52.1** | **51.2** |

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | I5-SED-0624 | I6-SED-0624 | I7-SED-0624 | I8-SED-0624 | I9-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 08-Jun-2024 13:07 | 08-Jun-2024 13:08 | 08-Jun-2024 13:09 | 08-Jun-2024 13:09 | 08-Jun-2024 13:09 |
| | | | | | EB2420000-081 | EB2420000-082 | EB2420000-083 | EB2420000-084 | EB2420000-085 |
| | | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | | |
| **Moisture Content** | ---- | 1.0 | % | | **33.3** | **34.2** | **35.7** | **37.9** | **36.8** |
| **EG005(ED093)-SD: Total Metals in Sediments by ICP-AES** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 50 | mg/kg | | **420** | **320** | **290** | **300** | **330** |
| **Iron** | 7439-89-6 | 50 | mg/kg | | **410** | **340** | **340** | **350** | **400** |
| **EG020-SD: Total Metals in Sediments by ICPMS** | | | | | | | | | |
| **Antimony** | 7440-36-0 | 0.50 | mg/kg | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| **Arsenic** | 7440-38-2 | 1.00 | mg/kg | | **1.48** | **1.29** | **1.35** | **1.35** | **1.69** |
| **Cadmium** | 7440-43-9 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Chromium** | 7440-47-3 | 1.0 | mg/kg | | **5.2** | **6.2** | **5.3** | **5.2** | **6.0** |
| **Copper** | 7440-50-8 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Cobalt** | 7440-48-4 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **Lead** | 7439-92-1 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Manganese** | 7439-96-5 | 10 | mg/kg | | **15** | **17** | **15** | **19** | **18** |
| **Nickel** | 7440-02-0 | 1.0 | mg/kg | | **1.1** | <1.0 | <1.0 | <1.0 | <1.0 |
| **Selenium** | 7782-49-2 | 0.1 | mg/kg | | **0.1** | **0.1** | **0.1** | **0.1** | **0.1** |
| **Silver** | 7440-22-4 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Vanadium** | 7440-62-2 | 2.0 | mg/kg | | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| **Zinc** | 7440-66-6 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| **Barium** | 7440-39-3 | 0.1 | mg/kg | | **6.5** | **6.1** | **5.5** | **5.7** | **6.9** |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.01 | mg/kg | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EP090: Organotin Compounds** | | | | | | | | | |
| **Monobutyltin** | 78763-54-9 | 1 | µgSn/kg | | <1 | <1 | <1 | <1 | <1 |
| **Dibutyltin** | 1002-53-5 | 1 | µgSn/kg | | <1 | <1 | <1 | <1 | <1 |
| **Tributyltin** | 56573-85-4 | 0.5 | µgSn/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: SEDIMENT (Matrix: SOIL) | | | | Sample ID | I5-SED-0624 | I6-SED-0624 | I7-SED-0624 | I8-SED-0624 | I9-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 08-Jun-2024 13:07 | 08-Jun-2024 13:08 | 08-Jun-2024 13:09 | 08-Jun-2024 13:09 | 08-Jun-2024 13:09 |
| Compound | CAS Number | LOR | Unit | | EB2420000-081 | EB2420000-082 | EB2420000-083 | EB2420000-084 | EB2420000-085 |
| | | | | | Result | Result | Result | Result | Result |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides - Continued** | | | | | | | | | |
| **Diuron** | 330-54-1 | 0.001 | mg/kg | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **EP090S: Organotin Surrogate** | | | | | | | | | |
| **Tripropyltin** | ---- | 0.5 | % | | **Not Determined** | **Not Determined** | **Not Determined** | **Not Determined** | **Not Determined** |

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | I10-SED-0624 | I13-SED-0624 | I14-SED-0624 | H1-SED-0624 | H2-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 09-Jun-2024 11:00 | 08-Jun-2024 13:09 | 08-Jun-2024 13:09 | 08-Jun-2024 13:39 | 08-Jun-2024 13:42 |
| | | | | | EB2420000-086 | EB2420000-087 | EB2420000-088 | EB2420000-089 | EB2420000-090 |
| | | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | | |
| **Moisture Content** | ---- | 1.0 | % | | **38.4** | **33.6** | **35.4** | **38.2** | **37.1** |
| **EG005(ED093)-SD: Total Metals in Sediments by ICP-AES** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 50 | mg/kg | | **260** | **310** | **280** | **420** | **320** |
| **Iron** | 7439-89-6 | 50 | mg/kg | | **340** | **370** | **320** | **460** | **360** |
| **EG020-SD: Total Metals in Sediments by ICPMS** | | | | | | | | | |
| **Antimony** | 7440-36-0 | 0.50 | mg/kg | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| **Arsenic** | 7440-38-2 | 1.00 | mg/kg | | **1.42** | **1.46** | **1.35** | **1.41** | **1.18** |
| **Cadmium** | 7440-43-9 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Chromium** | 7440-47-3 | 1.0 | mg/kg | | **5.3** | **5.6** | **5.6** | **5.5** | **4.6** |
| **Copper** | 7440-50-8 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Cobalt** | 7440-48-4 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **Lead** | 7439-92-1 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Manganese** | 7439-96-5 | 10 | mg/kg | | **16** | **18** | **16** | **16** | **14** |
| **Nickel** | 7440-02-0 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | **1.0** | <1.0 |
| **Selenium** | 7782-49-2 | 0.1 | mg/kg | | **0.1** | **0.1** | **0.1** | **0.1** | **0.1** |
| **Silver** | 7440-22-4 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Vanadium** | 7440-62-2 | 2.0 | mg/kg | | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| **Zinc** | 7440-66-6 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| **Barium** | 7440-39-3 | 0.1 | mg/kg | | **5.6** | **6.3** | **6.8** | **5.4** | **6.9** |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.01 | mg/kg | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EP090: Organotin Compounds** | | | | | | | | | |
| **Monobutyltin** | 78763-54-9 | 1 | µgSn/kg | | <1 | <1 | <1 | <1 | <1 |
| **Dibutyltin** | 1002-53-5 | 1 | µgSn/kg | | <1 | <1 | <1 | <1 | <1 |
| **Tributyltin** | 56573-85-4 | 0.5 | µgSn/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: SEDIMENT (Matrix: SOIL) | | | | Sample ID | I10-SED-0624 | I13-SED-0624 | I14-SED-0624 | H1-SED-0624 | H2-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 09-Jun-2024 11:00 | 08-Jun-2024 13:09 | 08-Jun-2024 13:09 | 08-Jun-2024 13:39 | 08-Jun-2024 13:42 |
| Compound | CAS Number | LOR | Unit | | EB2420000-086 | EB2420000-087 | EB2420000-088 | EB2420000-089 | EB2420000-090 |
| | | | | | Result | Result | Result | Result | Result |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides - Continued** | | | | | | | | | |
| **Diuron** | 330-54-1 | 0.001 | mg/kg | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **EP090S: Organotin Surrogate** | | | | | | | | | |
| **Tripropyltin** | ---- | 0.5 | % | | **Not Determined** | **Not Determined** | **Not Determined** | **Not Determined** | **Not Determined** |

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | H3-SED-0624 | H4-SED-0624 | H5-SED-0624 | H6-SED-0624 | H7-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 08-Jun-2024 13:50 | 08-Jun-2024 14:00 | 08-Jun-2024 14:05 | 08-Jun-2024 14:10 | 08-Jun-2024 14:10 |
| | | | | | EB2420000-091 | EB2420000-092 | EB2420000-093 | EB2420000-094 | EB2420000-095 |
| | | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | | |
| **Moisture Content** | ---- | 1.0 | % | | **38.8** | **35.1** | **36.7** | **34.2** | **36.1** |
| **EG005(ED093)-SD: Total Metals in Sediments by ICP-AES** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 50 | mg/kg | | **340** | **230** | **360** | **370** | **310** |
| **Iron** | 7439-89-6 | 50 | mg/kg | | **370** | **240** | **370** | **420** | **350** |
| **EG020-SD: Total Metals in Sediments by ICPMS** | | | | | | | | | |
| **Antimony** | 7440-36-0 | 0.50 | mg/kg | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| **Arsenic** | 7440-38-2 | 1.00 | mg/kg | | **1.22** | <1.00 | **1.13** | **1.32** | **1.20** |
| **Cadmium** | 7440-43-9 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Chromium** | 7440-47-3 | 1.0 | mg/kg | | **4.9** | **3.5** | **4.5** | **6.9** | **5.2** |
| **Copper** | 7440-50-8 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Cobalt** | 7440-48-4 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **Lead** | 7439-92-1 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Manganese** | 7439-96-5 | 10 | mg/kg | | **16** | **16** | **15** | **16** | **15** |
| **Nickel** | 7440-02-0 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Selenium** | 7782-49-2 | 0.1 | mg/kg | | **0.1** | <0.1 | **0.1** | **0.1** | **0.1** |
| **Silver** | 7440-22-4 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Vanadium** | 7440-62-2 | 2.0 | mg/kg | | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| **Zinc** | 7440-66-6 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| **Barium** | 7440-39-3 | 0.1 | mg/kg | | **5.8** | **5.3** | **5.9** | **6.3** | **5.7** |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.01 | mg/kg | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EP090: Organotin Compounds** | | | | | | | | | |
| **Monobutyltin** | 78763-54-9 | 1 | µgSn/kg | | <2 | <3 | <3 | <2 | <1 |
| **Dibutyltin** | 1002-53-5 | 1 | µgSn/kg | | <1 | <1 | <1 | <1 | <1 |
| **Tributyltin** | 56573-85-4 | 0.5 | µgSn/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: SEDIMENT (Matrix: SOIL) | | | | Sample ID | H3-SED-0624 | H4-SED-0624 | H5-SED-0624 | H6-SED-0624 | H7-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 08-Jun-2024 13:50 | 08-Jun-2024 14:00 | 08-Jun-2024 14:05 | 08-Jun-2024 14:10 | 08-Jun-2024 14:10 |
| Compound | CAS Number | LOR | Unit | | EB2420000-091 | EB2420000-092 | EB2420000-093 | EB2420000-094 | EB2420000-095 |
| | | | | | Result | Result | Result | Result | Result |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides - Continued** | | | | | | | | | |
| **Diuron** | 330-54-1 | 0.001 | mg/kg | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **EP090S: Organotin Surrogate** | | | | | | | | | |
| **Tripropyltin** | ---- | 0.5 | % | | **Not Determined** | **Not Determined** | **Not Determined** | **Not Determined** | **Not Determined** |

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | H8-SED-0624 | H9-SED-0624 | H10-SED-0624 | H13-SED-0624 | H14-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 10-Jun-2024 12:30 | 10-Jun-2024 12:30 | 08-Jun-2024 14:10 | 08-Jun-2024 14:10 | 08-Jun-2024 14:10 |
| | | | | | EB2420000-096 | EB2420000-097 | EB2420000-098 | EB2420000-099 | EB2420000-100 |
| | | | | | Result | Result | Result | Result | Result |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | | | |
| **Moisture Content** | ---- | 1.0 | % | | **34.8** | **34.3** | **36.3** | **37.4** | **36.4** |
| **EG005(ED093)-SD: Total Metals in Sediments by ICP-AES** | | | | | | | | | |
| **Aluminium** | 7429-90-5 | 50 | mg/kg | | **400** | **440** | **360** | **350** | **400** |
| **Iron** | 7439-89-6 | 50 | mg/kg | | **450** | **390** | **420** | **390** | **440** |
| **EG020-SD: Total Metals in Sediments by ICPMS** | | | | | | | | | |
| **Antimony** | 7440-36-0 | 0.50 | mg/kg | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| **Arsenic** | 7440-38-2 | 1.00 | mg/kg | | **1.49** | **1.17** | **1.28** | **1.23** | **1.35** |
| **Cadmium** | 7440-43-9 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Chromium** | 7440-47-3 | 1.0 | mg/kg | | **8.0** | **6.0** | **6.3** | **4.4** | **4.9** |
| **Copper** | 7440-50-8 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Cobalt** | 7440-48-4 | 0.5 | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **Lead** | 7439-92-1 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Manganese** | 7439-96-5 | 10 | mg/kg | | **16** | **13** | **16** | **14** | **23** |
| **Nickel** | 7440-02-0 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **Selenium** | 7782-49-2 | 0.1 | mg/kg | | <0.1 | **0.1** | **0.1** | **0.1** | **0.1** |
| **Silver** | 7440-22-4 | 0.1 | mg/kg | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Vanadium** | 7440-62-2 | 2.0 | mg/kg | | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| **Zinc** | 7440-66-6 | 1.0 | mg/kg | | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | | |
| **Barium** | 7440-39-3 | 0.1 | mg/kg | | **5.6** | **6.1** | **5.4** | **6.1** | **6.2** |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.01 | mg/kg | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **EP090: Organotin Compounds** | | | | | | | | | |
| **Monobutyltin** | 78763-54-9 | 1 | µgSn/kg | | <2 | <2 | <2 | <1 | <1 |
| **Dibutyltin** | 1002-53-5 | 1 | µgSn/kg | | <1 | <1 | <1 | <1 | <1 |
| **Tributyltin** | 56573-85-4 | 0.5 | µgSn/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides** | | | | | | | | | |

## Analytical Results

| Sub-Matrix: SEDIMENT (Matrix: SOIL) | | | | Sample ID | H8-SED-0624 | H9-SED-0624 | H10-SED-0624 | H13-SED-0624 | H14-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 10-Jun-2024 12:30 | 10-Jun-2024 12:30 | 08-Jun-2024 14:10 | 08-Jun-2024 14:10 | 08-Jun-2024 14:10 |
| Compound | CAS Number | LOR | Unit | | EB2420000-096 | EB2420000-097 | EB2420000-098 | EB2420000-099 | EB2420000-100 |
| | | | | | Result | Result | Result | Result | Result |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides - Continued** | | | | | | | | | |
| **Diuron** | 330-54-1 | 0.001 | mg/kg | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **EP090S: Organotin Surrogate** | | | | | | | | | |
| **Tripropyltin** | ---- | 0.5 | % | | **Not Determined** | **Not Determined** | **Not Determined** | **Not Determined** | **Not Determined** |

## Surrogate Control Limits

| Sub-Matrix: SEDIMENT | | Recovery Limits (%) | |
|---|---|---|---|
| Compound | CAS Number | Low | High |
| **EP090S: Organotin Surrogate** | | | |
| **Tripropyltin** | ---- | 35 | 130 |

## Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(SOIL) EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **EB2420357** | Page | : 1 of 16 |
| Client | : **BMT COMMERCIAL AUSTRALIA PTY LTD** | Laboratory | : Environmental Division Brisbane |
| Contact | : MR CONOR JONES | Contact | : Nathan King |
| Address | : PO BOX 203 SPRING HILL<br>BRISBANE QLD 4004 | Address | : 2 Byth Street Stafford QLD Australia 4053 |
| Telephone | : ---- | Telephone | : +61-7-3243 7222 |
| Project | : B23282 Douglas Shoal | Date Samples Received | : 14-Jun-2024 11:00 |
| Order number | : 214 | Date Analysis Commenced | : 17-Jul-2024 |
| C-O-C number | : ---- | Issue Date | : 22-Jul-2024 17:25 |
| Sampler | : CONOR JONES | | |
| Site | : ---- | | |
| Quote number | : EB24BMTWBM0001 | | |
| No. of samples received | : 80 | | |
| No. of samples analysed | : 70 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Layla Hafner | Acid Sulphate Soils - Chemist | Brisbane Acid Sulphate Soils, Stafford, QLD |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EA150H: Soil particle density results fell outside the scope of AS1289.3.6.3. Results should be scrutinised accordingly.
- EA150H (Particle Sizing with Hydrometer) and EA152 (Soil Particle Density) analysis is cancelled for A6-SED-0624 (EB2420357-006), A9-SED-0624 (EB2420357-009), B7-SED-0624 (EB2420357-021), B8-SED-0624 (EB2420357-022), C3-SED-0624 (EB2420357-028), D4-SED-0624 (EB2420357-043), D5-SED-0624 (EB2420357-044), E1-SED-0624 (EB2420357-058), E2-SED-0624 (EB2420357-059) H1-SED-0624 (EB2420357-089) due to insufficient volume.

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | A1-SED-0624 | A2-SED-0624 | A3-SED-0624 | A4-SED-0624 | A5-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 06-Jun-2024 09:57 | 06-Jun-2024 10:05 | 06-Jun-2024 10:11 | 06-Jun-2024 10:59 | 06-Jun-2024 10:20 |
| | | | | | EB2420357-001 | EB2420357-002 | EB2420357-003 | EB2420357-004 | EB2420357-005 |
| | | | | | Result | Result | Result | Result | Result |
| **EA150: Particle Sizing** | | | | | | | | | |
| **+75µm** | ---- | 1 | % | | **96** | **96** | **97** | **96** | **97** |
| **+150µm** | ---- | 1 | % | | **96** | **96** | **97** | **96** | **97** |
| **+300µm** | ---- | 1 | % | | **89** | **95** | **96** | **95** | **97** |
| **+425µm** | ---- | 1 | % | | **79** | **93** | **93** | **93** | **96** |
| **+600µm** | ---- | 1 | % | | **66** | **89** | **87** | **88** | **94** |
| **+1180µm** | ---- | 1 | % | | **41** | **75** | **62** | **67** | **72** |
| **+2.36mm** | ---- | 1 | % | | **17** | **40** | **36** | **39** | **44** |
| **+4.75mm** | ---- | 1 | % | | **6** | **14** | **15** | **18** | **20** |
| **+9.5mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **+19.0mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **+37.5mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **+75.0mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **EA150: Soil Classification based on Particle Size** | | | | | | | | | |
| **Clay (<2 µm)** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **Silt (2-60 µm)** | ---- | 1 | % | | **2** | **3** | **2** | **2** | **1** |
| **Sand (0.06-2.00 mm)** | ---- | 1 | % | | **74** | **46** | **54** | **51** | **46** |
| **Gravel (>2mm)** | ---- | 1 | % | | **24** | **51** | **44** | **47** | **53** |
| **Cobbles (>6cm)** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **EA152: Soil Particle Density** | | | | | | | | | |
| **Soil Particle Density (Clay/Silt/Sand)** | ---- | 0.01 | g/cm3 | | **2.68** | **2.72** | **2.71** | **2.68** | **2.68** |

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | A7-SED-0624 | A8-SED-0624 | A10-SED-0624 | B1-SED-0624 | B2-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 06-Jun-2024 11:01 | 06-Jun-2024 11:04 | 06-Jun-2024 11:09 | 06-Jun-2024 14:58 | 06-Jun-2024 14:12 |
| | | | | | EB2420357-007 | EB2420357-008 | EB2420357-010 | EB2420357-015 | EB2420357-016 |
| | | | | | Result | Result | Result | Result | Result |
| **EA150: Particle Sizing** | | | | | | | | | |
| **+75µm** | ---- | 1 | % | | **97** | **97** | **98** | **97** | **96** |
| **+150µm** | ---- | 1 | % | | **97** | **97** | **98** | **97** | **96** |
| **+300µm** | ---- | 1 | % | | **97** | **97** | **98** | **97** | **94** |
| **+425µm** | ---- | 1 | % | | **97** | **96** | **98** | **97** | **92** |
| **+600µm** | ---- | 1 | % | | **94** | **94** | **96** | **96** | **89** |
| **+1180µm** | ---- | 1 | % | | **49** | **71** | **67** | **66** | **69** |
| **+2.36mm** | ---- | 1 | % | | **5** | **34** | **17** | **13** | **35** |
| **+4.75mm** | ---- | 1 | % | | **2** | **14** | **7** | **3** | **11** |
| **+9.5mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **+19.0mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **+37.5mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **+75.0mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **EA150: Soil Classification based on Particle Size** | | | | | | | | | |
| **Clay (<2 µm)** | ---- | 1 | % | | **1** | <1 | <1 | <1 | **1** |
| **Silt (2-60 µm)** | ---- | 1 | % | | **1** | <1 | **1** | **1** | **1** |
| **Sand (0.06-2.00 mm)** | ---- | 1 | % | | **79** | **55** | **67** | **70** | **52** |
| **Gravel (>2mm)** | ---- | 1 | % | | **19** | **45** | **32** | **29** | **46** |
| **Cobbles (>6cm)** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **EA152: Soil Particle Density** | | | | | | | | | |
| **Soil Particle Density (Clay/Silt/Sand)** | ---- | 0.01 | g/cm3 | | **2.65** | **2.50** | **2.65** | **2.72** | **2.64** |

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | B3-SED-0624 | B4-SED-0624 | B5-SED-0624 | B6-SED-0624 | B9-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 06-Jun-2024 14:15 | 06-Jun-2024 14:19 | 06-Jun-2024 14:22 | 06-Jun-2024 15:02 | 06-Jun-2024 15:15 |
| | | | | | EB2420357-017 | EB2420357-018 | EB2420357-019 | EB2420357-020 | EB2420357-023 |
| | | | | | Result | Result | Result | Result | Result |
| **EA150: Particle Sizing** | | | | | | | | | |
| **+75µm** | ---- | 1 | % | | **97** | **97** | **97** | **97** | **97** |
| **+150µm** | ---- | 1 | % | | **96** | **97** | **97** | **97** | **97** |
| **+300µm** | ---- | 1 | % | | **96** | **96** | **96** | **97** | **96** |
| **+425µm** | ---- | 1 | % | | **94** | **94** | **95** | **96** | **96** |
| **+600µm** | ---- | 1 | % | | **90** | **86** | **91** | **95** | **95** |
| **+1180µm** | ---- | 1 | % | | **62** | **46** | **57** | **68** | **72** |
| **+2.36mm** | ---- | 1 | % | | **24** | **13** | **17** | **14** | **20** |
| **+4.75mm** | ---- | 1 | % | | **10** | **6** | **6** | **4** | **4** |
| **+9.5mm** | ---- | 1 | % | | <1 | <1 | **1** | <1 | <1 |
| **+19.0mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **+37.5mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **+75.0mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **EA150: Soil Classification based on Particle Size** | | | | | | | | | |
| **Clay (<2 µm)** | ---- | 1 | % | | <1 | <1 | <1 | <1 | **2** |
| **Silt (2-60 µm)** | ---- | 1 | % | | <1 | **3** | **2** | **1** | **1** |
| **Sand (0.06-2.00 mm)** | ---- | 1 | % | | **64** | **74** | **69** | **69** | **61** |
| **Gravel (>2mm)** | ---- | 1 | % | | **36** | **23** | **29** | **30** | **36** |
| **Cobbles (>6cm)** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **EA152: Soil Particle Density** | | | | | | | | | |
| **Soil Particle Density (Clay/Silt/Sand)** | ---- | 0.01 | g/cm3 | | **2.61** | **2.71** | **2.77** | **2.62** | **2.32** |

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | B10-SED-0624 | C1-SED-0624 | C2-SED-0624 | C4-SED-0624 | C5-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 06-Jun-2024 11:09 | 06-Jun-2024 12:18 | 06-Jun-2024 12:21 | 06-Jun-2024 12:27 | 06-Jun-2024 12:29 |
| | | | | | EB2420357-024 | EB2420357-026 | EB2420357-027 | EB2420357-029 | EB2420357-030 |
| | | | | | Result | Result | Result | Result | Result |
| **EA150: Particle Sizing** | | | | | | | | | |
| +75µm | ---- | 1 | % | | 98 | 97 | 98 | 97 | 98 |
| +150µm | ---- | 1 | % | | 98 | 97 | 98 | 97 | 98 |
| +300µm | ---- | 1 | % | | 98 | 97 | 98 | 97 | 98 |
| +425µm | ---- | 1 | % | | 97 | 96 | 98 | 95 | 97 |
| +600µm | ---- | 1 | % | | 95 | 92 | 93 | 84 | 87 |
| +1180µm | ---- | 1 | % | | 54 | 47 | 45 | 35 | 22 |
| +2.36mm | ---- | 1 | % | | 5 | 12 | 14 | 10 | <1 |
| +4.75mm | ---- | 1 | % | | <1 | 3 | 5 | 3 | <1 |
| +9.5mm | ---- | 1 | % | | <1 | <1 | 2 | <1 | <1 |
| +19.0mm | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| +37.5mm | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| +75.0mm | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **EA150: Soil Classification based on Particle Size** | | | | | | | | | |
| Clay (<2 µm) | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| Silt (2-60 µm) | ---- | 1 | % | | <1 | 1 | <1 | 1 | 2 |
| Sand (0.06-2.00 mm) | ---- | 1 | % | | 80 | 76 | 77 | 81 | 91 |
| Gravel (>2mm) | ---- | 1 | % | | 20 | 23 | 23 | 18 | 7 |
| Cobbles (>6cm) | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **EA152: Soil Particle Density** | | | | | | | | | |
| Soil Particle Density (Clay/Silt/Sand) | ---- | 0.01 | g/cm3 | | 2.43 | 2.31 | 2.39 | 2.43 | 2.67 |

## Analytical Results

| Sub-Matrix: SEDIMENT (Matrix: SOIL) | | | Sample ID | C6-SED-0624 | C7-SED-0624 | C8-SED-0624 | C9-SED-0624 | C10-SED-0624 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 06-Jun-2024 13:18 | 06-Jun-2024 13:20 | 06-Jun-2024 13:21 | 06-Jun-2024 13:22 | 06-Jun-2024 13:29 |
| Compound | CAS Number | LOR | Unit | EB2420357-031 | EB2420357-032 | EB2420357-033 | EB2420357-034 | EB2420357-035 |
| | | | | Result | Result | Result | Result | Result |
| **EA150: Particle Sizing** | | | | | | | | |
| +75µm | ---- | 1 | % | 97 | 98 | 97 | 97 | 98 |
| +150µm | ---- | 1 | % | 97 | 98 | 97 | 97 | 98 |
| +300µm | ---- | 1 | % | 97 | 97 | 97 | 97 | 97 |
| +425µm | ---- | 1 | % | 96 | 95 | 97 | 97 | 97 |
| +600µm | ---- | 1 | % | 95 | 90 | 96 | 95 | 96 |
| +1180µm | ---- | 1 | % | 57 | 30 | 84 | 68 | 59 |
| +2.36mm | ---- | 1 | % | 23 | 8 | 51 | 34 | 23 |
| +4.75mm | ---- | 1 | % | 10 | 5 | 22 | 14 | 9 |
| +9.5mm | ---- | 1 | % | <1 | 3 | 1 | 2 | <1 |
| +19.0mm | ---- | 1 | % | <1 | <1 | <1 | <1 | <1 |
| +37.5mm | ---- | 1 | % | <1 | <1 | <1 | <1 | <1 |
| +75.0mm | ---- | 1 | % | <1 | <1 | <1 | <1 | <1 |
| **EA150: Soil Classification based on Particle Size** | | | | | | | | |
| Clay (<2 µm) | ---- | 1 | % | <1 | <1 | <1 | 1 | <1 |
| Silt (2-60 µm) | ---- | 1 | % | 3 | 2 | 3 | 2 | 2 |
| Sand (0.06-2.00 mm) | ---- | 1 | % | 64 | 83 | 36 | 53 | 64 |
| Gravel (>2mm) | ---- | 1 | % | 33 | 15 | 61 | 44 | 34 |
| Cobbles (>6cm) | ---- | 1 | % | <1 | <1 | <1 | <1 | <1 |
| **EA152: Soil Particle Density** | | | | | | | | |
| Soil Particle Density (Clay/Silt/Sand) | ---- | 0.01 | g/cm3 | 2.65 | 2.59 | 2.68 | 2.80 | 2.78 |

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | D1-SED-0624 | D2-SED-0624 | D3-SED-0624 | D6-SED-0624 | D7-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 06-Jun-2024 09:47 | 06-Jun-2024 09:50 | 06-Jun-2024 09:52 | 06-Jun-2024 10:24 | 06-Jun-2024 10:50 |
| | | | | | EB2420357-040 | EB2420357-041 | EB2420357-042 | EB2420357-045 | EB2420357-046 |
| | | | | | Result | Result | Result | Result | Result |
| **EA150: Particle Sizing** | | | | | | | | | |
| **+75µm** | ---- | 1 | % | | **96** | **98** | **97** | **97** | **97** |
| **+150µm** | ---- | 1 | % | | **96** | **98** | **96** | **97** | **97** |
| **+300µm** | ---- | 1 | % | | **96** | **97** | **96** | **97** | **97** |
| **+425µm** | ---- | 1 | % | | **96** | **93** | **96** | **96** | **96** |
| **+600µm** | ---- | 1 | % | | **93** | **81** | **91** | **86** | **88** |
| **+1180µm** | ---- | 1 | % | | **68** | **30** | **57** | **18** | **38** |
| **+2.36mm** | ---- | 1 | % | | **34** | **6** | **21** | **2** | **8** |
| **+4.75mm** | ---- | 1 | % | | **18** | **1** | **7** | <1 | **2** |
| **+9.5mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **+19.0mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **+37.5mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **+75.0mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **EA150: Soil Classification based on Particle Size** | | | | | | | | | |
| **Clay (<2 µm)** | ---- | 1 | % | | <1 | <1 | **1** | <1 | **1** |
| **Silt (2-60 µm)** | ---- | 1 | % | | **4** | **2** | **2** | **3** | **2** |
| **Sand (0.06-2.00 mm)** | ---- | 1 | % | | **52** | **85** | **65** | **90** | **80** |
| **Gravel (>2mm)** | ---- | 1 | % | | **44** | **13** | **32** | **7** | **17** |
| **Cobbles (>6cm)** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **EA152: Soil Particle Density** | | | | | | | | | |
| **Soil Particle Density (Clay/Silt/Sand)** | ---- | 0.01 | g/cm3 | | **2.59** | **2.57** | **2.77** | **2.84** | **2.79** |

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | D8-SED-0624 | D9-SED-0624 | D10-SED-0624 | G1-SED-0624 | G2-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 06-Jun-2024 10:50 | 06-Jun-2024 10:50 | 06-Jun-2024 10:50 | 06-Jun-2024 11:28 | 06-Jun-2024 11:31 |
| | | | | | EB2420357-047 | EB2420357-048 | EB2420357-049 | EB2420357-053 | EB2420357-054 |
| | | | | | Result | Result | Result | Result | Result |
| **EA150: Particle Sizing** | | | | | | | | | |
| +75µm | ---- | 1 | % | | 96 | 95 | 99 | 96 | 97 |
| +150µm | ---- | 1 | % | | 96 | 95 | 98 | 96 | 97 |
| +300µm | ---- | 1 | % | | 96 | 95 | 98 | 96 | 97 |
| +425µm | ---- | 1 | % | | 95 | 94 | 97 | 96 | 96 |
| +600µm | ---- | 1 | % | | 94 | 90 | 95 | 95 | 88 |
| +1180µm | ---- | 1 | % | | 73 | 59 | 74 | 78 | 31 |
| +2.36mm | ---- | 1 | % | | 36 | 21 | 34 | 40 | 2 |
| +4.75mm | ---- | 1 | % | | 11 | 6 | 11 | 14 | <1 |
| +9.5mm | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| +19.0mm | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| +37.5mm | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| +75.0mm | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **EA150: Soil Classification based on Particle Size** | | | | | | | | | |
| Clay (<2 µm) | ---- | 1 | % | | <1 | 1 | <1 | <1 | 1 |
| Silt (2-60 µm) | ---- | 1 | % | | 4 | 4 | 1 | 4 | 2 |
| Sand (0.06-2.00 mm) | ---- | 1 | % | | 49 | 62 | 53 | 45 | 86 |
| Gravel (>2mm) | ---- | 1 | % | | 47 | 33 | 46 | 51 | 11 |
| Cobbles (>6cm) | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **EA152: Soil Particle Density** | | | | | | | | | |
| Soil Particle Density (Clay/Silt/Sand) | ---- | 0.01 | g/cm3 | | 2.61 | 2.67 | 2.58 | 2.67 | 2.47 |

## Analytical Results

| Sub-Matrix: SEDIMENT (Matrix: SOIL) | | | Sample ID | G3-SED-0624 | G4-SED-0624 | G5-SED-0624 | E3-SED-0624 | E4-SED-0624 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 06-Jun-2024 11:37 | 06-Jun-2024 11:42 | 06-Jun-2024 11:48 | 06-Jun-2024 13:17 | 06-Jun-2024 13:19 |
| Compound | CAS Number | LOR | Unit | EB2420357-055 | EB2420357-056 | EB2420357-057 | EB2420357-060 | EB2420357-061 |
| | | | | Result | Result | Result | Result | Result |
| **EA150: Particle Sizing** | | | | | | | | |
| +75µm | ---- | 1 | % | 97 | 98 | 98 | 97 | 97 |
| +150µm | ---- | 1 | % | 97 | 98 | 98 | 97 | 97 |
| +300µm | ---- | 1 | % | 96 | 97 | 97 | 97 | 97 |
| +425µm | ---- | 1 | % | 96 | 97 | 97 | 96 | 96 |
| +600µm | ---- | 1 | % | 94 | 95 | 95 | 92 | 94 |
| +1180µm | ---- | 1 | % | 53 | 53 | 52 | 49 | 55 |
| +2.36mm | ---- | 1 | % | 12 | 7 | 10 | 16 | 21 |
| +4.75mm | ---- | 1 | % | 2 | <1 | 3 | 5 | 8 |
| +9.5mm | ---- | 1 | % | <1 | <1 | <1 | <1 | 1 |
| +19.0mm | ---- | 1 | % | <1 | <1 | <1 | <1 | <1 |
| +37.5mm | ---- | 1 | % | <1 | <1 | <1 | <1 | <1 |
| +75.0mm | ---- | 1 | % | <1 | <1 | <1 | <1 | <1 |
| **EA150: Soil Classification based on Particle Size** | | | | | | | | |
| Clay (<2 µm) | ---- | 1 | % | 1 | 2 | 1 | 2 | 2 |
| Silt (2-60 µm) | ---- | 1 | % | 2 | <1 | 1 | 1 | 1 |
| Sand (0.06-2.00 mm) | ---- | 1 | % | 72 | 77 | 75 | 71 | 66 |
| Gravel (>2mm) | ---- | 1 | % | 25 | 21 | 23 | 26 | 31 |
| Cobbles (>6cm) | ---- | 1 | % | <1 | <1 | <1 | <1 | <1 |
| **EA152: Soil Particle Density** | | | | | | | | |
| Soil Particle Density (Clay/Silt/Sand) | ---- | 0.01 | g/cm3 | 2.45 | 2.48 | 2.53 | 2.50 | 2.52 |

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | E5-SED-0624 | E6-SED-0624 | E7-SED-0624 | E8-SED-0624 | E9-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 06-Jun-2024 13:20 | 06-Jun-2024 13:21 | 06-Jun-2024 13:22 | 06-Jun-2024 13:22 | 06-Jun-2024 13:22 |
| | | | | | EB2420357-062 | EB2420357-063 | EB2420357-064 | EB2420357-065 | EB2420357-066 |
| | | | | | Result | Result | Result | Result | Result |
| **EA150: Particle Sizing** | | | | | | | | | |
| **+75µm** | ---- | 1 | % | | **96** | **97** | **95** | **97** | **97** |
| **+150µm** | ---- | 1 | % | | **96** | **97** | **95** | **97** | **96** |
| **+300µm** | ---- | 1 | % | | **96** | **97** | **95** | **97** | **96** |
| **+425µm** | ---- | 1 | % | | **96** | **96** | **94** | **96** | **96** |
| **+600µm** | ---- | 1 | % | | **94** | **95** | **92** | **95** | **94** |
| **+1180µm** | ---- | 1 | % | | **74** | **69** | **63** | **61** | **60** |
| **+2.36mm** | ---- | 1 | % | | **38** | **22** | **21** | **22** | **17** |
| **+4.75mm** | ---- | 1 | % | | **18** | **6** | **10** | **7** | **5** |
| **+9.5mm** | ---- | 1 | % | | **3** | **1** | <1 | <1 | <1 |
| **+19.0mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **+37.5mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **+75.0mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **EA150: Soil Classification based on Particle Size** | | | | | | | | | |
| **Clay (<2 µm)** | ---- | 1 | % | | **3** | <1 | **1** | **1** | <1 |
| **Silt (2-60 µm)** | ---- | 1 | % | | **1** | **3** | **3** | **2** | **3** |
| **Sand (0.06-2.00 mm)** | ---- | 1 | % | | **47** | **61** | **62** | **63** | **67** |
| **Gravel (>2mm)** | ---- | 1 | % | | **49** | **36** | **34** | **34** | **30** |
| **Cobbles (>6cm)** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **EA152: Soil Particle Density** | | | | | | | | | |
| **Soil Particle Density (Clay/Silt/Sand)** | ---- | 0.01 | g/cm3 | | **2.48** | **2.44** | **2.53** | **2.47** | **2.48** |

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | E10-SED-0624 | G6-SED-0624 | G7-SED-0624 | G8-SED-0624 | G9-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 06-Jun-2024 13:22 | 06-Jun-2024 14:09 | 06-Jun-2024 14:19 | 06-Jun-2024 14:21 | 06-Jun-2024 14:22 |
| | | | | | EB2420357-067 | EB2420357-070 | EB2420357-071 | EB2420357-072 | EB2420357-073 |
| | | | | | Result | Result | Result | Result | Result |
| **EA150: Particle Sizing** | | | | | | | | | |
| **+75µm** | ---- | 1 | % | | **97** | **96** | **98** | **96** | **96** |
| **+150µm** | ---- | 1 | % | | **97** | **96** | **97** | **96** | **96** |
| **+300µm** | ---- | 1 | % | | **96** | **95** | **95** | **96** | **96** |
| **+425µm** | ---- | 1 | % | | **96** | **94** | **90** | **95** | **94** |
| **+600µm** | ---- | 1 | % | | **94** | **88** | **78** | **92** | **90** |
| **+1180µm** | ---- | 1 | % | | **60** | **58** | **34** | **62** | **59** |
| **+2.36mm** | ---- | 1 | % | | **21** | **19** | **7** | **18** | **20** |
| **+4.75mm** | ---- | 1 | % | | **8** | **2** | **3** | **5** | **6** |
| **+9.5mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **+19.0mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **+37.5mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **+75.0mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **EA150: Soil Classification based on Particle Size** | | | | | | | | | |
| **Clay (<2 µm)** | ---- | 1 | % | | <1 | <1 | **1** | **2** | **2** |
| **Silt (2-60 µm)** | ---- | 1 | % | | **3** | **2** | **1** | <1 | <1 |
| **Sand (0.06-2.00 mm)** | ---- | 1 | % | | **64** | **67** | **82** | **66** | **66** |
| **Gravel (>2mm)** | ---- | 1 | % | | **33** | **31** | **16** | **32** | **32** |
| **Cobbles (>6cm)** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **EA152: Soil Particle Density** | | | | | | | | | |
| **Soil Particle Density (Clay/Silt/Sand)** | ---- | 0.01 | g/cm3 | | **2.51** | **2.49** | **2.43** | **2.45** | **2.43** |

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | G10-SED-0624 | I1-SED-0624 | I2-SED-0624 | I3-SED-0624 | I4-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 06-Jun-2024 14:28 | 06-Jun-2024 12:51 | 06-Jun-2024 12:54 | 06-Jun-2024 12:57 | 06-Jun-2024 12:58 |
| | | | | | EB2420357-074 | EB2420357-077 | EB2420357-078 | EB2420357-079 | EB2420357-080 |
| | | | | | Result | Result | Result | Result | Result |
| **EA150: Particle Sizing** | | | | | | | | | |
| +75µm | ---- | 1 | % | | 97 | 99 | 98 | 98 | 98 |
| +150µm | ---- | 1 | % | | 97 | 99 | 98 | 98 | 98 |
| +300µm | ---- | 1 | % | | 96 | 99 | 97 | 97 | 97 |
| +425µm | ---- | 1 | % | | 92 | 98 | 91 | 90 | 91 |
| +600µm | ---- | 1 | % | | 82 | 93 | 66 | 64 | 64 |
| +1180µm | ---- | 1 | % | | 42 | 46 | 14 | 10 | 10 |
| +2.36mm | ---- | 1 | % | | 13 | 9 | 2 | <1 | <1 |
| +4.75mm | ---- | 1 | % | | 5 | 4 | <1 | <1 | <1 |
| +9.5mm | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| +19.0mm | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| +37.5mm | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| +75.0mm | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **EA150: Soil Classification based on Particle Size** | | | | | | | | | |
| Clay (<2 µm) | ---- | 1 | % | | 3 | <1 | 2 | <1 | <1 |
| Silt (2-60 µm) | ---- | 1 | % | | <1 | <1 | <1 | 2 | 2 |
| Sand (0.06-2.00 mm) | ---- | 1 | % | | 75 | 80 | 92 | 95 | 95 |
| Gravel (>2mm) | ---- | 1 | % | | 22 | 20 | 6 | 3 | 3 |
| Cobbles (>6cm) | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **EA152: Soil Particle Density** | | | | | | | | | |
| Soil Particle Density (Clay/Silt/Sand) | ---- | 0.01 | g/cm3 | | 2.46 | 2.58 | 2.63 | 2.46 | 2.54 |

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | I5-SED-0624 | I6-SED-0624 | I7-SED-0624 | I8-SED-0624 | I9-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 06-Jun-2024 13:07 | 06-Jun-2024 13:08 | 06-Jun-2024 13:09 | 06-Jun-2024 13:09 | 06-Jun-2024 13:09 |
| | | | | | EB2420357-081 | EB2420357-082 | EB2420357-083 | EB2420357-084 | EB2420357-085 |
| | | | | | Result | Result | Result | Result | Result |
| **EA150: Particle Sizing** | | | | | | | | | |
| **+75µm** | ---- | 1 | % | | **98** | **99** | **99** | **99** | **99** |
| **+150µm** | ---- | 1 | % | | **98** | **99** | **99** | **99** | **99** |
| **+300µm** | ---- | 1 | % | | **97** | **99** | **97** | **98** | **97** |
| **+425µm** | ---- | 1 | % | | **89** | **99** | **86** | **92** | **88** |
| **+600µm** | ---- | 1 | % | | **64** | **96** | **57** | **66** | **63** |
| **+1180µm** | ---- | 1 | % | | **10** | **42** | **6** | **10** | **8** |
| **+2.36mm** | ---- | 1 | % | | **1** | **6** | <1 | <1 | <1 |
| **+4.75mm** | ---- | 1 | % | | <1 | **2** | <1 | <1 | <1 |
| **+9.5mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **+19.0mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **+37.5mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **+75.0mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **EA150: Soil Classification based on Particle Size** | | | | | | | | | |
| **Clay (<2 µm)** | ---- | 1 | % | | <1 | <1 | <1 | **1** | <1 |
| **Silt (2-60 µm)** | ---- | 1 | % | | **1** | **1** | **1** | <1 | **1** |
| **Sand (0.06-2.00 mm)** | ---- | 1 | % | | **95** | **82** | **97** | **96** | **96** |
| **Gravel (>2mm)** | ---- | 1 | % | | **4** | **17** | **2** | **3** | **3** |
| **Cobbles (>6cm)** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **EA152: Soil Particle Density** | | | | | | | | | |
| **Soil Particle Density (Clay/Silt/Sand)** | ---- | 0.01 | g/cm3 | | **2.57** | **2.56** | **2.57** | **2.58** | **2.60** |

## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

| Compound | CAS Number | LOR | Unit | Sample ID | I10-SED-0624 | H2-SED-0624 | H3-SED-0624 | H4-SED-0624 | H5-SED-0624 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 06-Jun-2024 11:00 | 06-Jun-2024 13:42 | 06-Jun-2024 13:50 | 06-Jun-2024 14:00 | 06-Jun-2024 14:05 |
| | | | | | EB2420357-086 | EB2420357-090 | EB2420357-091 | EB2420357-092 | EB2420357-093 |
| | | | | | Result | Result | Result | Result | Result |
| **EA150: Particle Sizing** | | | | | | | | | |
| **+75µm** | ---- | 1 | % | | **99** | **98** | **99** | **98** | **98** |
| **+150µm** | ---- | 1 | % | | **99** | **98** | **99** | **98** | **98** |
| **+300µm** | ---- | 1 | % | | **98** | **96** | **98** | **98** | **97** |
| **+425µm** | ---- | 1 | % | | **90** | **91** | **94** | **95** | **92** |
| **+600µm** | ---- | 1 | % | | **59** | **75** | **72** | **84** | **73** |
| **+1180µm** | ---- | 1 | % | | **6** | **30** | **16** | **39** | **19** |
| **+2.36mm** | ---- | 1 | % | | <1 | **5** | **2** | **11** | <1 |
| **+4.75mm** | ---- | 1 | % | | <1 | <1 | <1 | **2** | <1 |
| **+9.5mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **+19.0mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **+37.5mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **+75.0mm** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **EA150: Soil Classification based on Particle Size** | | | | | | | | | |
| **Clay (<2 µm)** | ---- | 1 | % | | <1 | <1 | **1** | **2** | **2** |
| **Silt (2-60 µm)** | ---- | 1 | % | | **1** | <1 | <1 | <1 | <1 |
| **Sand (0.06-2.00 mm)** | ---- | 1 | % | | **97** | **88** | **93** | **78** | **92** |
| **Gravel (>2mm)** | ---- | 1 | % | | **2** | **12** | **6** | **20** | **6** |
| **Cobbles (>6cm)** | ---- | 1 | % | | <1 | <1 | <1 | <1 | <1 |
| **EA152: Soil Particle Density** | | | | | | | | | |
| **Soil Particle Density (Clay/Silt/Sand)** | ---- | 0.01 | g/cm3 | | **2.59** | **2.47** | **2.56** | **2.57** | **2.67** |

## Analytical Results

| Sub-Matrix: SEDIMENT (Matrix: SOIL) | | | Sample ID | H6-SED-0624 | H7-SED-0624 | H8-SED-0624 | H9-SED-0624 | H10-SED-0624 |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 06-Jun-2024 14:10 | 06-Jun-2024 14:10 | 06-Jun-2024 12:30 | 06-Jun-2024 12:30 | 06-Jun-2024 14:10 |
| Compound | CAS Number | LOR | Unit | EB2420357-094 | EB2420357-095 | EB2420357-096 | EB2420357-097 | EB2420357-098 |
| | | | | Result | Result | Result | Result | Result |
| **EA150: Particle Sizing** | | | | | | | | |
| +75µm | ---- | 1 | % | 98 | 99 | 98 | 99 | 99 |
| +150µm | ---- | 1 | % | 98 | 99 | 98 | 99 | 99 |
| +300µm | ---- | 1 | % | 98 | 98 | 98 | 99 | 99 |
| +425µm | ---- | 1 | % | 97 | 93 | 96 | 98 | 97 |
| +600µm | ---- | 1 | % | 88 | 72 | 86 | 88 | 87 |
| +1180µm | ---- | 1 | % | 31 | 24 | 44 | 35 | 24 |
| +2.36mm | ---- | 1 | % | 6 | 6 | 12 | 4 | 2 |
| +4.75mm | ---- | 1 | % | 2 | 3 | 2 | <1 | <1 |
| +9.5mm | ---- | 1 | % | <1 | <1 | <1 | <1 | <1 |
| +19.0mm | ---- | 1 | % | <1 | <1 | <1 | <1 | <1 |
| +37.5mm | ---- | 1 | % | <1 | <1 | <1 | <1 | <1 |
| +75.0mm | ---- | 1 | % | <1 | <1 | <1 | <1 | <1 |
| **EA150: Soil Classification based on Particle Size** | | | | | | | | |
| Clay (<2 µm) | ---- | 1 | % | <1 | <1 | 1 | 1 | 1 |
| Silt (2-60 µm) | ---- | 1 | % | 2 | 1 | <1 | <1 | <1 |
| Sand (0.06-2.00 mm) | ---- | 1 | % | 85 | 88 | 77 | 85 | 90 |
| Gravel (>2mm) | ---- | 1 | % | 13 | 11 | 22 | 14 | 9 |
| Cobbles (>6cm) | ---- | 1 | % | <1 | <1 | <1 | <1 | <1 |
| **EA152: Soil Particle Density** | | | | | | | | |
| Soil Particle Density (Clay/Silt/Sand) | ---- | 0.01 | g/cm3 | 2.55 | 2.54 | 2.55 | 2.52 | 2.47 |

# Certificate of Analysis

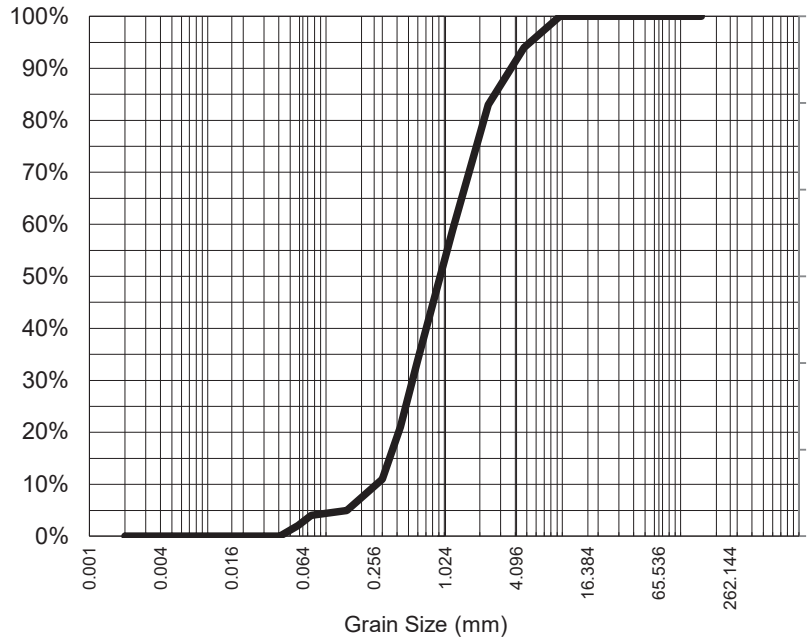
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Stafford, QLD 4053
pH 07 3243 7222
samples.brisbane@alsenviro.com

**ALS Environmental**

**Brisbane QLD**

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| **COMPANY:** | BMT COMMERCIAL AUSTRALIA PTY LTD | **DATE RECEIVED:** | 14-Jun-2024 |
| **ADDRESS:** | Po Box 203<br>Spring Hill<br>Brisbane Qld | **REPORT NO:** | EB2420357-001 / PSD |
| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | A1-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| 9.50 | 100% |
| 4.75 | 94% |
| 2.36 | 83% |
| 1.18 | 59% |
| 0.600 | 34% |
| 0.425 | 21% |
| 0.300 | 11% |
| 0.150 | 5% |
| 0.075 | 4% |
| Particle Size (microns) | |
| 58 | 2% |
| 41 | 0% |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

## Analysis Notes

*Samples analysed as received.*

| | |
|---|---|
| Median Particle Size (mm)* | 0.971 |

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.68 | | |

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Satish Trivedi
Soil Senior Chemist
***Authorised Signatory***

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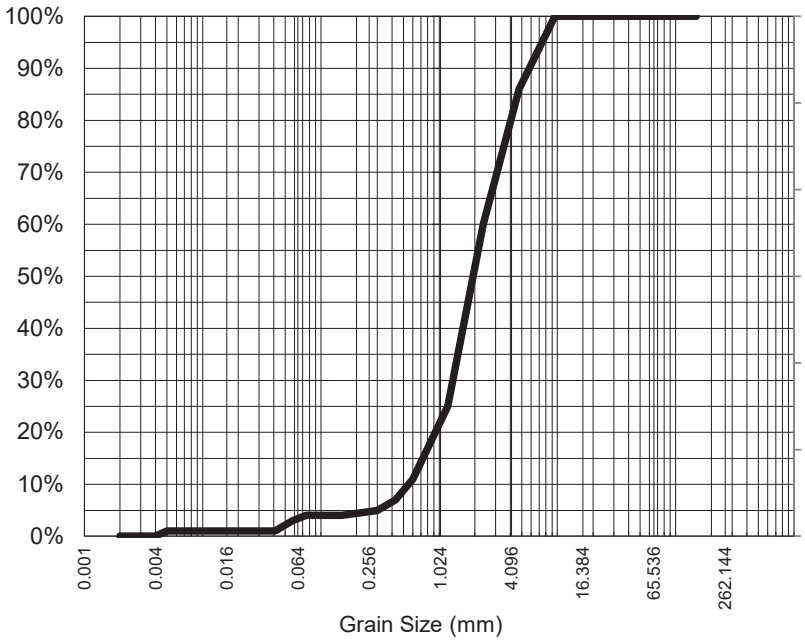
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| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | A2-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| 9.50 | 100% |
| 4.75 | 86% |
| 2.36 | 60% |
| 1.18 | 25% |
| 0.600 | 11% |
| 0.425 | 7% |
| 0.300 | 5% |
| 0.150 | 4% |
| 0.075 | 4% |
| Particle Size (microns) | |
| 58 | 3% |
| 41 | 1% |
| 29 | 1% |
| 20 | 1% |
| 15 | 1% |
| 11 | 1% |
| 7 | 1% |
| 5 | 1% |
| 2 | 0% |

## Analysis Notes

*Samples analysed as received.*

| | |
|---|---|
| Median Particle Size (mm)* | 2.023 |

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.72 | | |

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Satish Trivedi
Soil Senior Chemist
***Authorised Signatory***

# Certificate of Analysis

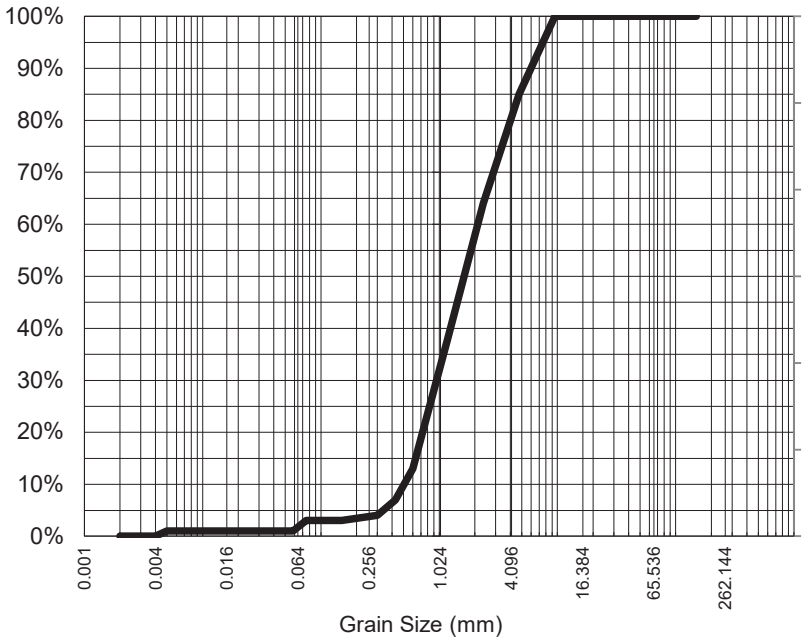
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| **COMPANY:** | BMT COMMERCIAL AUSTRALIA PTY LTD | **DATE RECEIVED:** | 14-Jun-2024 |
| **ADDRESS:** | Po Box 203<br>Spring Hill<br>Brisbane Qld | **REPORT NO:** | EB2420357-003 / PSD |
| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | A3-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| 9.50 | 100% |
| 4.75 | 85% |
| 2.36 | 64% |
| 1.18 | 38% |
| 0.600 | 13% |
| 0.425 | 7% |
| 0.300 | 4% |
| 0.150 | 3% |
| 0.075 | 3% |
| Particle Size (microns) | |
| 58 | 1% |
| 41 | 1% |
| 29 | 1% |
| 20 | 1% |
| 15 | 1% |
| 11 | 1% |
| 7 | 1% |
| 5 | 1% |
| 2 | 0% |

## Analysis Notes

*Samples analysed as received.*

| | |
|---|---|
| Median Particle Size (mm)* | 1.725 |

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.71 | | |

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Satish Trivedi
Soil Senior Chemist
***Authorised Signatory***

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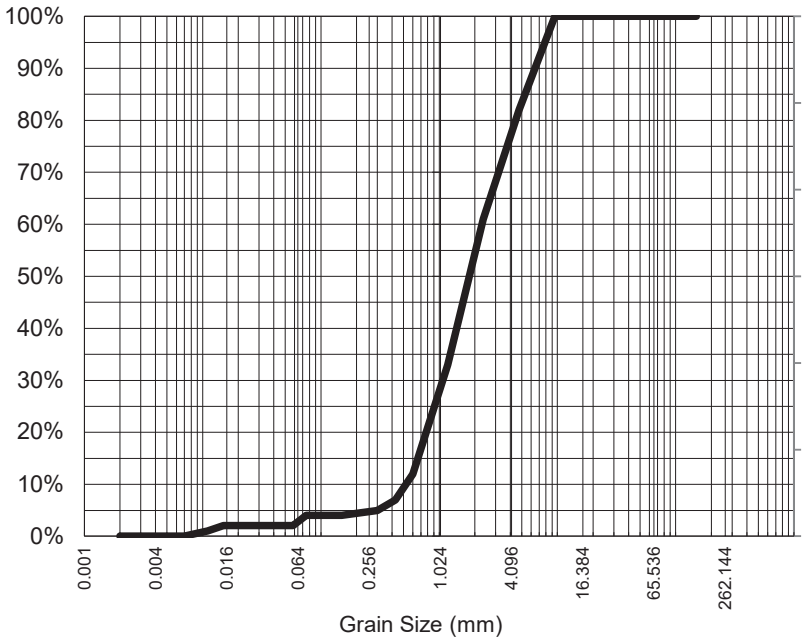
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| **COMPANY:** | BMT COMMERCIAL AUSTRALIA PTY LTD | **DATE RECEIVED:** | 14-Jun-2024 |
| **ADDRESS:** | Po Box 203<br>Spring Hill<br>Brisbane Qld | **REPORT NO:** | EB2420357-004 / PSD |
| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | A4-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| 9.50 | 100% |
| 4.75 | 82% |
| 2.36 | 61% |
| 1.18 | 33% |
| 0.600 | 12% |
| 0.425 | 7% |
| 0.300 | 5% |
| 0.150 | 4% |
| 0.075 | 4% |
| Particle Size (microns) | |
| 58 | 2% |
| 41 | 2% |
| 29 | 2% |
| 21 | 2% |
| 15 | 2% |
| 11 | 1% |
| 7 | 0% |
| | |
| | |

## Analysis Notes

*Samples analysed as received.*

| | |
|---|---|
| Median Particle Size (mm)* | 1.896 |

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.68 | | |

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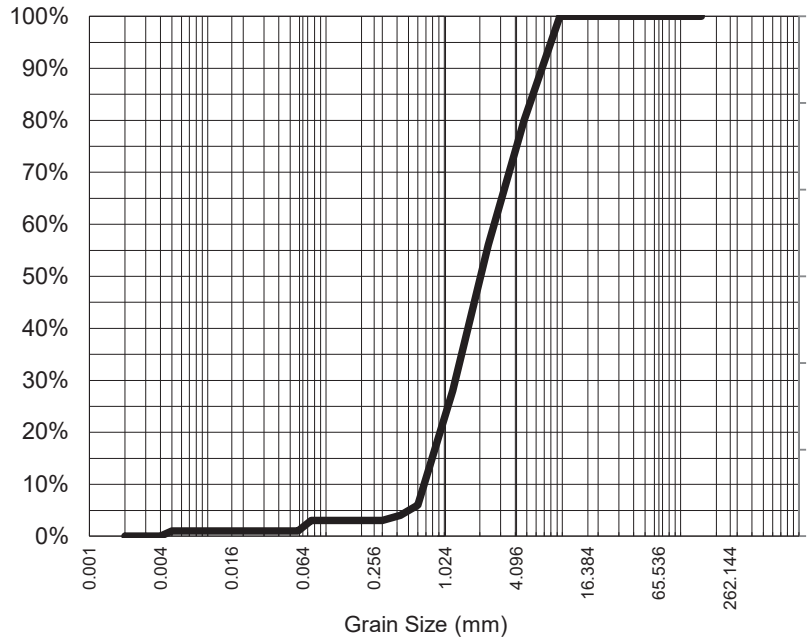
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| **ADDRESS:** | Po Box 203<br>Spring Hill<br>Brisbane Qld | **REPORT NO:** | EB2420357-005 / PSD |
| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | A5-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| 9.50 | 100% |
| 4.75 | 80% |
| 2.36 | 56% |
| 1.18 | 28% |
| 0.600 | 6% |
| 0.425 | 4% |
| 0.300 | 3% |
| 0.150 | 3% |
| 0.075 | 3% |
| Particle Size (microns) | |
| 58 | 1% |
| 41 | 1% |
| 29 | 1% |
| 21 | 1% |
| 15 | 1% |
| 11 | 1% |
| 7 | 1% |
| 5 | 1% |
| 2 | 0% |

## Analysis Notes

*Samples analysed as received.*

| | |
|---|---|
| Median Particle Size (mm)* | 2.107 |

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.68 | | |

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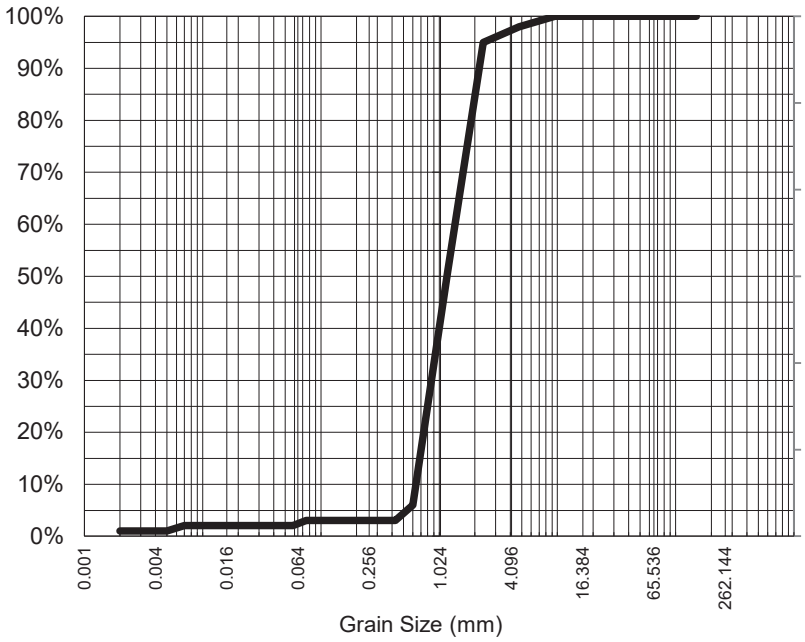
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| **ADDRESS:** | Po Box 203<br>Spring Hill<br>Brisbane Qld | **REPORT NO:** | EB2420357-007 / PSD |
| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | A7-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| 9.50 | 100% |
| 4.75 | 98% |
| 2.36 | 95% |
| 1.18 | 51% |
| 0.600 | 6% |
| 0.425 | 3% |
| 0.300 | 3% |
| 0.150 | 3% |
| 0.075 | 3% |
| Particle Size (microns) | |
| 58 | 2% |
| 41 | 2% |
| 29 | 2% |
| 21 | 2% |
| 15 | 2% |
| 11 | 2% |
| 7 | 2% |
| 5 | 1% |
| 2 | 1% |

## Analysis Notes

*Samples analysed as received.*

| | |
|---|---|
| Median Particle Size (mm)* | 1.167 |

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.65 | | |

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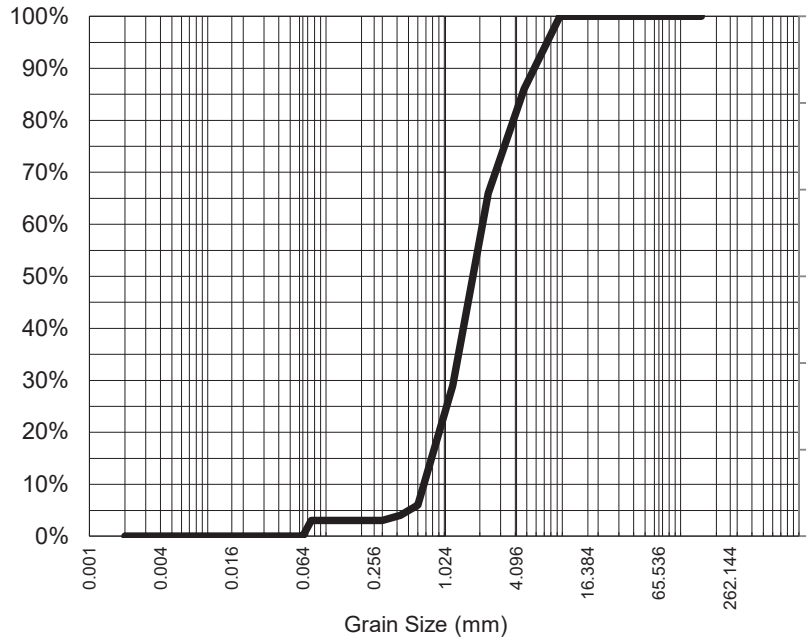
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| **ADDRESS:** | Po Box 203<br>Spring Hill<br>Brisbane Qld | **REPORT NO:** | EB2420357-008 / PSD |
| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | A8-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| 9.50 | 100% |
| 4.75 | 86% |
| 2.36 | 66% |
| 1.18 | 29% |
| 0.600 | 6% |
| 0.425 | 4% |
| 0.300 | 3% |
| 0.150 | 3% |
| 0.075 | 3% |
| Particle Size (microns) | |
| | |
| | |
| | |
| | |
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| | |
| | |
| | |

## Analysis Notes

*Samples analysed as received.*

| | |
|---|---|
| Median Particle Size (mm)* | 1.850 |

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.5 | | |

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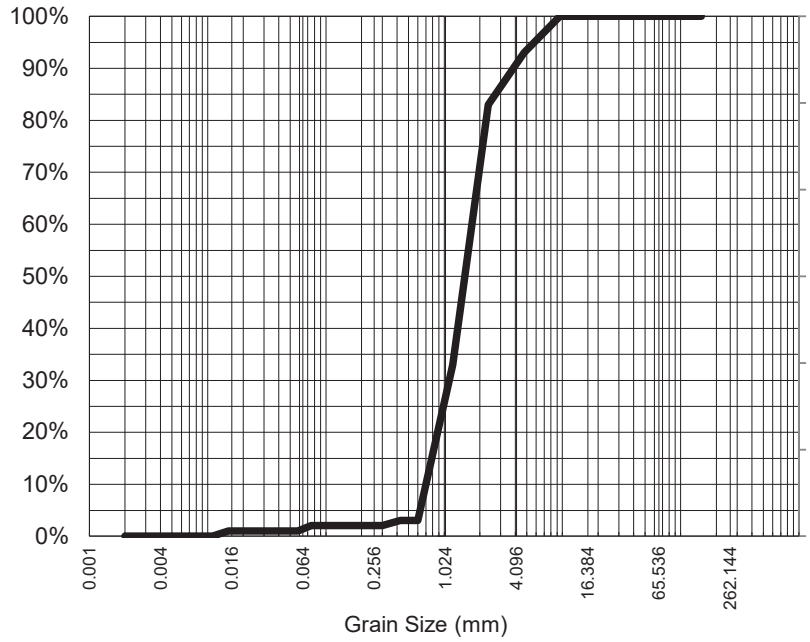
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| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | A10-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| 9.50 | 100% |
| 4.75 | 93% |
| 2.36 | 83% |
| 1.18 | 33% |
| 0.600 | 3% |
| 0.425 | 3% |
| 0.300 | 2% |
| 0.150 | 2% |
| 0.075 | 2% |
| Particle Size (microns) | |
| 58 | 1% |
| 41 | 1% |
| 29 | 1% |
| 21 | 1% |
| 15 | 1% |
| 11 | 0% |
| | |
| | |
| | |

## Analysis Notes

*Samples analysed as received.*

| | |
|---|---|
| Median Particle Size (mm)* | 1.581 |

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.65 | | |

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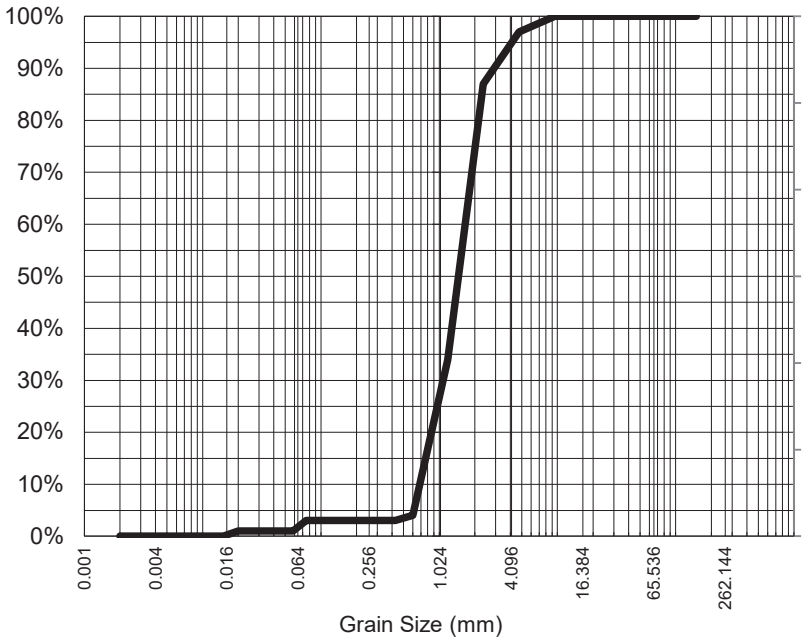
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| **ADDRESS:** | Po Box 203<br>Spring Hill<br>Brisbane Qld | **REPORT NO:** | EB2420357-015 / PSD |
| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | B1-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| 9.50 | 100% |
| 4.75 | 97% |
| 2.36 | 87% |
| 1.18 | 34% |
| 0.600 | 4% |
| 0.425 | 3% |
| 0.300 | 3% |
| 0.150 | 3% |
| 0.075 | 3% |
| Particle Size (microns) | |
| 58 | 1% |
| 41 | 1% |
| 29 | 1% |
| 20 | 1% |
| 15 | 0% |
| | |
| | |
| | |
| | |

## Analysis Notes

*Samples analysed as received.*

| | |
|---|---|
| Median Particle Size (mm)* | 1.536 |

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.72 | | |

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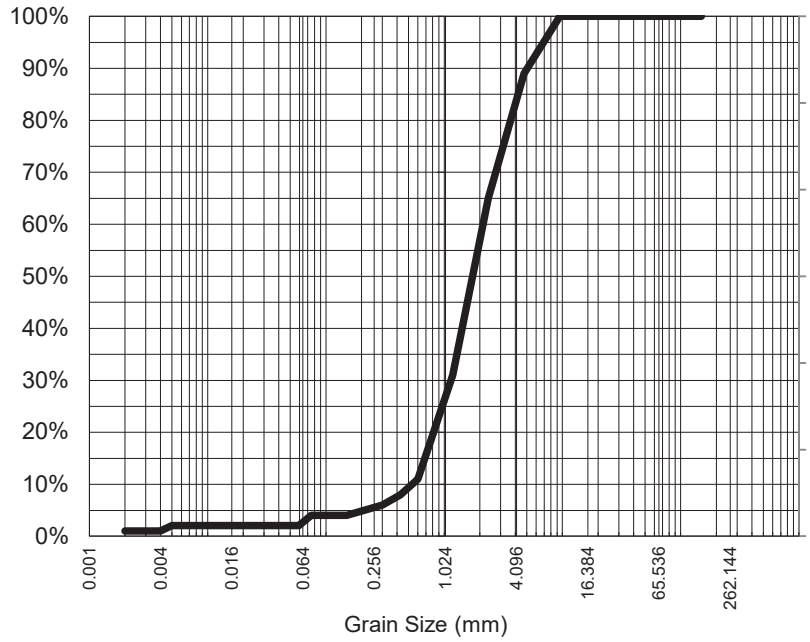
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| **ADDRESS:** | Po Box 203<br>Spring Hill<br>Brisbane Qld | **REPORT NO:** | EB2420357-016 / PSD |
| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | B2-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| 9.50 | 100% |
| 4.75 | 89% |
| 2.36 | 65% |
| 1.18 | 31% |
| 0.600 | 11% |
| 0.425 | 8% |
| 0.300 | 6% |
| 0.150 | 4% |
| 0.075 | 4% |
| Particle Size (microns) | |
| 59 | 2% |
| 42 | 2% |
| 29 | 2% |
| 21 | 2% |
| 15 | 2% |
| 11 | 2% |
| 8 | 2% |
| 5 | 2% |
| 2 | 1% |

## Analysis Notes

*Samples analysed as received.*

| | |
|---|---|
| Median Particle Size (mm)* | 1.839 |

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.64 | | |

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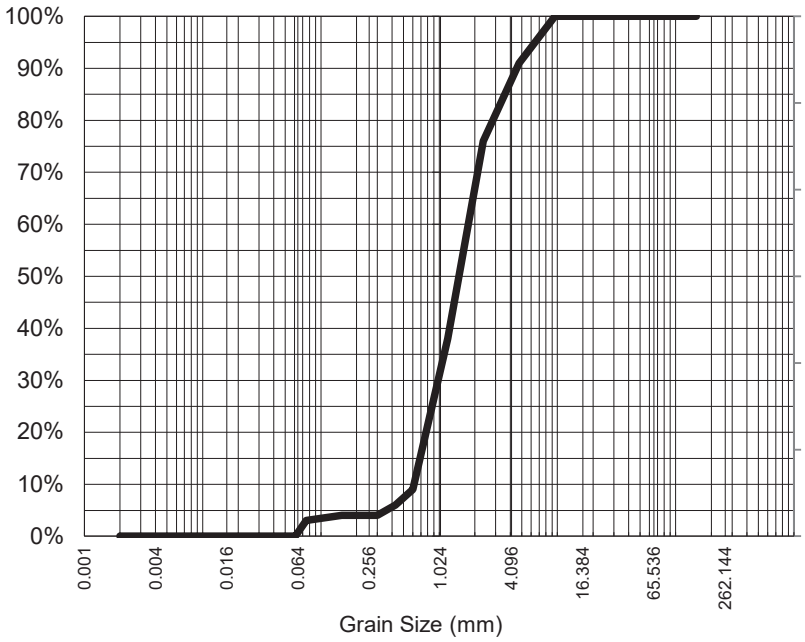
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| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | B3-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| 9.50 | 100% |
| 4.75 | 91% |
| 2.36 | 76% |
| 1.18 | 38% |
| 0.600 | 9% |
| 0.425 | 6% |
| 0.300 | 4% |
| 0.150 | 4% |
| 0.075 | 3% |
| Particle Size (microns) | |
| | |
| | |
| | |
| | |
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| | |
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| | |
| | |

| | |
|---|---|
| Median Particle Size (mm)* | 1.553 |

## Analysis Notes

*Samples analysed as received.*

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.61 | | |

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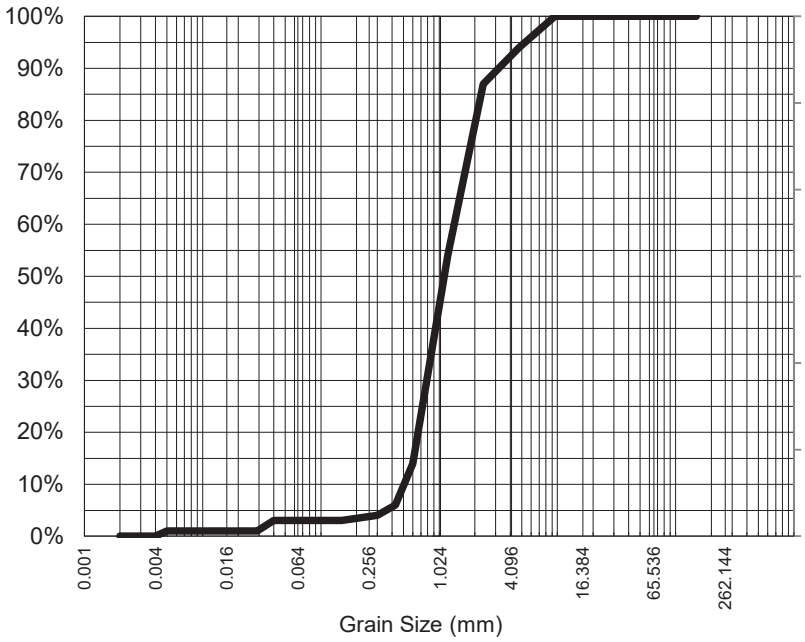
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| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | B4-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| 9.50 | 100% |
| 4.75 | 94% |
| 2.36 | 87% |
| 1.18 | 54% |
| 0.600 | 14% |
| 0.425 | 6% |
| 0.300 | 4% |
| 0.150 | 3% |
| 0.075 | 3% |
| Particle Size (microns) | |
| 57 | 3% |
| 40 | 3% |
| 29 | 1% |
| 20 | 1% |
| 15 | 1% |
| 10 | 1% |
| 7 | 1% |
| 5 | 1% |
| 2 | 0% |

## Analysis Notes

*Samples analysed as received.*

| | |
|---|---|
| Median Particle Size (mm)* | 1.122 |

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.71 | | |

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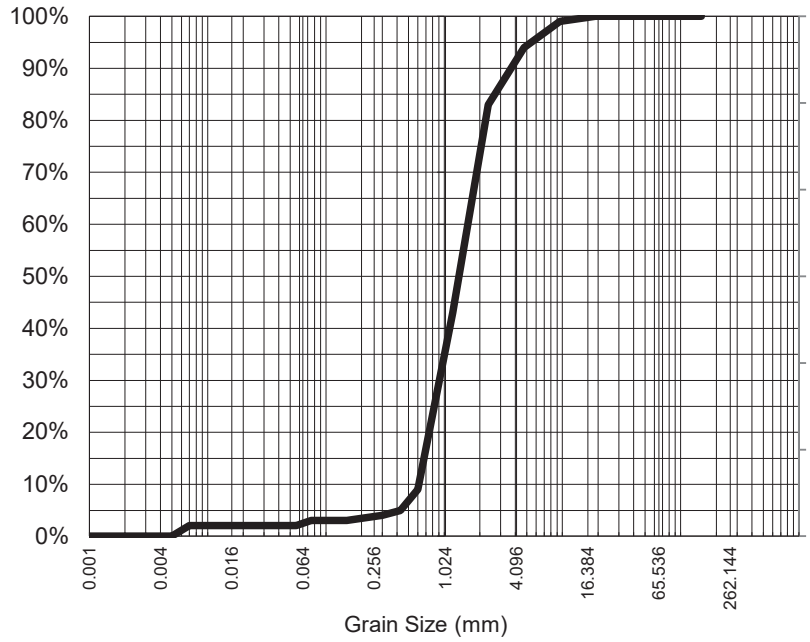
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| **ADDRESS:** | Po Box 203<br>Spring Hill<br>Brisbane Qld | **REPORT NO:** | EB2420357-019 / PSD |
| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | B5-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| 19.0 | 100% |
| 9.50 | 99% |
| 4.75 | 94% |
| 2.36 | 83% |
| 1.18 | 43% |
| 0.600 | 9% |
| 0.425 | 5% |
| 0.300 | 4% |
| 0.150 | 3% |
| 0.075 | 3% |
| Particle Size (microns) | |
| 56 | 2% |
| 40 | 2% |
| 28 | 2% |
| 20 | 2% |
| 15 | 2% |
| 10 | 2% |
| 7 | 2% |
| 5 | 0% |
| | |

## Analysis Notes

*Samples analysed as received.*

| | |
|---|---|
| Median Particle Size (mm)* | 1.387 |

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.77 | | |

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Satish Trivedi
Soil Senior Chemist
***Authorised Signatory***

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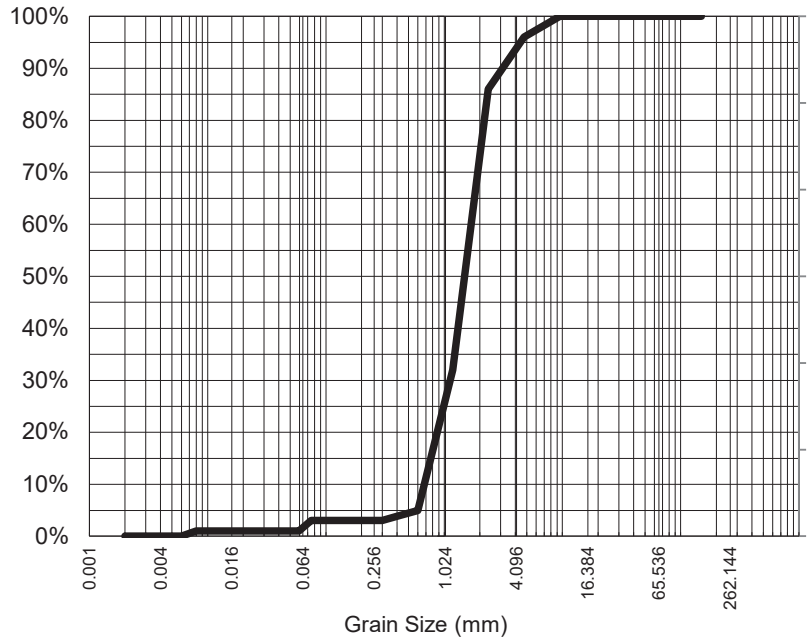
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| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | B6-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| 9.50 | 100% |
| 4.75 | 96% |
| 2.36 | 86% |
| 1.18 | 32% |
| 0.600 | 5% |
| 0.425 | 4% |
| 0.300 | 3% |
| 0.150 | 3% |
| 0.075 | 3% |
| Particle Size (microns) | |
| 59 | 1% |
| 42 | 1% |
| 29 | 1% |
| 21 | 1% |
| 15 | 1% |
| 11 | 1% |
| 8 | 1% |
| 6 | 0% |
| | |

## Analysis Notes

*Samples analysed as received.*

| | |
|---|---|
| Median Particle Size (mm)* | 1.573 |

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.62 | | |

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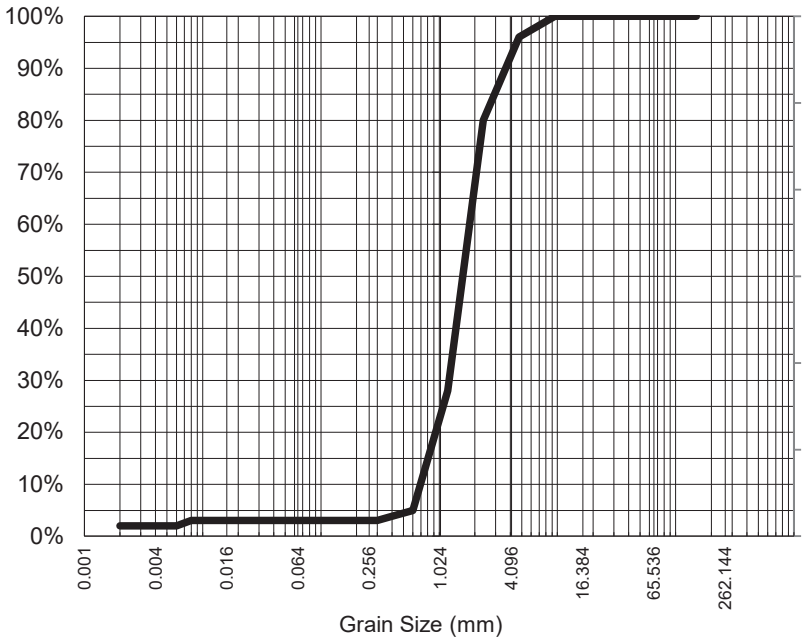
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| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | B9-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| 9.50 | 100% |
| 4.75 | 96% |
| 2.36 | 80% |
| 1.18 | 28% |
| 0.600 | 5% |
| 0.425 | 4% |
| 0.300 | 3% |
| 0.150 | 3% |
| 0.075 | 3% |
| Particle Size (microns) | |
| 62 | 3% |
| 44 | 3% |
| 31 | 3% |
| 22 | 3% |
| 16 | 3% |
| 11 | 3% |
| 8 | 3% |
| 6 | 2% |
| 2 | 2% |

| | |
|---|---|
| Median Particle Size (mm)* | 1.679 |

## Analysis Notes

*Samples analysed as received.*

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.32 (2.45)* | | |

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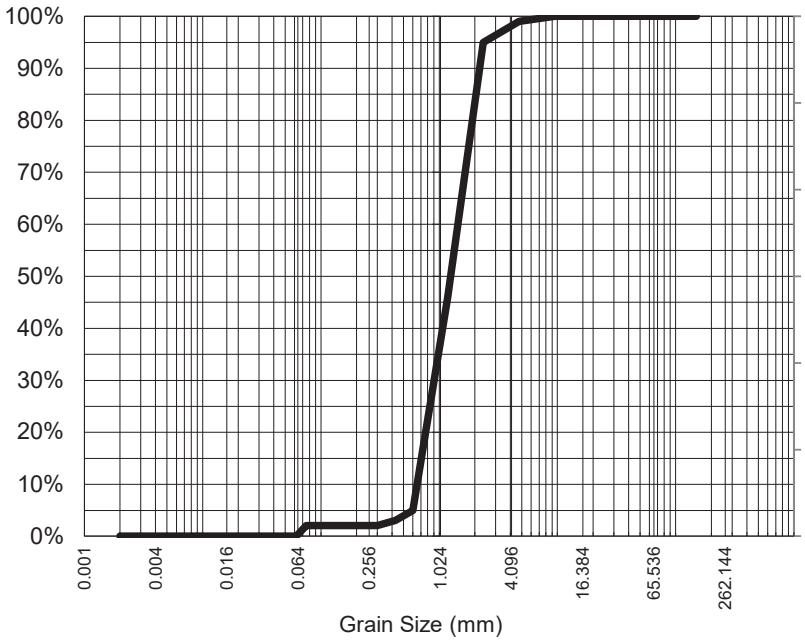
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| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | B10-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| 9.50 | 100% |
| 4.75 | 99% |
| 2.36 | 95% |
| 1.18 | 46% |
| 0.600 | 5% |
| 0.425 | 3% |
| 0.300 | 2% |
| 0.150 | 2% |
| 0.075 | 2% |
| Particle Size (microns) | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

| | |
|---|---|
| Median Particle Size (mm)* | 1.276 |

## Analysis Notes

*Samples analysed as received.*

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.43 (2.45)* | | |

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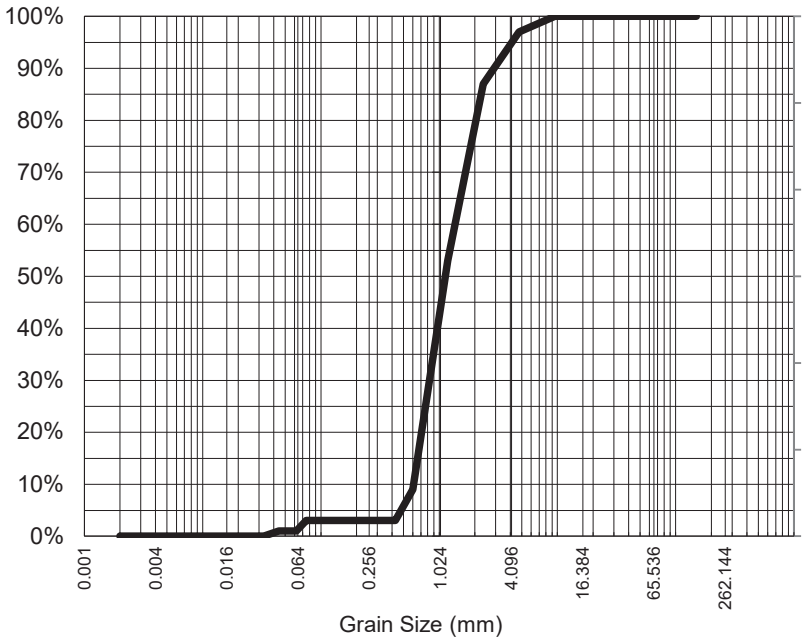
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| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | C1-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| 9.50 | 100% |
| 4.75 | 97% |
| 2.36 | 87% |
| 1.18 | 53% |
| 0.600 | 9% |
| 0.425 | 3% |
| 0.300 | 3% |
| 0.150 | 3% |
| 0.075 | 3% |
| Particle Size (microns) | |
| 62 | 1% |
| 44 | 1% |
| 33 | 0% |
| | |
| | |
| | |
| | |
| | |
| | |

| | |
|---|---|
| Median Particle Size (mm)* | 1.140 |

## Analysis Notes

*Samples analysed as received.*

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.31 (2.45)* | | |

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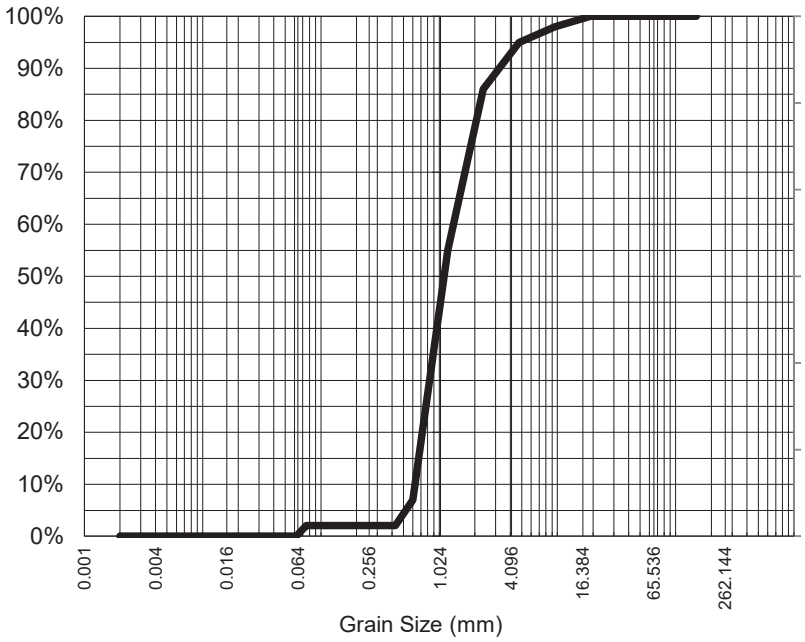
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| **ADDRESS:** | Po Box 203<br>Spring Hill<br>Brisbane Qld | **REPORT NO:** | EB2420357-027 / PSD |
| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | C2-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| 19.0 | 100% |
| 9.50 | 98% |
| 4.75 | 95% |
| 2.36 | 86% |
| 1.18 | 55% |
| 0.600 | 7% |
| 0.425 | 2% |
| 0.300 | 2% |
| 0.150 | 2% |
| 0.075 | 2% |
| Particle Size (microns) | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

| | |
|---|---|
| Median Particle Size (mm)* | 1.120 |

## Analysis Notes

*Samples analysed as received.*

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.39 (2.45)* | | |

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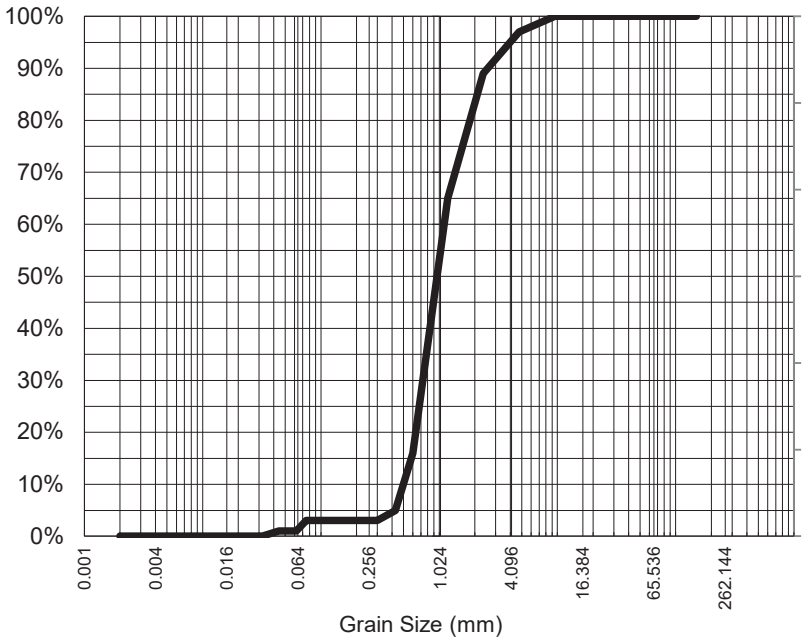
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| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | C4-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| 9.50 | 100% |
| 4.75 | 97% |
| 2.36 | 89% |
| 1.18 | 65% |
| 0.600 | 16% |
| 0.425 | 5% |
| 0.300 | 3% |
| 0.150 | 3% |
| 0.075 | 3% |
| Particle Size (microns) | |
| 62 | 1% |
| 44 | 1% |
| 32 | 0% |
| | |
| | |
| | |
| | |
| | |
| | |

| | |
|---|---|
| Median Particle Size (mm)* | 1.002 |

## Analysis Notes

*Samples analysed as received.*

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.43 (2.45)* | | |

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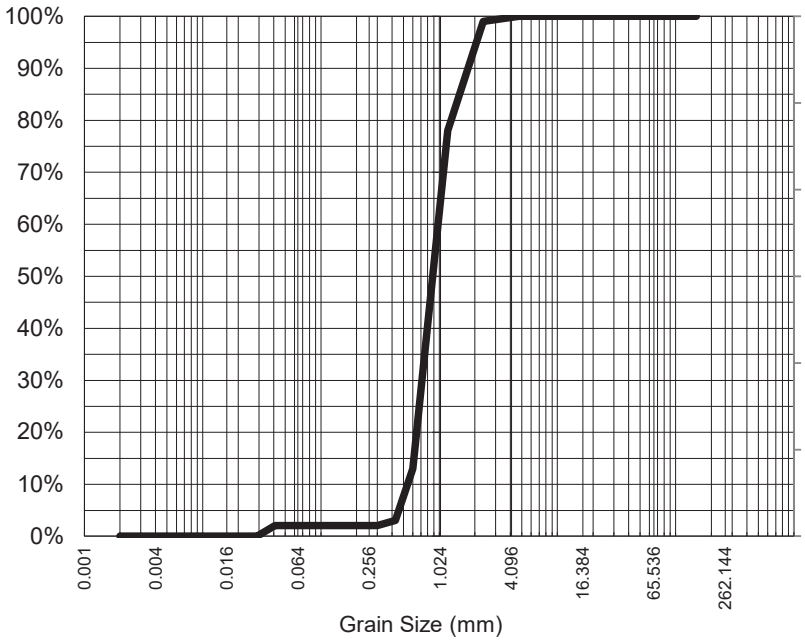
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| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | C5-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| | |
| 4.75 | 100% |
| 2.36 | 99% |
| 1.18 | 78% |
| 0.600 | 13% |
| 0.425 | 3% |
| 0.300 | 2% |
| 0.150 | 2% |
| 0.075 | 2% |
| Particle Size (microns) | |
| 58 | 2% |
| 41 | 2% |
| 29 | 0% |
| | |
| | |
| | |
| | |
| | |
| | |

## Analysis Notes

*Samples analysed as received.*

| | |
|---|---|
| Median Particle Size (mm)* | 0.930 |

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.67 | | |

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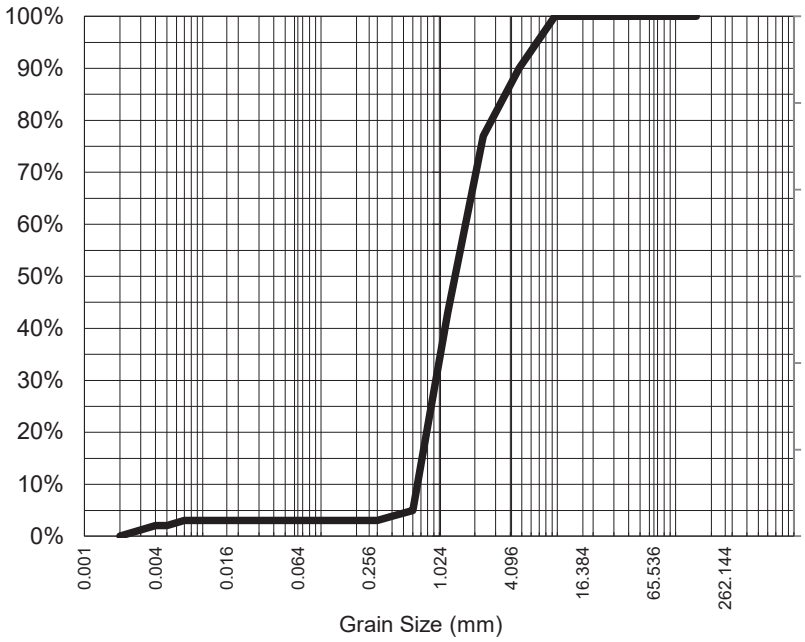
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| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | C6-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| 9.50 | 100% |
| 4.75 | 90% |
| 2.36 | 77% |
| 1.18 | 43% |
| 0.600 | 5% |
| 0.425 | 4% |
| 0.300 | 3% |
| 0.150 | 3% |
| 0.075 | 3% |
| Particle Size (microns) | |
| 58 | 3% |
| 41 | 3% |
| 29 | 3% |
| 21 | 3% |
| 15 | 3% |
| 11 | 3% |
| 7 | 3% |
| 5 | 2% |
| 2 | 0% |

## Analysis Notes

*Samples analysed as received.*

| | |
|---|---|
| Median Particle Size (mm)* | 1.423 |

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.65 | | |

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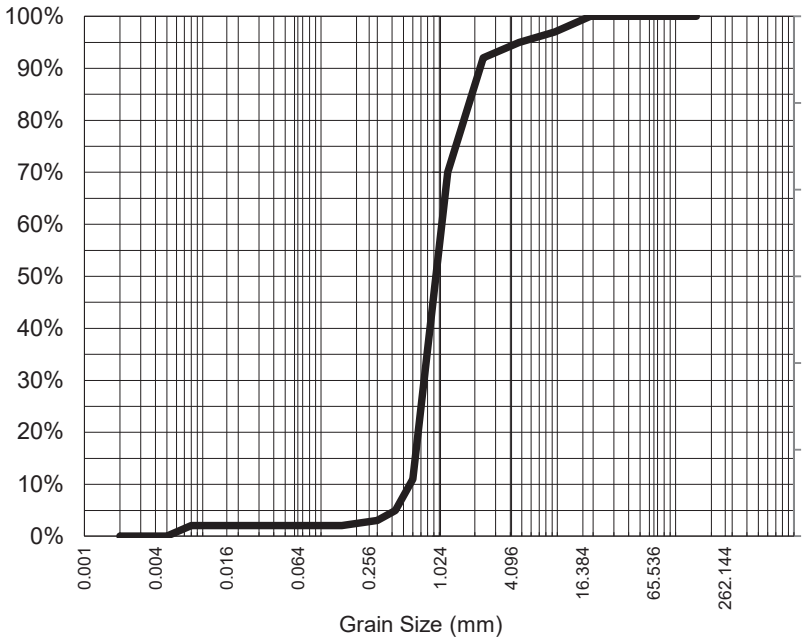
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| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | C7-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| 19.0 | 100% |
| 9.50 | 97% |
| 4.75 | 95% |
| 2.36 | 92% |
| 1.18 | 70% |
| 0.600 | 11% |
| 0.425 | 5% |
| 0.300 | 3% |
| 0.150 | 2% |
| 0.075 | 2% |
| Particle Size (microns) | |
| 60 | 2% |
| 42 | 2% |
| 30 | 2% |
| 21 | 2% |
| 15 | 2% |
| 11 | 2% |
| 8 | 2% |
| 5 | 0% |
| | |

## Analysis Notes

*Samples analysed as received.*

| | |
|---|---|
| Median Particle Size (mm)* | 0.983 |

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.59 | | |

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Soil Senior Chemist
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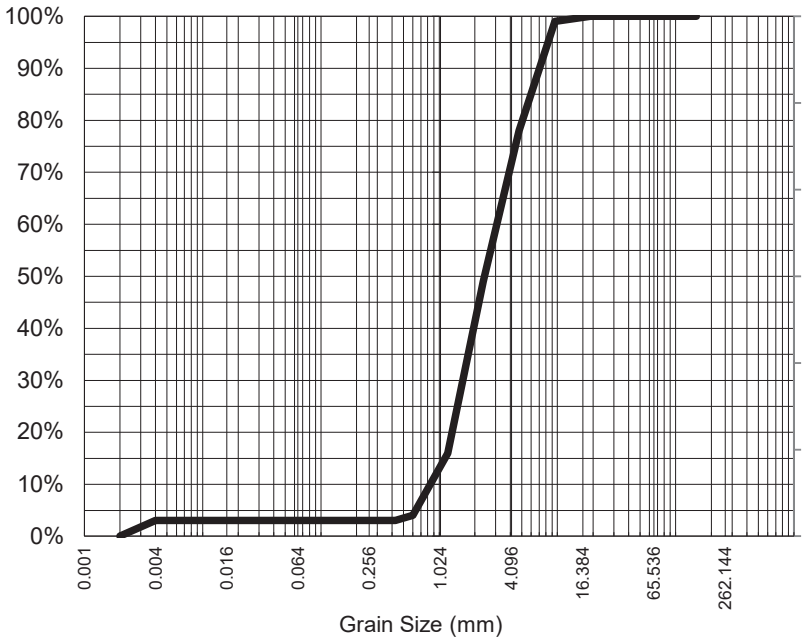
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| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | C8-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| 19.0 | 100% |
| 9.50 | 99% |
| 4.75 | 78% |
| 2.36 | 49% |
| 1.18 | 16% |
| 0.600 | 4% |
| 0.425 | 3% |
| 0.300 | 3% |
| 0.150 | 3% |
| 0.075 | 3% |
| Particle Size (microns) | |
| 58 | 3% |
| 41 | 3% |
| 29 | 3% |
| 21 | 3% |
| 15 | 3% |
| 11 | 3% |
| 7 | 3% |
| 5 | 3% |
| 2 | 0% |

## Analysis Notes

*Samples analysed as received.*

| | |
|---|---|
| Median Particle Size (mm)* | 2.442 |

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.68 | | |

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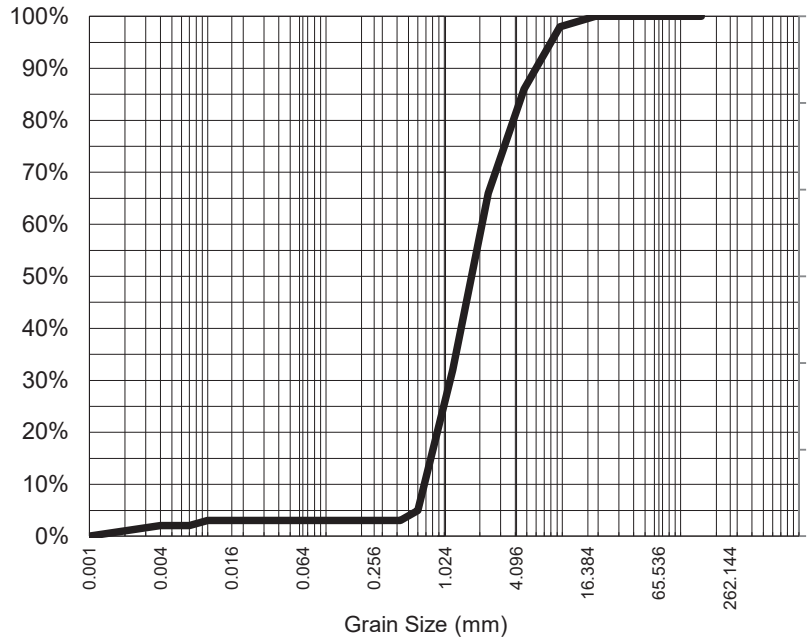
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| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | C9-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| 19.0 | 100% |
| 9.50 | 98% |
| 4.75 | 86% |
| 2.36 | 66% |
| 1.18 | 32% |
| 0.600 | 5% |
| 0.425 | 3% |
| 0.300 | 3% |
| 0.150 | 3% |
| 0.075 | 3% |
| Particle Size (microns) | |
| 56 | 3% |
| 39 | 3% |
| 28 | 3% |
| 20 | 3% |
| 14 | 3% |
| 10 | 3% |
| 7 | 2% |
| 5 | 2% |
| 1 | 0% |

## Analysis Notes

*Samples analysed as received.*

| | |
|---|---|
| Median Particle Size (mm)* | 1.805 |

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.8 | | |

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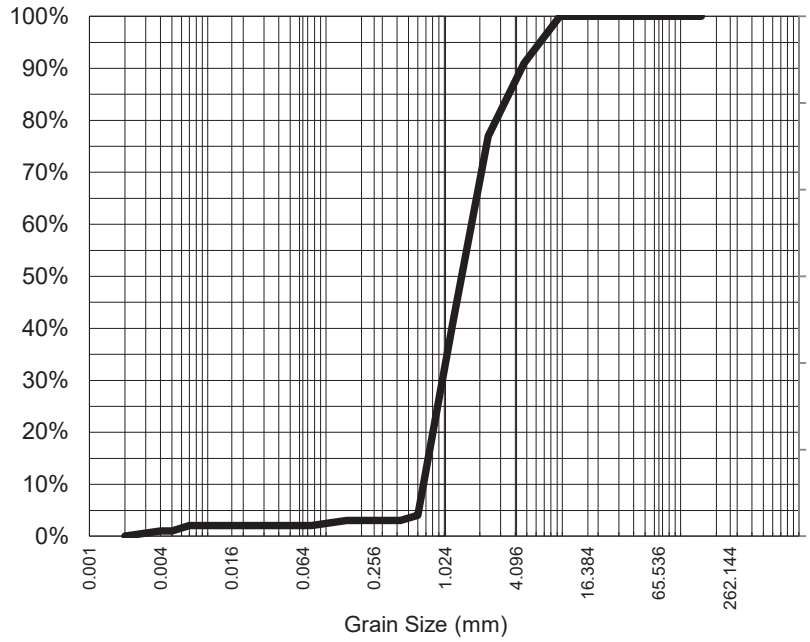
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| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | C10-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| 9.50 | 100% |
| 4.75 | 91% |
| 2.36 | 77% |
| 1.18 | 41% |
| 0.600 | 4% |
| 0.425 | 3% |
| 0.300 | 3% |
| 0.150 | 3% |
| 0.075 | 2% |
| Particle Size (microns) | |
| 56 | 2% |
| 40 | 2% |
| 28 | 2% |
| 20 | 2% |
| 15 | 2% |
| 10 | 2% |
| 7 | 2% |
| 5 | 1% |
| 2 | 0% |

## Analysis Notes

*Samples analysed as received.*

| | |
|---|---|
| Median Particle Size (mm)* | 1.475 |

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.78 | | |

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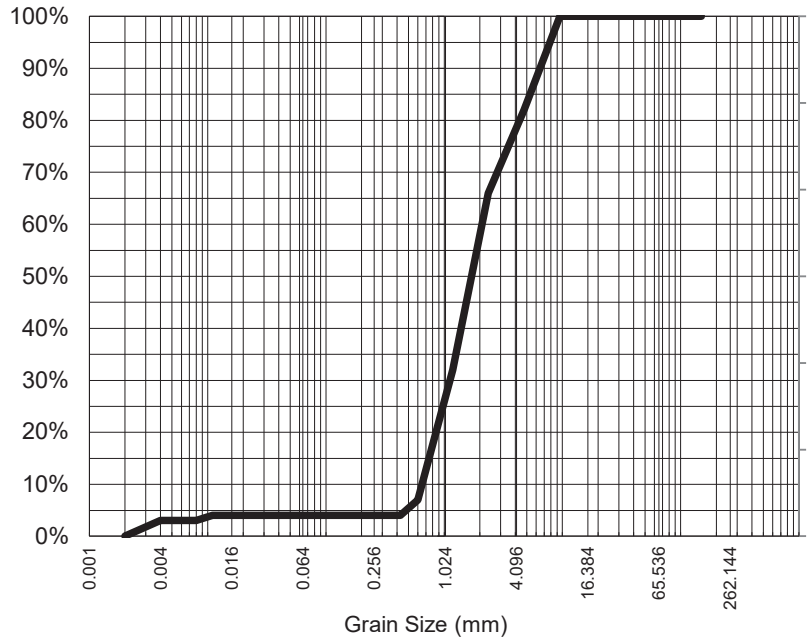
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| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | D1-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| 9.50 | 100% |
| 4.75 | 82% |
| 2.36 | 66% |
| 1.18 | 32% |
| 0.600 | 7% |
| 0.425 | 4% |
| 0.300 | 4% |
| 0.150 | 4% |
| 0.075 | 4% |
| Particle Size (microns) | |
| 60 | 4% |
| 42 | 4% |
| 30 | 4% |
| 21 | 4% |
| 15 | 4% |
| 11 | 4% |
| 8 | 3% |
| 5 | 3% |
| 2 | 0% |

## Analysis Notes

*Samples analysed as received.*

| | |
|---|---|
| Median Particle Size (mm)* | 1.805 |

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.59 | | |

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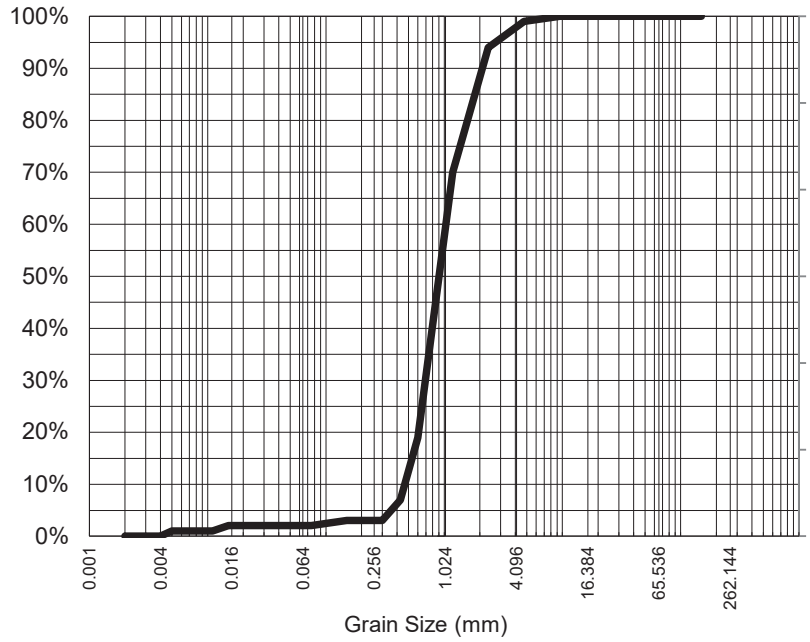
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| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | D2-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| 9.50 | 100% |
| 4.75 | 99% |
| 2.36 | 94% |
| 1.18 | 70% |
| 0.600 | 19% |
| 0.425 | 7% |
| 0.300 | 3% |
| 0.150 | 3% |
| 0.075 | 2% |
| Particle Size (microns) | |
| 60 | 2% |
| 42 | 2% |
| 30 | 2% |
| 21 | 2% |
| 15 | 2% |
| 11 | 1% |
| 8 | 1% |
| 5 | 1% |
| 2 | 0% |

## Analysis Notes

*Samples analysed as received.*

| | |
|---|---|
| Median Particle Size (mm)* | 0.953 |

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.57 | | |

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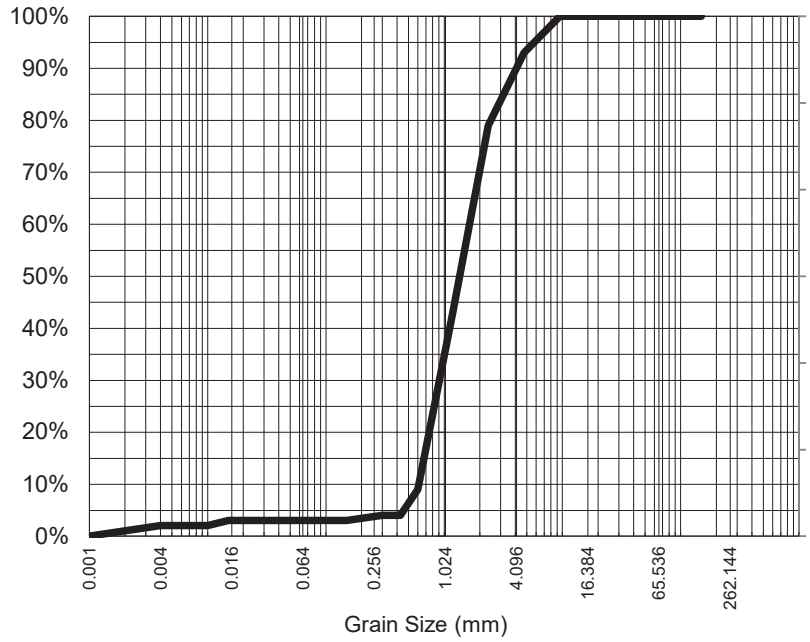
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| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | D3-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| 9.50 | 100% |
| 4.75 | 93% |
| 2.36 | 79% |
| 1.18 | 43% |
| 0.600 | 9% |
| 0.425 | 4% |
| 0.300 | 4% |
| 0.150 | 3% |
| 0.075 | 3% |
| Particle Size (microns) | |
| 56 | 3% |
| 40 | 3% |
| 28 | 3% |
| 20 | 3% |
| 15 | 3% |
| 10 | 2% |
| 7 | 2% |
| 5 | 2% |
| 1 | 0% |

## Analysis Notes

*Samples analysed as received.*

| | |
|---|---|
| Median Particle Size (mm)* | 1.409 |

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.77 | | |

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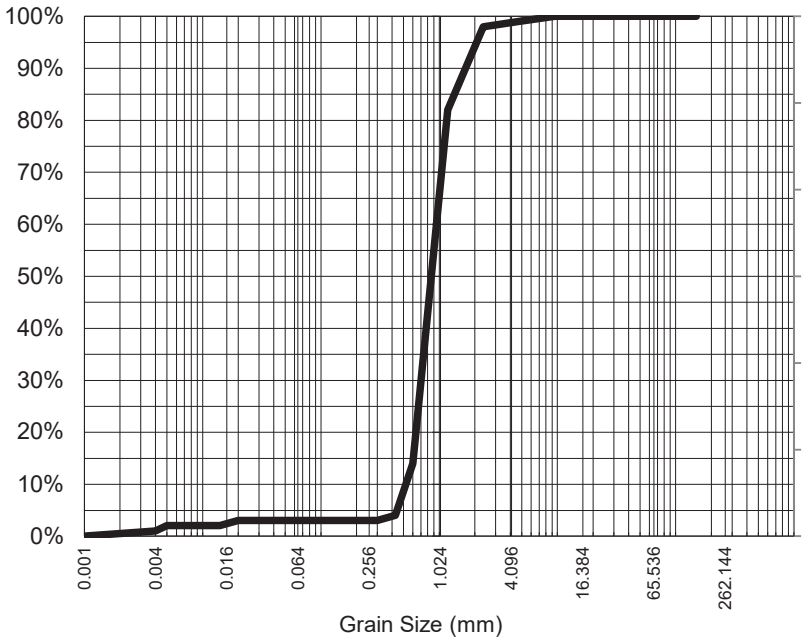
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| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | D6-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| 9.50 | 100% |
| 4.75 | 99% |
| 2.36 | 98% |
| 1.18 | 82% |
| 0.600 | 14% |
| 0.425 | 4% |
| 0.300 | 3% |
| 0.150 | 3% |
| 0.075 | 3% |
| Particle Size (microns) | |
| 56 | 3% |
| 39 | 3% |
| 28 | 3% |
| 20 | 3% |
| 14 | 2% |
| 10 | 2% |
| 7 | 2% |
| 5 | 2% |
| 1 | 0% |

## Analysis Notes

*Samples analysed as received.*

| | |
|---|---|
| Median Particle Size (mm)* | 0.907 |

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.84 | | |

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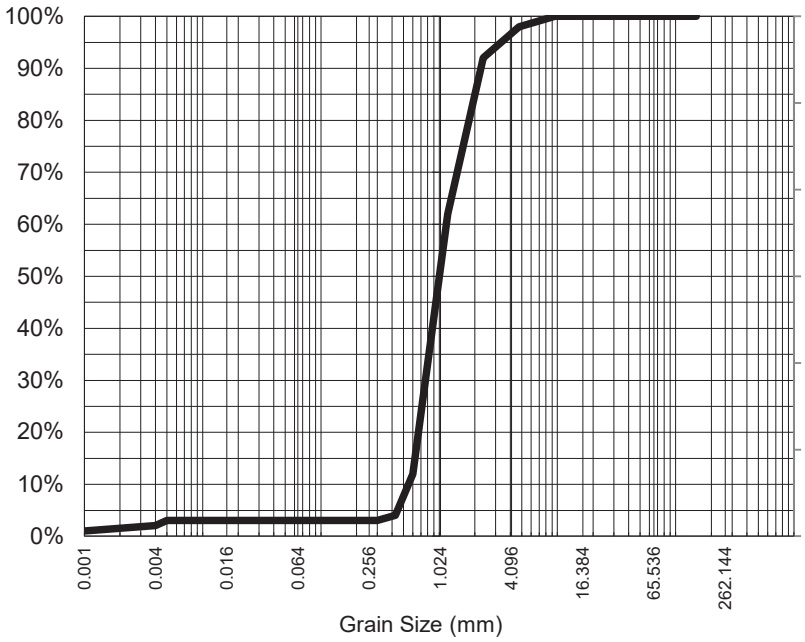
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| **ADDRESS:** | Po Box 203<br>Spring Hill<br>Brisbane Qld | **REPORT NO:** | EB2420357-046 / PSD |
| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | D7-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| 9.50 | 100% |
| 4.75 | 98% |
| 2.36 | 92% |
| 1.18 | 62% |
| 0.600 | 12% |
| 0.425 | 4% |
| 0.300 | 3% |
| 0.150 | 3% |
| 0.075 | 3% |
| Particle Size (microns) | |
| 56 | 3% |
| 40 | 3% |
| 28 | 3% |
| 20 | 3% |
| 14 | 3% |
| 10 | 3% |
| 7 | 3% |
| 5 | 3% |
| 1 | 1% |

## Analysis Notes

*Samples analysed as received.*

| | |
|---|---|
| Median Particle Size (mm)* | 1.041 |

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.79 | | |

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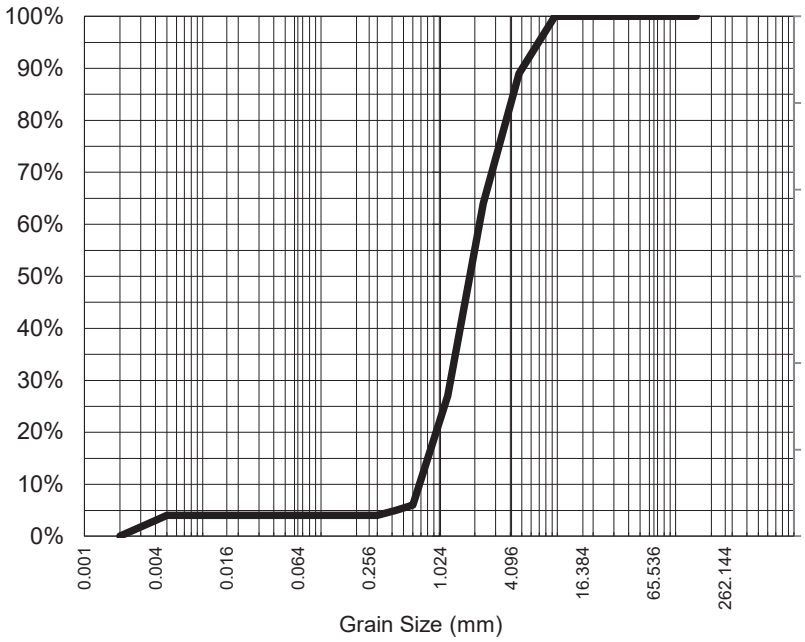
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| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | D8-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| 9.50 | 100% |
| 4.75 | 89% |
| 2.36 | 64% |
| 1.18 | 27% |
| 0.600 | 6% |
| 0.425 | 5% |
| 0.300 | 4% |
| 0.150 | 4% |
| 0.075 | 4% |
| Particle Size (microns) | |
| 59 | 4% |
| 41 | 4% |
| 29 | 4% |
| 21 | 4% |
| 15 | 4% |
| 11 | 4% |
| 8 | 4% |
| 5 | 4% |
| 2 | 0% |

## Analysis Notes

*Samples analysed as received.*

| | |
|---|---|
| Median Particle Size (mm)* | 1.914 |

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.61 | | |

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NATA
WORLD RECOGNISED ACCREDITATION

Satish Trivedi
Soil Senior Chemist
***Authorised Signatory***

# Certificate of Analysis

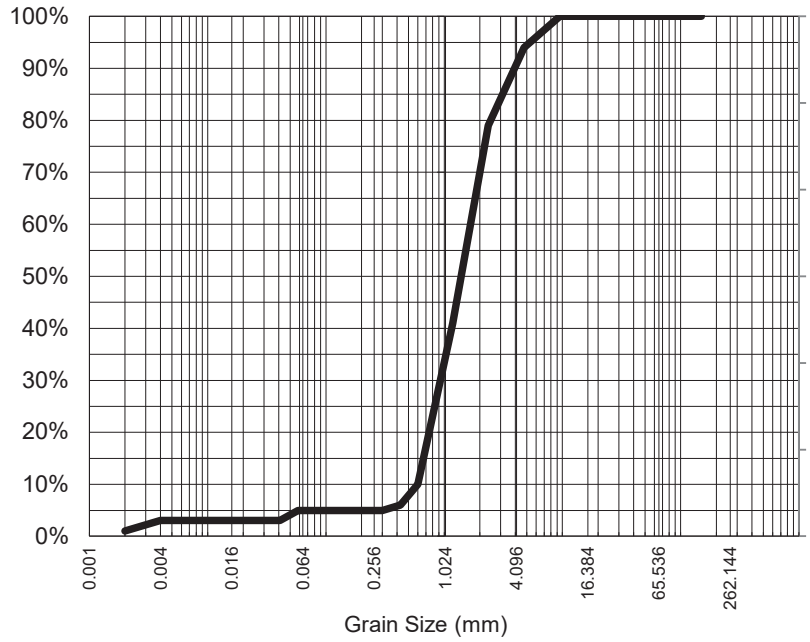
ALS Laboratory Group Pty Ltd
2 Byth Street
Stafford, QLD 4053
pH 07 3243 7222
samples.brisbane@alsenviro.com

**ALS Environmental**

**Brisbane QLD**

| | | | |
|---|---|---|---|
| **CLIENT:** | CONOR JONES | **DATE REPORTED:** | 22-Jul-2024 |
| **COMPANY:** | BMT COMMERCIAL AUSTRALIA PTY LTD | **DATE RECEIVED:** | 14-Jun-2024 |
| **ADDRESS:** | Po Box 203<br>Spring Hill<br>Brisbane Qld | **REPORT NO:** | EB2420357-048 / PSD |
| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | D9-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| 9.50 | 100% |
| 4.75 | 94% |
| 2.36 | 79% |
| 1.18 | 41% |
| 0.600 | 10% |
| 0.425 | 6% |
| 0.300 | 5% |
| 0.150 | 5% |
| 0.075 | 5% |
| Particle Size (microns) | |
| 58 | 5% |
| 41 | 3% |
| 29 | 3% |
| 20 | 3% |
| 15 | 3% |
| 11 | 3% |
| 7 | 3% |
| 5 | 3% |
| 2 | 1% |

## Analysis Notes

*Samples analysed as received.*

| | |
|---|---|
| Median Particle Size (mm)* | 1.459 |

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.67 | | |

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**Satish Trivedi**
Soil Senior Chemist
***Authorised Signatory***

# Certificate of Analysis

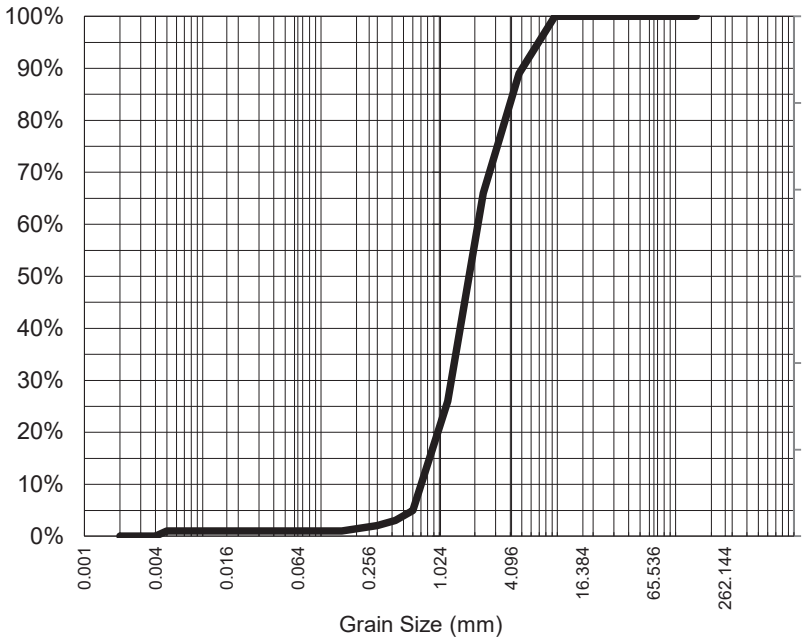
ALS Laboratory Group Pty Ltd
2 Byth Street
Stafford, QLD 4053
pH 07 3243 7222
samples.brisbane@alsenviro.com

**ALS Environmental**

**Brisbane QLD**

| | | | |
|---|---|---|---|
| **CLIENT:** | CONOR JONES | **DATE REPORTED:** | 22-Jul-2024 |
| **COMPANY:** | BMT COMMERCIAL AUSTRALIA PTY LTD | **DATE RECEIVED:** | 14-Jun-2024 |
| **ADDRESS:** | Po Box 203<br>Spring Hill<br>Brisbane Qld | **REPORT NO:** | EB2420357-049 / PSD |
| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | D10-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| 9.50 | 100% |
| 4.75 | 89% |
| 2.36 | 66% |
| 1.18 | 26% |
| 0.600 | 5% |
| 0.425 | 3% |
| 0.300 | 2% |
| 0.150 | 1% |
| 0.075 | 1% |
| Particle Size (microns) | |
| 60 | 1% |
| 42 | 1% |
| 30 | 1% |
| 21 | 1% |
| 15 | 1% |
| 11 | 1% |
| 8 | 1% |
| 5 | 1% |
| 2 | 0% |

## Analysis Notes

*Samples analysed as received.*

| | |
|---|---|
| Median Particle Size (mm)* | 1.888 |

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.58 | | |

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Soil Senior Chemist
***Authorised Signatory***

# Certificate of Analysis

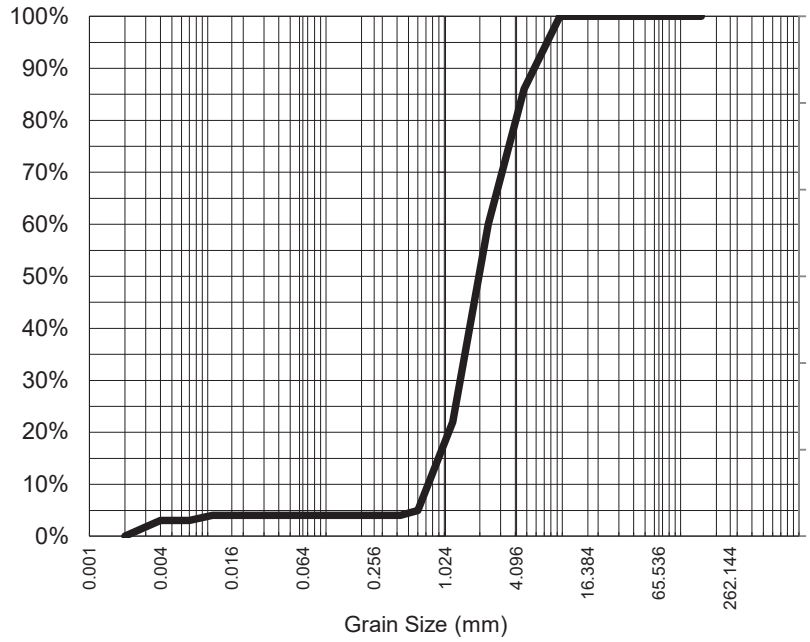
ALS Laboratory Group Pty Ltd
2 Byth Street
Stafford, QLD 4053
pH 07 3243 7222
samples.brisbane@alsenviro.com

**ALS Environmental**

**Brisbane QLD**

| | | | |
|---|---|---|---|
| **CLIENT:** | CONOR JONES | **DATE REPORTED:** | 22-Jul-2024 |
| **COMPANY:** | BMT COMMERCIAL AUSTRALIA PTY LTD | **DATE RECEIVED:** | 14-Jun-2024 |
| **ADDRESS:** | Po Box 203<br>Spring Hill<br>Brisbane Qld | **REPORT NO:** | EB2420357-053 / PSD |
| **PROJECT:** | B23282 Douglas Shoal | **SAMPLE ID:** | G1-SED-0624 |

## Particle Size Distribution




| Particle Size (mm) | % Passing |
|---|---|
| | |
| | |
| | |
| | |
| 9.50 | 100% |
| 4.75 | 86% |
| 2.36 | 60% |
| 1.18 | 22% |
| 0.600 | 5% |
| 0.425 | 4% |
| 0.300 | 4% |
| 0.150 | 4% |
| 0.075 | 4% |
| Particle Size (microns) | |
| 58 | 4% |
| 41 | 4% |
| 29 | 4% |
| 20 | 4% |
| 15 | 4% |
| 11 | 4% |
| 7 | 3% |
| 5 | 3% |
| 2 | 0% |

## Analysis Notes

*Samples analysed as received.*

| | |
|---|---|
| Median Particle Size (mm)* | 2.049 |

*Median Particle Size is not covered under the current scope of ALS's NATA accreditation.*

| | | | |
|---|---|---|---|
| **Sample Comments:** | AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly | **Analysed:** | 13-Jul-24 |
| **Loss on Pretreatment** | NA | **Limit of Reporting:** | 1% |
| **Sample Description:** | | **Dispersion Method** | Shaker |
| **Test Method:** | AS1289.3.6.2/AS1289.3.6.3 | | |
| **Soil Particle Density (<2.36mm)** | 2.67 | | |

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Satish Trivedi
Soil Senior Chemist
***Authorised Signatory***

# Symbio LABORATORIES

## CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Certificate Number** | B1559551 [R00] | **Page** | 1/11 |
| **Client** | BMT Commercial Australia Pty Ltd | **Registering Laboratory** | Brisbane |
| **Primary Contact** | Katherine Bailey | **Contact** | Customer Service Team |
| **Address** | Level 8 200 Creek Street Brisbane QLD 4000 | **Address** | 52 Brandl Street, Eight Mile Plains, QLD 4113 |
| | | **Email** | admin@symbiolabs.com.au |
| **Telephone** | 07 3831 6744 | **Telephone** | 1300 703 166 |
| **Order Number** | --- | **Date Samples Received** | 21/06/2024 15:25 |
| **Job Description** | Sediment | **Date Analysis Commenced** | 21/06/2024 15:44 |
| **Client Job Reference** | --- | **Issue Date** | 08/07/2024 |
| **No. of Samples Registered** | 4 \| Sampler: Customer | **Receipt Temperature (°C)** | 22.5 |
| **Priority** | Normal | **Storage Temperature (°C)** | 21 |

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**ABN: 82 079 645 015**

NATA

Accreditation No: 2455
Accredited for compliance with ISO/IEC 17025 -

This report supersedes any previous revision with this reference. This document must not be reproduced, except in full. If samples were provided by the customer, results apply only to the samples 'as received' and responsibility for representative sampling rests with the customer. Sample preparation was conducted in accordance with Agricultural and Veterinary Chemicals Code (MRL Standard) Instrument 2019, Table 2, unless otherwise indicated in the 'Report Comments' section. Measurement Uncertainty is available upon request. If the laboratory was authorised to conduct testing on samples received outside of the specified conditions, all test results may be impacted. Details of samples received outside of the specified conditions are mentioned in the sample description section of this test report.

### Definitions

| <: Less Than | >: Greater Than | ---: Not Received/Not Requested | NA: Not Applicable | ND: Not Detected | [NT]: Not Tested | CL: Confidence Level | NL: No MRL Listed | MF: Mixed Food | LOR: Limit of Reporting | TBA: To Be Advised |
| ^ Subcontracted Analysis | * Test not covered by NATA scope of accreditation | # The result is derived from a calculation incorporating the residue definition of chemicals defined in the Agricultural and Veterinary Chemicals Code (MRL Standard) Instrument 2019. Results equal to or exceeding the LOR are included in the calculation. | IH: Inconsistent results possibly caused by sample homogeneity |

### Authorised By

| Name | Position | Accreditation Category |
|---|---|---|
| Glen Rangott | Environmental Laboratory Manager, Brisbane | Environmental Chemistry |
| Yeleen Chui | Residue Laboratory Manager, Brisbane | Environmental and Food Chemistry |

### General Comments

A result of "<LOR" indicates no chemical on the 'Method Analyte List' was detected at a concentration equal to or exceeding the stated LOR.
If a chemical is detected at a concentration equal to or exceeding the stated LOR, it will be detailed in the 'Analytical Result Summary.' All other chemicals included in the 'Method Analyte List' were not detected at or exceeding the listed LOR.
MRL information is only provided in the event of a chemical detection exceeding the LOR on a single commodity.
MRL information is not provided for mixed foods. Further information regarding mixed food MRL's can be obtained from Food Standards Code, part 1.4.2 – AgVet Chemical.
In accordance with the Queensland Chemical Usage (Agricultural and Veterinary) Control Act 1988, the laboratory must discharge its lawful obligations in accordance with Division 4, Section 15 & 15A and notify the standards officer of any potential MRL exceedances.
Disclaimer: All reasonable measures have been taken to ensure the MRL information provided is accurate and current. No liability is accepted by Symbio Laboratories for any occurrence arising from the adoption of any of the information.

| | | | |
|---|---|---|---|
| **Client** | BMT Commercial Australia Pty Ltd | **Job Description** | Sediment |
| **Certificate Number** | B1559551 [R00] | **Order Number** | --- |
| **Page** | 2/11 | **Received Date** | 21/06/2024 15:25 |

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## Analytical Test Results

| Sample ID | Sample Description - *Client/Sampler Supplied* | Matrix | Compound/Analyte | LOR | Units | Result | MRL |
|---|---|---|---|---|---|---|---|
| **ENV104 - Pesticides in Soil** | | | | | | | |
| B1559551/1 | SD:2024-07-08 17:58 A12-SED-0624 | Sediment | Extended Residue in Soil | <LOR | mg/kg | <LOR | --- |
| B1559551/2 | SD:2024-07-08 17:58 B12-SED-0624 | Sediment | Extended Residue in Soil | <LOR | mg/kg | <LOR | --- |
| B1559551/3 | SD:2024-07-08 17:58 C12-SED-0624 | Sediment | Extended Residue in Soil | <LOR | mg/kg | <LOR | --- |
| B1559551/4 | SD:2024-07-08 17:58 D12-SED-0624 | Sediment | Extended Residue in Soil | <LOR | mg/kg | <LOR | --- |
| **IND041 - Metals in Soil - ICP-AES** | | | | | | | |
| B1559551/1 | SD:2024-07-08 17:58 A12-SED-0624 | Sediment | Aluminium (Al) | 1 | mg/kg | 905 | --- |
| B1559551/1 | SD:2024-07-08 17:58 A12-SED-0624 | Sediment | Iron (Fe) | 2 | mg/kg | 544 | --- |
| B1559551/2 | SD:2024-07-08 17:58 B12-SED-0624 | Sediment | Aluminium (Al) | 1 | mg/kg | 423 | --- |
| B1559551/2 | SD:2024-07-08 17:58 B12-SED-0624 | Sediment | Iron (Fe) | 2 | mg/kg | 265 | --- |
| B1559551/3 | SD:2024-07-08 17:58 C12-SED-0624 | Sediment | Aluminium (Al) | 1 | mg/kg | 674 | --- |
| B1559551/3 | SD:2024-07-08 17:58 C12-SED-0624 | Sediment | Iron (Fe) | 2 | mg/kg | 421 | --- |
| B1559551/4 | SD:2024-07-08 17:58 D12-SED-0624 | Sediment | Aluminium (Al) | 1 | mg/kg | 649 | --- |
| B1559551/4 | SD:2024-07-08 17:58 D12-SED-0624 | Sediment | Iron (Fe) | 2 | mg/kg | 373 | --- |
| **IND042 - Metals in Soil - ICP-MS** | | | | | | | |
| B1559551/1 | SD:2024-07-08 17:58 A12-SED-0624 | Sediment | Mercury (Hg) | 0.1 | mg/kg | 0.4 | --- |
| B1559551/1 | SD:2024-07-08 17:58 A12-SED-0624 | Sediment | Manganese (Mn) | 0.5 | mg/kg | 12 | --- |
| B1559551/1 | SD:2024-07-08 17:58 A12-SED-0624 | Sediment | Nickel (Ni) | 0.1 | mg/kg | 1.3 | --- |
| B1559551/1 | SD:2024-07-08 17:58 A12-SED-0624 | Sediment | Lead (Pb) | 0.1 | mg/kg | 0.4 | --- |
| B1559551/1 | SD:2024-07-08 17:58 A12-SED-0624 | Sediment | Antimony (Sb) | 0.1 | mg/kg | <0.1 | --- |
| B1559551/1 | SD:2024-07-08 17:58 A12-SED-0624 | Sediment | Selenium (Se) | 0.5 | mg/kg | <0.5 | --- |
| B1559551/1 | SD:2024-07-08 17:58 A12-SED-0624 | Sediment | Vanadium (V) | 0.1 | mg/kg | 1.7 | --- |
| B1559551/1 | SD:2024-07-08 17:58 A12-SED-0624 | Sediment | Zinc (Zn) | 0.5 | mg/kg | 4.5 | --- |
| B1559551/1 | SD:2024-07-08 17:58 A12-SED-0624 | Sediment | Arsenic (As) | 0.5 | mg/kg | 1.0 | --- |
| B1559551/1 | SD:2024-07-08 17:58 A12-SED-0624 | Sediment | Barium (Ba) | 0.1 | mg/kg | 7.7 | --- |
| B1559551/1 | SD:2024-07-08 17:58 A12-SED-0624 | Sediment | Cadmium (Cd) | 0.1 | mg/kg | <0.1 | --- |
| B1559551/1 | SD:2024-07-08 17:58 A12-SED-0624 | Sediment | Cobalt (Co) | 0.1 | mg/kg | 8.0 | --- |
| B1559551/1 | SD:2024-07-08 17:58 A12-SED-0624 | Sediment | Chromium (Cr) | 0.5 | mg/kg | 4.5 | --- |
| B1559551/1 | SD:2024-07-08 17:58 A12-SED-0624 | Sediment | Copper (Cu) | 0.5 | mg/kg | 4.8 | --- |
| B1559551/1 | SD:2024-07-08 17:58 A12-SED-0624 | Sediment | Silver (Ag) | 0.01 | mg/kg | 0.02 | --- |

| | | | |
|---|---|---|---|
| **Client** | BMT Commercial Australia Pty Ltd | **Job Description** | Sediment |
| **Certificate Number** | B1559551 [R00] | **Order Number** | --- |
| **Page** | 3/11 | **Received Date** | 21/06/2024 15:25 |

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## Analytical Test Results

| Sample ID | Sample Description - *Client/Sampler Supplied* | Matrix | Compound/Analyte | LOR | Units | Result | MRL |
|---|---|---|---|---|---|---|---|
| **IND042 - Metals in Soil - ICP-MS - *Continued*** | | | | | | | |
| B1559551/2 | SD:2024-07-08 17:58 B12-SED-0624 | Sediment | Mercury (Hg) | 0.1 | mg/kg | 0.5 | --- |
| B1559551/2 | SD:2024-07-08 17:58 B12-SED-0624 | Sediment | Manganese (Mn) | 0.5 | mg/kg | 8.9 | --- |
| B1559551/2 | SD:2024-07-08 17:58 B12-SED-0624 | Sediment | Nickel (Ni) | 0.1 | mg/kg | 0.93 | --- |
| B1559551/2 | SD:2024-07-08 17:58 B12-SED-0624 | Sediment | Lead (Pb) | 0.1 | mg/kg | 0.3 | --- |
| B1559551/2 | SD:2024-07-08 17:58 B12-SED-0624 | Sediment | Antimony (Sb) | 0.1 | mg/kg | <0.1 | --- |
| B1559551/2 | SD:2024-07-08 17:58 B12-SED-0624 | Sediment | Selenium (Se) | 0.5 | mg/kg | <0.5 | --- |
| B1559551/2 | SD:2024-07-08 17:58 B12-SED-0624 | Sediment | Vanadium (V) | 0.1 | mg/kg | 1.1 | --- |
| B1559551/2 | SD:2024-07-08 17:58 B12-SED-0624 | Sediment | Zinc (Zn) | 0.5 | mg/kg | 1.6 | --- |
| B1559551/2 | SD:2024-07-08 17:58 B12-SED-0624 | Sediment | Arsenic (As) | 0.5 | mg/kg | 0.9 | --- |
| B1559551/2 | SD:2024-07-08 17:58 B12-SED-0624 | Sediment | Barium (Ba) | 0.1 | mg/kg | 7.6 | --- |
| B1559551/2 | SD:2024-07-08 17:58 B12-SED-0624 | Sediment | Cadmium (Cd) | 0.1 | mg/kg | <0.1 | --- |
| B1559551/2 | SD:2024-07-08 17:58 B12-SED-0624 | Sediment | Cobalt (Co) | 0.1 | mg/kg | 15 | --- |
| B1559551/2 | SD:2024-07-08 17:58 B12-SED-0624 | Sediment | Chromium (Cr) | 0.5 | mg/kg | 3.0 | --- |
| B1559551/2 | SD:2024-07-08 17:58 B12-SED-0624 | Sediment | Copper (Cu) | 0.5 | mg/kg | <0.5 | --- |
| B1559551/2 | SD:2024-07-08 17:58 B12-SED-0624 | Sediment | Silver (Ag) | 0.01 | mg/kg | 0.03 | --- |
| B1559551/3 | SD:2024-07-08 17:58 C12-SED-0624 | Sediment | Mercury (Hg) | 0.1 | mg/kg | 0.4 | --- |
| B1559551/3 | SD:2024-07-08 17:58 C12-SED-0624 | Sediment | Manganese (Mn) | 0.5 | mg/kg | 11 | --- |
| B1559551/3 | SD:2024-07-08 17:58 C12-SED-0624 | Sediment | Nickel (Ni) | 0.1 | mg/kg | 1.2 | --- |
| B1559551/3 | SD:2024-07-08 17:58 C12-SED-0624 | Sediment | Lead (Pb) | 0.1 | mg/kg | 0.4 | --- |
| B1559551/3 | SD:2024-07-08 17:58 C12-SED-0624 | Sediment | Antimony (Sb) | 0.1 | mg/kg | <0.1 | --- |
| B1559551/3 | SD:2024-07-08 17:58 C12-SED-0624 | Sediment | Selenium (Se) | 0.5 | mg/kg | <0.5 | --- |
| B1559551/3 | SD:2024-07-08 17:58 C12-SED-0624 | Sediment | Vanadium (V) | 0.1 | mg/kg | 1.4 | --- |
| B1559551/3 | SD:2024-07-08 17:58 C12-SED-0624 | Sediment | Zinc (Zn) | 0.5 | mg/kg | 1.8 | --- |
| B1559551/3 | SD:2024-07-08 17:58 C12-SED-0624 | Sediment | Arsenic (As) | 0.5 | mg/kg | 1.2 | --- |
| B1559551/3 | SD:2024-07-08 17:58 C12-SED-0624 | Sediment | Barium (Ba) | 0.1 | mg/kg | 7.9 | --- |
| B1559551/3 | SD:2024-07-08 17:58 C12-SED-0624 | Sediment | Cadmium (Cd) | 0.1 | mg/kg | <0.1 | --- |
| B1559551/3 | SD:2024-07-08 17:58 C12-SED-0624 | Sediment | Cobalt (Co) | 0.1 | mg/kg | 6.6 | --- |
| B1559551/3 | SD:2024-07-08 17:58 C12-SED-0624 | Sediment | Chromium (Cr) | 0.5 | mg/kg | 4.0 | --- |
| B1559551/3 | SD:2024-07-08 17:58 C12-SED-0624 | Sediment | Copper (Cu) | 0.5 | mg/kg | 0.7 | --- |

| | | | |
|---|---|---|---|
| **Client** | BMT Commercial Australia Pty Ltd | **Job Description** | Sediment |
| **Certificate Number** | B1559551 [R00] | **Order Number** | --- |
| **Page** | 4/11 | **Received Date** | 21/06/2024 15:25 |

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## Analytical Test Results

| Sample ID | Sample Description - *Client/Sampler Supplied* | Matrix | Compound/Analyte | LOR | Units | Result | MRL |
|---|---|---|---|---|---|---|---|
| **IND042 - Metals in Soil - ICP-MS - *Continued*** | | | | | | | |
| B1559551/3 | SD:2024-07-08 17:58 C12-SED-0624 | Sediment | Silver (Ag) | 0.01 | mg/kg | 0.03 | --- |
| B1559551/4 | SD:2024-07-08 17:58 D12-SED-0624 | Sediment | Mercury (Hg) | 0.1 | mg/kg | 2.0 | --- |
| B1559551/4 | SD:2024-07-08 17:58 D12-SED-0624 | Sediment | Manganese (Mn) | 0.5 | mg/kg | 11 | --- |
| B1559551/4 | SD:2024-07-08 17:58 D12-SED-0624 | Sediment | Nickel (Ni) | 0.1 | mg/kg | 1.5 | --- |
| B1559551/4 | SD:2024-07-08 17:58 D12-SED-0624 | Sediment | Lead (Pb) | 0.1 | mg/kg | 0.4 | --- |
| B1559551/4 | SD:2024-07-08 17:58 D12-SED-0624 | Sediment | Antimony (Sb) | 0.1 | mg/kg | <0.1 | --- |
| B1559551/4 | SD:2024-07-08 17:58 D12-SED-0624 | Sediment | Selenium (Se) | 0.5 | mg/kg | <0.5 | --- |
| B1559551/4 | SD:2024-07-08 17:58 D12-SED-0624 | Sediment | Vanadium (V) | 0.1 | mg/kg | 1.4 | --- |
| B1559551/4 | SD:2024-07-08 17:58 D12-SED-0624 | Sediment | Zinc (Zn) | 0.5 | mg/kg | 1.4 | --- |
| B1559551/4 | SD:2024-07-08 17:58 D12-SED-0624 | Sediment | Arsenic (As) | 0.5 | mg/kg | 1.2 | --- |
| B1559551/4 | SD:2024-07-08 17:58 D12-SED-0624 | Sediment | Barium (Ba) | 0.1 | mg/kg | 8.7 | --- |
| B1559551/4 | SD:2024-07-08 17:58 D12-SED-0624 | Sediment | Cadmium (Cd) | 0.1 | mg/kg | <0.1 | --- |
| B1559551/4 | SD:2024-07-08 17:58 D12-SED-0624 | Sediment | Cobalt (Co) | 0.1 | mg/kg | 89 | --- |
| B1559551/4 | SD:2024-07-08 17:58 D12-SED-0624 | Sediment | Chromium (Cr) | 0.5 | mg/kg | 3.3 | --- |
| B1559551/4 | SD:2024-07-08 17:58 D12-SED-0624 | Sediment | Copper (Cu) | 0.5 | mg/kg | 2.0 | --- |
| B1559551/4 | SD:2024-07-08 17:58 D12-SED-0624 | Sediment | Silver (Ag) | 0.01 | mg/kg | 0.03 | --- |

## Analysis Location

All in-house analysis was completed by Symbio Laboratories - Brisbane.

| | | | |
|---|---|---|---|
| **Client** | BMT Commercial Australia Pty Ltd | **Job Description** | Sediment |
| **Certificate Number** | B1559551 [R00] | **Order Number** | --- |
| **Page** | 5/11 | **Received Date** | 21/06/2024 15:25 |

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## Method Analyte List

| Compound | Unit | LOR |
|---|---|---|
| **ENV104S - Multi-Pesticide Screen (OC/OP/SP) in Soil by GC-MS (USEPA 8270C/SW-846)** | | |
| Herbicides | | |
| 2,4-D | mg/kg | 0.02 |
| 3,4-Dichloroaniline | mg/kg | 0.02 |
| Acetochlor | mg/kg | 0.02 |
| Acifluorfen | mg/kg | 0.02 |
| Alachlor | mg/kg | 0.02 |
| Ametryn | mg/kg | 0.02 |
| Asulam | mg/kg | 0.02 |
| Atrazine | mg/kg | 0.02 |
| Atrazine desethyl | mg/kg | 0.02 |
| Atrazine desisopropyl | mg/kg | 0.02 |
| Bentazone | mg/kg | 0.02 |
| Bromacil | mg/kg | 0.02 |
| Bromoxynil | mg/kg | 0.02 |
| Butroxydim | mg/kg | 0.02 |
| Carfentrazone ethyl | mg/kg | 0.02 |
| Chloroxuron | mg/kg | 0.02 |
| Chlorpropham | mg/kg | 0.02 |
| Chlorsulfuron | mg/kg | 0.02 |
| Chlorthal dimethyl | mg/kg | 0.02 |
| Clethodim | mg/kg | 0.02 |
| Clodinafop (free acid) | mg/kg | 0.02 |
| Clodinafop propargyl | mg/kg | 0.02 |
| Clomazone | mg/kg | 0.02 |
| Cyanazine | mg/kg | 0.02 |
| Cybutryne (Irgarol) | mg/kg | 0.02 |

| Compound | Unit | LOR |
|---|---|---|
| **ENV104S - Multi-Pesticide Screen (OC/OP/SP) in Soil by GC-MS (USEPA 8270C/SW-846) - *Continued*** | | |
| Herbicides - *Continued* | | |
| Dicamba | mg/kg | 0.1 |
| Dichlobenil | mg/kg | 0.02 |
| Dichlorprop methyl | mg/kg | 0.02 |
| Dichlorprop-P | mg/kg | 0.02 |
| Diclofop methyl | mg/kg | 0.02 |
| Diflufenican | mg/kg | 0.02 |
| Dimethenamid | mg/kg | 0.02 |
| Dinoseb | mg/kg | 0.02 |
| Diphenamid | mg/kg | 0.02 |
| Diuron | mg/kg | 0.02 |
| Ethofumesate | mg/kg | 0.02 |
| Fenoprop | mg/kg | 0.02 |
| Flamprop-M-methyl | mg/kg | 0.02 |
| Fluazifop-P (free acid) | mg/kg | 0.02 |
| Fluazifop-P butyl | mg/kg | 0.02 |
| Flumetsulam | mg/kg | 0.02 |
| Flumioxazin | mg/kg | 0.02 |
| Fluometuron | mg/kg | 0.02 |
| Flupropanate | mg/kg | 0.05 |
| Fluroxypyr | mg/kg | 0.05 |
| Haloxyfop | mg/kg | 0.02 |
| Haloxyfop methyl | mg/kg | 0.02 |
| Hexazinone | mg/kg | 0.02 |
| Imazamox | mg/kg | 0.1 |
| Imazapic | mg/kg | 0.1 |

| Compound | Unit | LOR |
|---|---|---|
| **ENV104S - Multi-Pesticide Screen (OC/OP/SP) in Soil by GC-MS (USEPA 8270C/SW-846) - *Continued*** | | |
| Herbicides - *Continued* | | |
| Imazapyr | mg/kg | 0.1 |
| Imazaquin | mg/kg | 0.02 |
| Imazethapyr | mg/kg | 0.05 |
| Iodosulfuron methyl | mg/kg | 0.05 |
| Ioxynil | mg/kg | 0.02 |
| Isoproturon | mg/kg | 0.02 |
| Isoxaben | mg/kg | 0.02 |
| Linuron | mg/kg | 0.02 |
| MCPA | mg/kg | 0.02 |
| MCPP (Mecoprop) | mg/kg | 0.02 |
| Methabenzthiazuron | mg/kg | 0.02 |
| Metolachlor | mg/kg | 0.02 |
| Metosulam | mg/kg | 0.02 |
| Metribuzin | mg/kg | 0.02 |
| Metsulfuron methyl | mg/kg | 0.02 |
| Molinate | mg/kg | 0.02 |
| Napropamide | mg/kg | 0.02 |
| Norflurazon | mg/kg | 0.02 |
| Oryzalin | mg/kg | 0.02 |
| Oxadiazon | mg/kg | 0.02 |
| Oxyfluorfen | mg/kg | 0.02 |
| Pebulate | mg/kg | 0.02 |
| Pendimethalin | mg/kg | 0.02 |
| Picloram | mg/kg | 0.1 |
| Prometryn | mg/kg | 0.02 |

## Method Analyte List

| Compound | Unit | LOR |
|---|---|---|
| ENV104S - Multi-Pesticide Screen (OC/OP/SP) in Soil by GC-MS (USEPA 8270C/SW-846) - *Continued* | | |
| Herbicides - *Continued* | | |
| Propachlor | mg/kg | 0.02 |
| Propanil | mg/kg | 0.02 |
| Propaquizafop | mg/kg | 0.02 |
| Propazine | mg/kg | 0.02 |
| Propyzamide | mg/kg | 0.02 |
| Quizalofop (free acid) | mg/kg | 0.02 |
| Quizalofop ethyl | mg/kg | 0.02 |
| Quizalofop methyl | mg/kg | 0.02 |
| Quizalofop-P tefuryl | mg/kg | 0.02 |
| S-Ethyl dipropylthiocarbamate (EPTC) | mg/kg | 0.02 |
| Saflufenacil | mg/kg | 0.02 |
| Saflufenacil-metabolite (M800H35) | mg/kg | 0.02 |
| Sethoxydim | mg/kg | 0.02 |
| Simazine | mg/kg | 0.02 |
| Tebuthiuron | mg/kg | 0.02 |
| Terbacil | mg/kg | 0.02 |
| Terbuthylazine | mg/kg | 0.02 |
| Terbuthylazine desethyl | mg/kg | 0.02 |
| Terbutryn | mg/kg | 0.02 |
| Tralkoxydim | mg/kg | 0.02 |
| Triallate | mg/kg | 0.02 |
| Triasulfuron | mg/kg | 0.02 |
| Triclopyr | mg/kg | 0.1 |
| Trifloxysulfuron | mg/kg | 0.02 |

| Compound | Unit | LOR |
|---|---|---|
| ENV104S - Multi-Pesticide Screen (OC/OP/SP) in Soil by GC-MS (USEPA 8270C/SW-846) - *Continued* | | |
| Herbicides - *Continued* | | |
| Trifluralin | mg/kg | 0.02 |
| OC | | |
| 2,4,5-T | mg/kg | 0.02 |
| Aldrin | mg/kg | 0.02 |
| BHC-alpha | mg/kg | 0.02 |
| BHC-beta | mg/kg | 0.02 |
| BHC-delta | mg/kg | 0.02 |
| BHC-gamma (Lindane) | mg/kg | 0.02 |
| Chlordane-cis | mg/kg | 0.02 |
| Chlordane-trans | mg/kg | 0.05 |
| DDD-o,p | mg/kg | 0.02 |
| DDD-p,p | mg/kg | 0.02 |
| DDE-o,p | mg/kg | 0.02 |
| DDE-p,p | mg/kg | 0.02 |
| DDT-o,p | mg/kg | 0.02 |
| DDT-p,p | mg/kg | 0.02 |
| Dicofol-o,p | mg/kg | 0.02 |
| Dicofol-p,p | mg/kg | 0.02 |
| Dieldrin | mg/kg | 0.02 |
| Endosulfan sulfate | mg/kg | 0.05 |
| Endosulfan-alpha | mg/kg | 0.02 |
| Endosulfan-beta | mg/kg | 0.05 |
| Endrin | mg/kg | 0.05 |
| Endrin aldehyde | mg/kg | 0.02 |
| Endrin ketone | mg/kg | 0.02 |

| Compound | Unit | LOR |
|---|---|---|
| ENV104S - Multi-Pesticide Screen (OC/OP/SP) in Soil by GC-MS (USEPA 8270C/SW-846) - *Continued* | | |
| OC - *Continued* | | |
| Heptachlor | mg/kg | 0.02 |
| Heptachlor epoxide | mg/kg | 0.02 |
| Hexachlorobenzene | mg/kg | 0.02 |
| Methoxychlor | mg/kg | 0.02 |
| Mirex | mg/kg | 0.02 |
| Oxychlordane | mg/kg | 0.05 |
| Pentachloroaniline | mg/kg | 0.02 |
| Pentachloroanisole | mg/kg | 0.02 |
| Pentachlorothioanisole | mg/kg | 0.02 |
| Quintozene | mg/kg | 0.02 |
| S 421 | mg/kg | 0.02 |
| Tecnazene | mg/kg | 0.02 |
| Trichloronate | mg/kg | 0.02 |
| Triforine | mg/kg | 0.1 |
| OP | | |
| Acephate | mg/kg | 0.05 |
| Azamethiphos | mg/kg | 0.02 |
| Azinphos ethyl | mg/kg | 0.05 |
| Azinphos methyl | mg/kg | 0.1 |
| Bromophos ethyl | mg/kg | 0.02 |
| Bromophos methyl | mg/kg | 0.02 |
| Cadusafos | mg/kg | 0.02 |
| Carbophenothion | mg/kg | 0.05 |
| Chlorfenvinphos | mg/kg | 0.02 |
| Chlorpyrifos | mg/kg | 0.02 |

| | | | |
|---|---|---|---|
| **Client** | BMT Commercial Australia Pty Ltd | **Job Description** | Sediment |
| **Certificate Number** | B1559551 [R00] | **Order Number** | --- |
| **Page** | 7/11 | **Received Date** | 21/06/2024 15:25 |

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## Method Analyte List

| Compound | Unit | LOR |
|---|---|---|
| **ENV104S - Multi-Pesticide Screen (OC/OP/SP) in Soil by GC-MS (USEPA 8270C/SW-846) - *Continued*** | | |
| *OP - Continued* | | |
| Chlorpyrifos methyl | mg/kg | 0.05 |
| Coumaphos | mg/kg | 0.02 |
| Coumaphos oxon | mg/kg | 0.02 |
| Demeton-S methyl | mg/kg | 0.02 |
| Demeton-S sulfone | mg/kg | 0.02 |
| Demeton-S sulfoxide | mg/kg | 0.02 |
| Diazinon | mg/kg | 0.02 |
| Dichlorvos | mg/kg | 0.02 |
| Dimethoate | mg/kg | 0.02 |
| Dioxathion | mg/kg | 0.05 |
| Disulfoton | mg/kg | 0.02 |
| Disulfoton sulfone | mg/kg | 0.02 |
| Disulfoton sulfoxide | mg/kg | 0.02 |
| Ethion | mg/kg | 0.02 |
| Ethoprophos | mg/kg | 0.02 |
| Etrimfos | mg/kg | 0.05 |
| Fenamiphos | mg/kg | 0.02 |
| Fenamiphos sulfone | mg/kg | 0.02 |
| Fenamiphos sulfoxide | mg/kg | 0.02 |
| Fenchlorphos | mg/kg | 0.02 |
| Fenchlorphos oxon | mg/kg | 0.02 |
| Fenitrothion | mg/kg | 0.02 |
| Fensulfothion | mg/kg | 0.02 |
| Fensulfothion oxon | mg/kg | 0.02 |
| Fensulfothion oxon sulfone | mg/kg | 0.02 |

| Compound | Unit | LOR |
|---|---|---|
| **ENV104S - Multi-Pesticide Screen (OC/OP/SP) in Soil by GC-MS (USEPA 8270C/SW-846) - *Continued*** | | |
| *OP - Continued* | | |
| Fensulfothion sulfone | mg/kg | 0.1 |
| Fenthion | mg/kg | 0.02 |
| Fenthion ethyl | mg/kg | 0.02 |
| Fenthion oxon | mg/kg | 0.02 |
| Fenthion oxon sulfone | mg/kg | 0.02 |
| Fenthion oxon sulfoxide | mg/kg | 0.02 |
| Fenthion sulfone | mg/kg | 0.02 |
| Fenthion sulfoxide | mg/kg | 0.02 |
| Malaoxon | mg/kg | 0.02 |
| Malathion | mg/kg | 0.02 |
| Mecarbam | mg/kg | 0.02 |
| Methacrifos | mg/kg | 0.02 |
| Methamidophos | mg/kg | 0.02 |
| Methidathion | mg/kg | 0.02 |
| Mevinphos | mg/kg | 0.02 |
| Monocrotophos | mg/kg | 0.02 |
| Omethoate | mg/kg | 0.02 |
| Paraoxon | mg/kg | 0.02 |
| Paraoxon methyl | mg/kg | 0.02 |
| Parathion | mg/kg | 0.05 |
| Parathion methyl | mg/kg | 0.05 |
| Phorate | mg/kg | 0.02 |
| Phorate oxon | mg/kg | 0.01 |
| Phorate oxon sulfone | mg/kg | 0.01 |
| Phorate oxon sulfoxide | mg/kg | 0.01 |

| Compound | Unit | LOR |
|---|---|---|
| **ENV104S - Multi-Pesticide Screen (OC/OP/SP) in Soil by GC-MS (USEPA 8270C/SW-846) - *Continued*** | | |
| *OP - Continued* | | |
| Phorate sulfone | mg/kg | 0.01 |
| Phorate sulfoxide | mg/kg | 0.01 |
| Phosalone | mg/kg | 0.01 |
| Phosmet | mg/kg | 0.02 |
| Phosmet oxon | mg/kg | 0.02 |
| Phoxim | mg/kg | 0.02 |
| Pirimiphos ethyl | mg/kg | 0.02 |
| Pirimiphos methyl | mg/kg | 0.02 |
| Pirimiphos methyl-N-desethyl | mg/kg | 0.1 |
| Profenofos | mg/kg | 0.02 |
| Prothiofos | mg/kg | 0.02 |
| Quinalphos | mg/kg | 0.02 |
| Sulfotep | mg/kg | 0.02 |
| Sulprofos | mg/kg | 0.05 |
| Temephos | mg/kg | 0.02 |
| Temephos sulfoxide | mg/kg | 0.02 |
| Terbufos | mg/kg | 0.02 |
| Terbufos oxon | mg/kg | 0.02 |
| Terbufos oxon sulfone | mg/kg | 0.02 |
| Terbufos oxon sulfoxide | mg/kg | 0.02 |
| Terbufos sulfone | mg/kg | 0.02 |
| Terbufos sulfoxide | mg/kg | 0.02 |
| Tetrachlorvinphos | mg/kg | 0.02 |
| Tolclofos-methyl | mg/kg | 0.02 |
| Triazophos | mg/kg | 0.02 |

| | | | |
|---|---|---|---|
| **Client** | BMT Commercial Australia Pty Ltd | **Job Description** | Sediment |
| **Certificate Number** | B1559551 [R00] | **Order Number** | --- |
| **Page** | 8/11 | **Received Date** | 21/06/2024 15:25 |

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## Method Analyte List

| Compound | Unit | LOR |
|---|---|---|
| ENV104S - Multi-Pesticide Screen (OC/OP/SP) in Soil by GC-MS (USEPA 8270C/SW-846) - *Continued* | | |
| OP - *Continued* | | |
| Trichlorfon | mg/kg | 0.02 |
| Vamidothion | mg/kg | 0.02 |
| Other Residue | | |
| 2,4,6-Trichlorophenol (Prochloraz Met.) | mg/kg | 0.02 |
| 2-Aminobenzimidazole | mg/kg | 0.02 |
| 2-Phenylphenol | mg/kg | 0.02 |
| 6-Benzylaminopurine | mg/kg | 0.02 |
| 6-Chloronicotinic acid | mg/kg | 0.05 |
| Acetamiprid | mg/kg | 0.02 |
| Afidopyropen | mg/kg | 0.02 |
| Aldicarb | mg/kg | 0.02 |
| Aldicarb sulfone | mg/kg | 0.02 |
| Aldicarb sulfoxide | mg/kg | 0.02 |
| Amitraz-Metabolite (BTS27271) | mg/kg | 0.02 |
| Azaconazole | mg/kg | 0.02 |
| Azoxystrobin | mg/kg | 0.02 |
| Benalaxyl | mg/kg | 0.02 |
| Bendiocarb | mg/kg | 0.02 |
| Benzo[a]pyrene | mg/kg | 0.02 |
| Bifenazate diazene | mg/kg | 0.02 |
| Bitertanol | mg/kg | 0.02 |
| Boscalid | mg/kg | 0.02 |
| Brodifacoum | mg/kg | 0.02 |
| Bromopropylate | mg/kg | 0.02 |

| Compound | Unit | LOR |
|---|---|---|
| ENV104S - Multi-Pesticide Screen (OC/OP/SP) in Soil by GC-MS (USEPA 8270C/SW-846) - *Continued* | | |
| Other Residue - *Continued* | | |
| Bupirimate | mg/kg | 0.02 |
| Buprofezin | mg/kg | 0.02 |
| Carbaryl | mg/kg | 0.02 |
| Carbendazim | mg/kg | 0.02 |
| Carbofuran | mg/kg | 0.02 |
| Carbofuran 3-hydroxy | mg/kg | 0.02 |
| Carboxin | mg/kg | 0.02 |
| Chlorantraniliprole | mg/kg | 0.02 |
| Chlorfenapyr | mg/kg | 0.1 |
| Chlorfluazuron | mg/kg | 0.02 |
| Chlorothalonil | mg/kg | 0.05 |
| Chlorothalonil 4-hydroxy | mg/kg | 0.02 |
| Clofentezine | mg/kg | 0.02 |
| Clothianidin | mg/kg | 0.02 |
| Cyantraniliprole | mg/kg | 0.05 |
| Cyazofamid | mg/kg | 0.1 |
| Cyflufenamid | mg/kg | 0.02 |
| Cyproconazole | mg/kg | 0.02 |
| Cyprodinil | mg/kg | 0.02 |
| Diafenthiuron | mg/kg | 0.05 |
| Diafenthiuron urea | mg/kg | 0.02 |
| Dichloran | mg/kg | 0.05 |
| Difenoconazole | mg/kg | 0.02 |
| Diflubenzuron | mg/kg | 0.02 |
| Dimethomorph | mg/kg | 0.02 |

| Compound | Unit | LOR |
|---|---|---|
| ENV104S - Multi-Pesticide Screen (OC/OP/SP) in Soil by GC-MS (USEPA 8270C/SW-846) - *Continued* | | |
| Other Residue - *Continued* | | |
| Diphenylamine | mg/kg | 0.02 |
| Dithianon | mg/kg | 0.1 |
| Dodine | mg/kg | 0.02 |
| Emamectin | mg/kg | 0.02 |
| Epoxiconazole | mg/kg | 0.02 |
| Etridiazole | mg/kg | 0.02 |
| Fenarimol | mg/kg | 0.02 |
| Fenbuconazole | mg/kg | 0.02 |
| Fenbutatin oxide (NR) | mg/kg | 0.1 |
| Fenhexamid | mg/kg | 0.02 |
| Fenoxycarb | mg/kg | 0.02 |
| Fenpropathrin | mg/kg | 0.05 |
| Fenpropidin | mg/kg | 0.02 |
| Fenpropimorph | mg/kg | 0.02 |
| Fenpyrazamine | mg/kg | 0.1 |
| Fenpyroximate | mg/kg | 0.02 |
| Fipronil | mg/kg | 0.02 |
| Fipronil desulfinyl | mg/kg | 0.02 |
| Fipronil sulfide | mg/kg | 0.02 |
| Fipronil sulfone | mg/kg | 0.02 |
| Flonicamid | mg/kg | 0.02 |
| Flonicamid-metabolite (TFNA) | mg/kg | 0.1 |
| Flonicamid-metabolite (TFNA-AM) | mg/kg | 0.02 |
| Fluazinam | mg/kg | 0.02 |
| Fluazuron | mg/kg | 0.02 |

## Method Analyte List

| Compound | Unit | LOR |
|---|---|---|
| **ENV104S - Multi-Pesticide Screen (OC/OP/SP) in Soil by GC-MS (USEPA 8270C/SW-846) - *Continued*** | | |
| Other Residue - *Continued* | | |
| Flubendiamide | mg/kg | 0.02 |
| Fludioxonil | mg/kg | 0.02 |
| Fluensulfone | mg/kg | 0.02 |
| Fluopicolide | mg/kg | 0.02 |
| Fluopyram | mg/kg | 0.02 |
| Fluquinconazole | mg/kg | 0.02 |
| Flusilazole | mg/kg | 0.02 |
| Flutriafol | mg/kg | 0.02 |
| Fluvalinate | mg/kg | 0.1 |
| Fluxapyroxad | mg/kg | 0.02 |
| Folpet | mg/kg | 0.05 |
| Fonofos | mg/kg | 0.02 |
| Furathiocarb | mg/kg | 0.02 |
| Hexaconazole | mg/kg | 0.02 |
| Hexythiazox | mg/kg | 0.02 |
| Imazalil | mg/kg | 0.02 |
| Imidacloprid | mg/kg | 0.02 |
| Imidacloprid 5-hydroxy | mg/kg | 0.02 |
| Indoxacarb | mg/kg | 0.02 |
| Ipconazole | mg/kg | 0.02 |
| Isoprothiolane | mg/kg | 0.02 |
| Kresoxim methyl | mg/kg | 0.02 |
| Mandestrobin | mg/kg | 0.02 |
| Mandipropamid | mg/kg | 0.02 |

| Compound | Unit | LOR |
|---|---|---|
| **ENV104S - Multi-Pesticide Screen (OC/OP/SP) in Soil by GC-MS (USEPA 8270C/SW-846) - *Continued*** | | |
| Other Residue - *Continued* | | |
| Methiocarb | mg/kg | 0.05 |
| Methiocarb sulfone | mg/kg | 0.02 |
| Methiocarb sulfoxide | mg/kg | 0.02 |
| Methomyl | mg/kg | 0.1 |
| Methomyl Oxime | mg/kg | 0.02 |
| Methoxyfenozide | mg/kg | 0.05 |
| Metrafenone | mg/kg | 0.02 |
| Myclobutanil | mg/kg | 0.02 |
| N-Isopropylaniline | mg/kg | 0.05 |
| Novaluron | mg/kg | 0.02 |
| Oxadixyl | mg/kg | 0.02 |
| Oxamyl | mg/kg | 0.1 |
| Oxathiapiprolin | mg/kg | 0.02 |
| Oxycarboxin | mg/kg | 0.02 |
| Paclobutrazol | mg/kg | 0.02 |
| Penconazole | mg/kg | 0.02 |
| Penthiopyrad | mg/kg | 0.02 |
| Phosphamidon | mg/kg | 0.02 |
| Piperonyl butoxide | mg/kg | 0.02 |
| Pirimicarb | mg/kg | 0.02 |
| Pirimicarb desmethyl | mg/kg | 0.02 |
| Pirimicarb desmethyl formamido | mg/kg | 0.05 |
| Prochloraz | mg/kg | 0.02 |
| Procymidone | mg/kg | 0.02 |

| Compound | Unit | LOR |
|---|---|---|
| **ENV104S - Multi-Pesticide Screen (OC/OP/SP) in Soil by GC-MS (USEPA 8270C/SW-846) - *Continued*** | | |
| Other Residue - *Continued* | | |
| Propargite | mg/kg | 0.02 |
| Propiconazole | mg/kg | 0.02 |
| Propoxur | mg/kg | 0.05 |
| Proquinazid | mg/kg | 0.02 |
| Prothioconazole | mg/kg | 0.02 |
| Prothioconazole desthio | mg/kg | 0.02 |
| Pymetrozine | mg/kg | 0.1 |
| Pyraclostrobin | mg/kg | 0.02 |
| Pyrethrum (Cinerin-I) | mg/kg | 0.1 |
| Pyrethrum (Pyrethrin-I) | mg/kg | 0.05 |
| Pyrethrum (Pyrethrin-II) | mg/kg | 0.05 |
| Pyridaben | mg/kg | 0.02 |
| Pyrimethanil | mg/kg | 0.02 |
| Pyriofenone | mg/kg | 0.02 |
| Pyriproxyfen | mg/kg | 0.02 |
| Quinoxyfen | mg/kg | 0.02 |
| Safrole | mg/kg | 0.02 |
| Sedaxane | mg/kg | 0.02 |
| Spinetoram J | mg/kg | 0.02 |
| Spinetoram L | mg/kg | 0.02 |
| Spinosyn A | mg/kg | 0.02 |
| Spinosyn D | mg/kg | 0.02 |
| Spirotetramat | mg/kg | 0.02 |
| Spirotetramat-metabolite BYI088030-cis-enol | mg/kg | 0.02 |

| | | | |
|---|---|---|---|
| **Client** | BMT Commercial Australia Pty Ltd | **Job Description** | Sediment |
| **Certificate Number** | B1559551 [R00] | **Order Number** | --- |
| **Page** | 10/11 | **Received Date** | 21/06/2024 15:25 |

Symbio LABORATORIES quality solutions assured

## Method Analyte List

| Compound | Unit | LOR |
|---|---|---|
| **ENV104S - Multi-Pesticide Screen (OC/OP/SP) in Soil by GC-MS (USEPA 8270C/SW-846) - *Continued*** | | |
| Other Residue - *Continued* | | |
| Spiroxamine | mg/kg | 0.02 |
| Sulfoxaflor | mg/kg | 0.05 |
| Tebuconazole | mg/kg | 0.02 |
| Tebufenozide | mg/kg | 0.02 |
| Tebufenpyrad | mg/kg | 0.02 |
| Tetraconazole | mg/kg | 0.02 |
| Tetradifon | mg/kg | 0.05 |
| Tetramethrin | mg/kg | 0.02 |
| Thiabendazole | mg/kg | 0.02 |
| Thiacloprid | mg/kg | 0.02 |
| Thiamethoxam | mg/kg | 0.02 |
| Thiodicarb | mg/kg | 0.02 |
| Thiophanate methyl | mg/kg | 0.02 |
| Tolylfluanid | mg/kg | 0.02 |
| Triadimefon | mg/kg | 0.02 |
| Triadimenol | mg/kg | 0.02 |
| Tridemorph | mg/kg | 0.02 |
| Trifloxystrobin | mg/kg | 0.02 |
| Triflumuron | mg/kg | 0.05 |
| Triticonazole | mg/kg | 0.02 |
| Uniconazole-P | mg/kg | 0.02 |
| Vinclozolin | mg/kg | 0.02 |
| Others | | |
| Aldicarb Total | mg/kg | 0.01 |
| Ametryn Total | mg/kg | 0.01 |

| Compound | Unit | LOR |
|---|---|---|
| **ENV104S - Multi-Pesticide Screen (OC/OP/SP) in Soil by GC-MS (USEPA 8270C/SW-846) - *Continued*** | | |
| Others - *Continued* | | |
| Atrazine Total | mg/kg | 0.01 |
| Bifenazate Total | mg/kg | 0.01 |
| Carbendazim Total | mg/kg | 0.01 |
| Carbofuran Total | mg/kg | 0.01 |
| Chlordane Total | mg/kg | 0.05 |
| Chlorothalonil Total | mg/kg | 0.01 |
| DDT Total | mg/kg | 0.01 |
| Dicofol Total | mg/kg | 0.01 |
| Dimethoate Total | mg/kg | 0.01 |
| Disulfoton Total | mg/kg | 0.01 |
| Diuron Total | mg/kg | 0.01 |
| Endosulfan Total | mg/kg | 0.01 |
| Endrin Total | mg/kg | 0.01 |
| Fenamiphos Total | mg/kg | 0.01 |
| Fenchlorphos Total | mg/kg | 0.01 |
| Fensulfothion Total | mg/kg | 0.01 |
| Fenthion Total | mg/kg | 0.01 |
| Fipronil Total | mg/kg | 0.01 |
| Flonicamid Total | mg/kg | 0.01 |
| Haloxyfop Total | mg/kg | 0.01 |
| Heptachlor Total | mg/kg | 0.01 |
| Imidacloprid Total | mg/kg | 0.01 |
| Linuron Total | mg/kg | 0.01 |
| Methiocarb Total | mg/kg | 0.01 |
| Nonachlor Total | mg/kg | 0.01 |

| Compound | Unit | LOR |
|---|---|---|
| **ENV104S - Multi-Pesticide Screen (OC/OP/SP) in Soil by GC-MS (USEPA 8270C/SW-846) - *Continued*** | | |
| Others - *Continued* | | |
| Phorate Total | mg/kg | 0.01 |
| Phosmet Total | mg/kg | 0.01 |
| Pirimicarb Total | mg/kg | 0.01 |
| Prochloraz Total | mg/kg | 0.01 |
| Prothioconazole Total | mg/kg | 0.01 |
| Pyrethrum Total | mg/kg | 0.01 |
| Quintozene Total | mg/kg | 0.01 |
| Saflufenacil Total | mg/kg | 0.01 |
| Spinetoram Total | mg/kg | 0.01 |
| Spinosad Total | mg/kg | 0.01 |
| Spirotetramat Total | mg/kg | 0.01 |
| Temephos Total | mg/kg | 0.01 |
| Terbufos Total | mg/kg | 0.01 |
| Thiodicarb Total | mg/kg | 0.01 |
| Triadimefon Total | mg/kg | 0.01 |
| SP | | |
| 4-Chlorophenoxyacetic acid | mg/kg | 0.02 |
| Bifenthrin | mg/kg | 0.02 |
| Bioresmethrin | mg/kg | 0.02 |
| Cyfluthrin (sum of isomers) | mg/kg | 0.05 |
| Cyhalothrin | mg/kg | 0.02 |
| Cypermethrin (sum of isomers) | mg/kg | 0.02 |
| Deltamethrin (sum of isomers) | mg/kg | 0.05 |
| Fenvalerate (sum of isomers) | mg/kg | 0.05 |
| Flucythrinate (sum of isomers) | mg/kg | 0.02 |

## Method Analyte List

| Compound | Unit | LOR |
|---|---|---|
| **ENV104S - Multi-Pesticide Screen (OC/OP/SP) in Soil by GC-MS (USEPA 8270C/SW-846) - *Continued*** | | |
| **SP - *Continued*** | | |
| Permethrin (sum of isomers) | mg/kg | 0.02 |
| Phenothrin (sum of isomers) | mg/kg | 0.02 |
| Tau-Fluvalinate (sum of isomers) | mg/kg | 0.05 |

# Symbio LABORATORIES

## CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Certificate Number** | B1559551-B [R00] | **Page** | 1/2 |
| **Client** | BMT Commercial Australia Pty Ltd | **Registering Laboratory** | Brisbane |
| **Contact** | Katherine Bailey | **Contact** | Customer Service Team |
| **Address** | Level 8 200 Creek Street Brisbane QLD 4000 | **Address** | 52 Brandl Street, Eight Mile Plains, QLD 4113 |
| | | **Email** | admin@symbiolabs.com.au |
| **Telephone** | 07 3831 6744 | **Telephone** | 1300 703 166 |
| **Order Number** | --- | **Date Samples Received** | 21/06/2024 15:25 |
| **Project ID** | Sediment | **Date Analysis Commenced** | 08/07/2024 |
| **Sampler** | Customer | **Issue Date** | 15/08/2024 |
| **Client Job Reference** | --- | **Receipt Temperature (°C)** | 22.5 |
| **No. of Samples Registered** | 4 \| Sampler: Customer | **Storage Temperature (°C)** | 21 |
| **Priority** | Normal | **Quote Number** | --- |

Symbio LABORATORIES
quality solutions assured
**ABN: 82 079 645 015**

NATA
Accreditation No: 2455
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous revision with this reference. This document must not be reproduced, except in full. If samples were provided by the customer, results apply only to the samples 'as received' and responsibility for representative sampling rests with the customer. Water results are reported on an 'as is' basis. Soil and sediment results are reported on a 'dry weight' basis. For other matrices the basis of reporting will be confirmed in the 'Report Comments' section. Measurement Uncertainty is available upon request. If the laboratory was authorised to conduct testing on samples received outside of the specified conditions, all test results may be impacted. Details of samples received outside of the specified conditions are mentioned in the sample description section of this test report.

### Definitions

| <: Less Than | >: Greater Than | RP: Result Pending | MPN: Most Probable Number | CFU: Colony Forming Units | ---: Not Received/Not Requested | NA: Not Applicable | ND: Not Detected | LOR: Limit of Reporting | [NT]: Not Tested |

| ~: Estimated | ^ Subcontracted Analysis | TBA: To Be Advised | + Client Specified Limit | ** Potential Holding Time Concern | * Test not covered by NATA scope of accreditation | # Result derived from a calculation and includes results equal to or greater than the LOR |

### Authorised By

| Name | Position | Accreditation Category |
|---|---|---|
| Hongmei Kuang | Chemistry Laboratory Manager, Sydney, Brisbane & Melbourne | Environmental and Food Chemistry |

### Sample Information - *Client/Sampler Supplied*

| Sample ID | B1559551-B/1 | B1559551-B/2 | B1559551-B/3 | B1559551-B/4 |
|---|---|---|---|---|
| Sample Description | A12-SED-0624 | B12-SED-0624 | C12-SED-0624 | D12-SED-0624 |

| | | | |
|---|---|---|---|
| **Client** | BMT Commercial Australia Pty Ltd | **Project ID** | Sediment |
| **Certificate Number** | B1559551-B [R00] | **Sampler** | Customer |
| **Page** | 2/2 | **Order Number** | --- |

## Analytical Results

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | **Client Sample Description** | A12-SED-0624 | B12-SED-0624 | C12-SED-0624 | D12-SED-0624 |
| | | | **Client Sampling date/time** | --- | --- | --- | --- |
| **Compound/Analyte** | **LOR** | **Limit Range+** | **Units** | **B1559551-B/1** | **B1559551-B/2** | **B1559551-B/3** | **B1559551-B/4** |
| | | | | **Results** | **Results** | **Results** | **Results** |
| **Determination of Organotins in Sediment/Soil by GCMS** | | | | | | | |
| **Determination of Organotins in Biota by GCMS** | | | | | | | |
| Monobutyltin (MBT as Sn) | 5 | --- | µgSn/kg | <5.0 | <0.5 | <5.0 | <5.0 |
| Dibutyltin (DBT as Sn) | 2.5 | --- | µgSn/kg | 2.9 | <0.5 | <0.5 | <0.5 |
| Tributyltin (TBT as Sn) | 0.5 | --- | µgSn/kg | 6.0 | 1.2 | 3.0 | 1.2 |
| Tripropyltin (SUR) * | --- | --- | % | 100.0 | 87.0 | 101.0 | 101.0 |
| Monobutyltin (MBT) | 0.007 | --- | µg/kg | <0.007 | <0.007 | <0.007 | <0.007 |
| Dibutyltin (DBT) | 0.01 | --- | µg/kg | 4.30 | <0.01 | <0.01 | <0.01 |
| Tributyltin (TBT) | 0.01 | --- | µg/kg | 8.89 | 1.78 | 4.44 | 1.78 |

## Analysis Location

All in-house analysis was completed by Symbio Laboratories - Subcontract Laboratory.

# REPORT OF ANALYSIS



| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240515 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 15-MAY-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/010519 | A1-FIS-0524 | BIOTA 12.05.2024 |
| N24/010520 | A2-FIS-0524 | BIOTA 12.05.2024 |
| N24/010521 | A3-FIS-0524 | BIOTA 12.05.2024 |
| N24/010522 | A4-FIS-0524 | BIOTA 12.05.2024 |

| Lab Reg No. | Units | N24/010519 | N24/010520 | N24/010521 | N24/010522 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 12-MAY-2024 | 12-MAY-2024 | 12-MAY-2024 | 12-MAY-2024 | |
| Sample Reference | | A1-FIS-0524 | A2-FIS-0524 | A3-FIS-0524 | A4-FIS-0524 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 144 | 113 | 136 | 105 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | |
| Date analysed | | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | |

Luke Baker, Analyst
Organics - NSW
Accreditation No. 198

12-JUN-2024

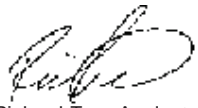
| Lab Reg No. | Units | N24/010519 | N24/010520 | N24/010521 | N24/010522 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 12-MAY-2024 | 12-MAY-2024 | 12-MAY-2024 | 12-MAY-2024 | |
| Sample Reference | | A1-FIS-0524 | A2-FIS-0524 | A3-FIS-0524 | A4-FIS-0524 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.4 | 0.18 | 0.16 | 0.21 | NT2_46 |
| Zinc | mg/kg | 3.6 | 3 | 2.5 | 3.9 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 5-JUN-2024 | 5-JUN-2024 | 5-JUN-2024 | 5-JUN-2024 | |
| Date analysed | | 6-JUN-2024 | 6-JUN-2024 | 6-JUN-2024 | 6-JUN-2024 | |

# REPORT OF ANALYSIS



Report No. RN1431354

| Lab Reg No. | | N24/010519 | N24/010520 | N24/010521 | N24/010522 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 12-MAY-2024 | 12-MAY-2024 | 12-MAY-2024 | 12-MAY-2024 | |
| Sample Reference | | A1-FIS-0524 | A2-FIS-0524 | A3-FIS-0524 | A4-FIS-0524 | |
| | Units | | | | | Method |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUN-2024

# REPORT OF ANALYSIS



Report No. RN1431354

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240515 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 15-MAY-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/010523 | A5-FIS-0524 | BIOTA 12.05.2024 |
| N24/010524 | B1-FIS-0524 | BIOTA 12.05.2024 |
| N24/010525 | B2-FIS-0524 | BIOTA 12.05.2024 |
| N24/010526 | B3-FIS-0524 | BIOTA 12.05.2024 |

| Lab Reg No. | Units | N24/010523 | N24/010524 | N24/010525 | N24/010526 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 12-MAY-2024 | 12-MAY-2024 | 12-MAY-2024 | 12-MAY-2024 | |
| Sample Reference | | A5-FIS-0524 | B1-FIS-0524 | B2-FIS-0524 | B3-FIS-0524 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 149 | 119 | 119 | 142 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | |
| Date analysed | | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | |



Luke Baker, Analyst
Organics - NSW
Accreditation No. 198

12-JUN-2024

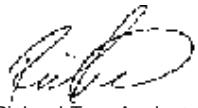
| Lab Reg No. | Units | N24/010523 | N24/010524 | N24/010525 | N24/010526 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 12-MAY-2024 | 12-MAY-2024 | 12-MAY-2024 | 12-MAY-2024 | |
| Sample Reference | | A5-FIS-0524 | B1-FIS-0524 | B2-FIS-0524 | B3-FIS-0524 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.17 | 0.13 | 0.091 | 0.18 | NT2_46 |
| Zinc | mg/kg | 3.7 | 2.5 | 2.7 | 2.7 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 5-JUN-2024 | 5-JUN-2024 | 5-JUN-2024 | 5-JUN-2024 | |
| Date analysed | | 6-JUN-2024 | 6-JUN-2024 | 6-JUN-2024 | 6-JUN-2024 | |

# REPORT OF ANALYSIS



Report No. RN1431354

| Lab Reg No. | | N24/010523 | N24/010524 | N24/010525 | N24/010526 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 12-MAY-2024 | 12-MAY-2024 | 12-MAY-2024 | 12-MAY-2024 | |
| Sample Reference | | A5-FIS-0524 | B1-FIS-0524 | B2-FIS-0524 | B3-FIS-0524 | |
| | Units | | | | | Method |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUN-2024

# REPORT OF ANALYSIS



Report No. RN1431354

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240515 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 15-MAY-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/010527 | B4-FIS-0524 | BIOTA 12.05.2024 |
| N24/010528 | B5-FIS-0524 | BIOTA 12.05.2024 |
| N24/010529 | C1-FIS-0524 | BIOTA 12.05.2024 |
| N24/010530 | C2-FIS-0524 | BIOTA 13.05.2024 |

| Lab Reg No. | Units | N24/010527 | N24/010528 | N24/010529 | N24/010530 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 12-MAY-2024 | 12-MAY-2024 | 12-MAY-2024 | 13-MAY-2024 | |
| Sample Reference | | B4-FIS-0524 | B5-FIS-0524 | C1-FIS-0524 | C2-FIS-0524 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 125 | 92 | 138 | 144 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | |
| Date analysed | | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | |

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Accreditation No. 198

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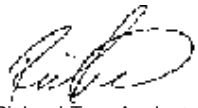
| Lab Reg No. | Units | N24/010527 | N24/010528 | N24/010529 | N24/010530 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 12-MAY-2024 | 12-MAY-2024 | 12-MAY-2024 | 13-MAY-2024 | |
| Sample Reference | | B4-FIS-0524 | B5-FIS-0524 | C1-FIS-0524 | C2-FIS-0524 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.17 | 0.11 | 0.11 | 0.19 | NT2_46 |
| Zinc | mg/kg | 7.9 | 2.7 | 2.8 | 3.2 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 5-JUN-2024 | 5-JUN-2024 | 5-JUN-2024 | 5-JUN-2024 | |
| Date analysed | | 6-JUN-2024 | 6-JUN-2024 | 6-JUN-2024 | 6-JUN-2024 | |

# REPORT OF ANALYSIS



Report No. RN1431354

| Lab Reg No. | | N24/010527 | N24/010528 | N24/010529 | N24/010530 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 12-MAY-2024 | 12-MAY-2024 | 12-MAY-2024 | 13-MAY-2024 | |
| Sample Reference | | B4-FIS-0524 | B5-FIS-0524 | C1-FIS-0524 | C2-FIS-0524 | |
| | Units | | | | | Method |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUN-2024

# REPORT OF ANALYSIS



Report No. RN1431354

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240515 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 15-MAY-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/010531 | C3-FIS-0524 | BIOTA 13.05.2024 |
| N24/010532 | C4-FIS-0524 | BIOTA 13.05.2024 |
| N24/010533 | C5-FIS-0524 | BIOTA 13.05.2024 |
| N24/010534 | D1-FIS-0524 | BIOTA 12.05.2024 |

| Lab Reg No. | Units | N24/010531 | N24/010532 | N24/010533 | N24/010534 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 13-MAY-2024 | 13-MAY-2024 | 13-MAY-2024 | 12-MAY-2024 | |
| Sample Reference | | C3-FIS-0524 | C4-FIS-0524 | C5-FIS-0524 | D1-FIS-0524 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 132 | 145 | 137 | 141 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | |
| Date analysed | | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | |



Luke Baker, Analyst
Organics - NSW
Accreditation No. 198

12-JUN-2024

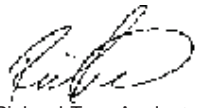
| Lab Reg No. | Units | N24/010531 | N24/010532 | N24/010533 | N24/010534 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 13-MAY-2024 | 13-MAY-2024 | 13-MAY-2024 | 12-MAY-2024 | |
| Sample Reference | | C3-FIS-0524 | C4-FIS-0524 | C5-FIS-0524 | D1-FIS-0524 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.11 | 0.25 | 0.098 | 0.31 | NT2_46 |
| Zinc | mg/kg | 3 | 2.9 | 2.3 | 2.6 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 5-JUN-2024 | 5-JUN-2024 | 5-JUN-2024 | 5-JUN-2024 | |
| Date analysed | | 6-JUN-2024 | 6-JUN-2024 | 6-JUN-2024 | 6-JUN-2024 | |

# REPORT OF ANALYSIS



Report No. RN1431354

| Lab Reg No. | | N24/010531 | N24/010532 | N24/010533 | N24/010534 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 13-MAY-2024 | 13-MAY-2024 | 13-MAY-2024 | 12-MAY-2024 | |
| Sample Reference | | C3-FIS-0524 | C4-FIS-0524 | C5-FIS-0524 | D1-FIS-0524 | |
| | Units | | | | | Method |



Richard Tea, Analyst
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Accreditation No. 198

12-JUN-2024

# REPORT OF ANALYSIS



Report No. RN1431354

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240515 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 15-MAY-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/010535 | D2-FIS-0524 | BIOTA 12.05.2024 |
| N24/010536 | D3-FIS-0524 | BIOTA 13.05.2024 |
| N24/010537 | D4-FIS-0524 | BIOTA 13.05.2024 |
| N24/010538 | D5-FIS-0524 | BIOTA 13.05.2024 |

| Lab Reg No. | Units | N24/010535 | N24/010536 | N24/010537 | N24/010538 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 12-MAY-2024 | 13-MAY-2024 | 13-MAY-2024 | 13-MAY-2024 | |
| Sample Reference | | D2-FIS-0524 | D3-FIS-0524 | D4-FIS-0524 | D5-FIS-0524 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 143 | 127 | 148 | 139 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | |
| Date analysed | | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | |



Luke Baker, Analyst
Organics - NSW
Accreditation No. 198

12-JUN-2024

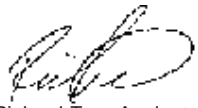
| Lab Reg No. | Units | N24/010535 | N24/010536 | N24/010537 | N24/010538 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 12-MAY-2024 | 13-MAY-2024 | 13-MAY-2024 | 13-MAY-2024 | |
| Sample Reference | | D2-FIS-0524 | D3-FIS-0524 | D4-FIS-0524 | D5-FIS-0524 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.14 | 0.12 | 0.1 | 0.19 | NT2_46 |
| Zinc | mg/kg | 2.7 | 3.8 | 2.5 | 5.1 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 5-JUN-2024 | 5-JUN-2024 | 5-JUN-2024 | 5-JUN-2024 | |
| Date analysed | | 6-JUN-2024 | 6-JUN-2024 | 6-JUN-2024 | 6-JUN-2024 | |

# REPORT OF ANALYSIS



Report No. RN1431354

| Lab Reg No. | | N24/010535 | N24/010536 | N24/010537 | N24/010538 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 12-MAY-2024 | 13-MAY-2024 | 13-MAY-2024 | 13-MAY-2024 | |
| Sample Reference | | D2-FIS-0524 | D3-FIS-0524 | D4-FIS-0524 | D5-FIS-0524 | |
| | Units | | | | | Method |



Richard Tea, Analyst
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Accreditation No. 198

12-JUN-2024

# REPORT OF ANALYSIS



Report No. RN1431354

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240515 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 15-MAY-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/010539 | E1-FIS-0524 | BIOTA 12.05.2024 |
| N24/010540 | E2-FIS-0524 | BIOTA 12.05.2024 |
| N24/010541 | E3-FIS-0524 | BIOTA 12.05.2024 |
| N24/010542 | E4-FIS-0524 | BIOTA 12.05.2024 |

| Lab Reg No. | Units | N24/010539 | N24/010540 | N24/010541 | N24/010542 | Method |
|---|---|---|---|---|---|---|
| **Date Sampled** | | 12-MAY-2024 | 12-MAY-2024 | 12-MAY-2024 | 12-MAY-2024 | |
| **Sample Reference** | | E1-FIS-0524 | E2-FIS-0524 | E3-FIS-0524 | E4-FIS-0524 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 131 | 109 | 126 | 124 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | |
| Date analysed | | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | |



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Accreditation No. 198

12-JUN-2024

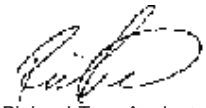
| Lab Reg No. | Units | N24/010539 | N24/010540 | N24/010541 | N24/010542 | Method |
|---|---|---|---|---|---|---|
| **Date Sampled** | | 12-MAY-2024 | 12-MAY-2024 | 12-MAY-2024 | 12-MAY-2024 | |
| **Sample Reference** | | E1-FIS-0524 | E2-FIS-0524 | E3-FIS-0524 | E4-FIS-0524 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.59 | 0.12 | 0.38 | 0.14 | NT2_46 |
| Zinc | mg/kg | 5.7 | 3.3 | 3.7 | 2.6 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 5-JUN-2024 | 5-JUN-2024 | 5-JUN-2024 | 5-JUN-2024 | |
| Date analysed | | 6-JUN-2024 | 6-JUN-2024 | 6-JUN-2024 | 6-JUN-2024 | |

# REPORT OF ANALYSIS



Report No. RN1431354

| Lab Reg No. | | N24/010539 | N24/010540 | N24/010541 | N24/010542 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 12-MAY-2024 | 12-MAY-2024 | 12-MAY-2024 | 12-MAY-2024 | |
| Sample Reference | | E1-FIS-0524 | E2-FIS-0524 | E3-FIS-0524 | E4-FIS-0524 | |
| | Units | | | | | Method |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUN-2024

# REPORT OF ANALYSIS



Report No. RN1431354

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240515 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 15-MAY-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/010543 | E5-FIS-0524 | BIOTA 12.05.2024 |
| N24/010544 | G1-FIS-0524 | BIOTA 12.05.2024 |
| N24/010545 | G2-FIS-0524 | BIOTA 12.05.2024 |
| N24/010546 | G3-FIS-0524 | BIOTA 12.05.2024 |

| Lab Reg No. | Units | N24/010543 | N24/010544 | N24/010545 | N24/010546 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 12-MAY-2024 | 12-MAY-2024 | 12-MAY-2024 | 12-MAY-2024 | |
| Sample Reference | | E5-FIS-0524 | G1-FIS-0524 | G2-FIS-0524 | G3-FIS-0524 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 124 | 110 | 107 | 104 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | |
| Date analysed | | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | |

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Accreditation No. 198

12-JUN-2024

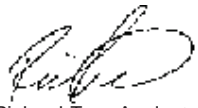
| Lab Reg No. | Units | N24/010543 | N24/010544 | N24/010545 | N24/010546 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 12-MAY-2024 | 12-MAY-2024 | 12-MAY-2024 | 12-MAY-2024 | |
| Sample Reference | | E5-FIS-0524 | G1-FIS-0524 | G2-FIS-0524 | G3-FIS-0524 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.17 | 0.26 | 7.4 | 0.14 | NT2_46 |
| Zinc | mg/kg | 3.1 | 2.8 | 3.1 | 2.8 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 5-JUN-2024 | 5-JUN-2024 | 5-JUN-2024 | 5-JUN-2024 | |
| Date analysed | | 6-JUN-2024 | 6-JUN-2024 | 6-JUN-2024 | 6-JUN-2024 | |

# REPORT OF ANALYSIS



Report No. RN1431354

| Lab Reg No. | | N24/010543 | N24/010544 | N24/010545 | N24/010546 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 12-MAY-2024 | 12-MAY-2024 | 12-MAY-2024 | 12-MAY-2024 | |
| Sample Reference | | E5-FIS-0524 | G1-FIS-0524 | G2-FIS-0524 | G3-FIS-0524 | |
| | Units | | | | | Method |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUN-2024

# REPORT OF ANALYSIS



Report No. RN1431354

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240515 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 15-MAY-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/010547 | G4-FIS-0524 | BIOTA 12.05.2024 |
| N24/010548 | G5-FIS-0524 | BIOTA 12.05.2024 |
| N24/010549 | H1-FIS-0524 | BIOTA 13.05.2024 |
| N24/010550 | H2-FIS-0524 | BIOTA 13.05.2024 |

| Lab Reg No. | Units | N24/010547 | N24/010548 | N24/010549 | N24/010550 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 12-MAY-2024 | 12-MAY-2024 | 13-MAY-2024 | 13-MAY-2024 | |
| Sample Reference | | G4-FIS-0524 | G5-FIS-0524 | H1-FIS-0524 | H2-FIS-0524 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 100 | 83 | 123 | 112 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | |
| Date analysed | | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | |



Luke Baker, Analyst
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Accreditation No. 198

12-JUN-2024

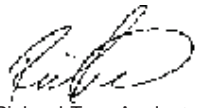
| Lab Reg No. | Units | N24/010547 | N24/010548 | N24/010549 | N24/010550 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 12-MAY-2024 | 12-MAY-2024 | 13-MAY-2024 | 13-MAY-2024 | |
| Sample Reference | | G4-FIS-0524 | G5-FIS-0524 | H1-FIS-0524 | H2-FIS-0524 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.31 | 0.16 | 0.99 | 0.12 | NT2_46 |
| Zinc | mg/kg | 12 | 2.2 | 7.6 | 3 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 5-JUN-2024 | 5-JUN-2024 | 5-JUN-2024 | 5-JUN-2024 | |
| Date analysed | | 6-JUN-2024 | 6-JUN-2024 | 6-JUN-2024 | 6-JUN-2024 | |

# REPORT OF ANALYSIS



Report No. RN1431354

| Lab Reg No. | | N24/010547 | N24/010548 | N24/010549 | N24/010550 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 12-MAY-2024 | 12-MAY-2024 | 13-MAY-2024 | 13-MAY-2024 | |
| Sample Reference | | G4-FIS-0524 | G5-FIS-0524 | H1-FIS-0524 | H2-FIS-0524 | |
| | Units | | | | | Method |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUN-2024

# REPORT OF ANALYSIS



Report No. RN1431354

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240515 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 15-MAY-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/010551 | H3FIS-0524 | BIOTA 13.05.2024 |
| N24/010552 | H4-FIS-0524 | BIOTA 13.05.2024 |
| N24/010553 | H5-FIS-0524 | BIOTA 13.05.2024 |
| N24/010554 | I1-FIS-0524 | BIOTA 13.05.2024 |

| Lab Reg No. | Units | N24/010551 | N24/010552 | N24/010553 | N24/010554 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 13-MAY-2024 | 13-MAY-2024 | 13-MAY-2024 | 13-MAY-2024 | |
| Sample Reference | | H3FIS-0524 | H4-FIS-0524 | H5-FIS-0524 | I1-FIS-0524 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 125 | 103 | 68 | 75 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | |
| Date analysed | | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | |



Luke Baker, Analyst
Organics - NSW
Accreditation No. 198

12-JUN-2024

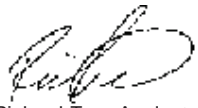
| Lab Reg No. | Units | N24/010551 | N24/010552 | N24/010553 | N24/010554 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 13-MAY-2024 | 13-MAY-2024 | 13-MAY-2024 | 13-MAY-2024 | |
| Sample Reference | | H3FIS-0524 | H4-FIS-0524 | H5-FIS-0524 | I1-FIS-0524 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.15 | 0.12 | 0.14 | 0.09 | NT2_46 |
| Zinc | mg/kg | 2.5 | 2.4 | 3.1 | 2.3 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 5-JUN-2024 | 5-JUN-2024 | 5-JUN-2024 | 5-JUN-2024 | |
| Date analysed | | 6-JUN-2024 | 6-JUN-2024 | 6-JUN-2024 | 6-JUN-2024 | |

# REPORT OF ANALYSIS



Report No. RN1431354

| Lab Reg No. | | N24/010551 | N24/010552 | N24/010553 | N24/010554 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 13-MAY-2024 | 13-MAY-2024 | 13-MAY-2024 | 13-MAY-2024 | |
| Sample Reference | | H3FIS-0524 | H4-FIS-0524 | H5-FIS-0524 | I1-FIS-0524 | |
| | Units | | | | | Method |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUN-2024

# REPORT OF ANALYSIS



Report No. RN1431354

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240515 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 15-MAY-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/010555 | I2-FIS-0524 | BIOTA 13.05.2024 |
| N24/010556 | I3-FIS-0524 | BIOTA 13.05.2024 |
| N24/010557 | I4-FIS-0524 | BIOTA 13.05.2024 |
| N24/010558 | I5-FIS-0524 | BIOTA 13.05.2024 |

| Lab Reg No. | Units | N24/010555 | N24/010556 | N24/010557 | N24/010558 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 13-MAY-2024 | 13-MAY-2024 | 13-MAY-2024 | 13-MAY-2024 | |
| Sample Reference | | I2-FIS-0524 | I3-FIS-0524 | I4-FIS-0524 | I5-FIS-0524 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 85 | 62 | 73 | 66 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | |
| Date analysed | | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | 31-MAY-2024 | |

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Accreditation No. 198

12-JUN-2024

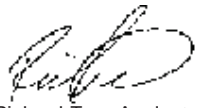
| Lab Reg No. | Units | N24/010555 | N24/010556 | N24/010557 | N24/010558 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 13-MAY-2024 | 13-MAY-2024 | 13-MAY-2024 | 13-MAY-2024 | |
| Sample Reference | | I2-FIS-0524 | I3-FIS-0524 | I4-FIS-0524 | I5-FIS-0524 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.15 | 0.1 | 0.14 | 0.3 | NT2_46 |
| Zinc | mg/kg | 3.1 | 2.5 | 2.8 | 3.4 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 5-JUN-2024 | 5-JUN-2024 | 5-JUN-2024 | 5-JUN-2024 | |
| Date analysed | | 6-JUN-2024 | 6-JUN-2024 | 6-JUN-2024 | 6-JUN-2024 | |

# REPORT OF ANALYSIS



Report No. RN1431354

| Lab Reg No. | Units | N24/010555 | N24/010556 | N24/010557 | N24/010558 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 13-MAY-2024 | 13-MAY-2024 | 13-MAY-2024 | 13-MAY-2024 | |
| Sample Reference | | I2-FIS-0524 | I3-FIS-0524 | I4-FIS-0524 | I5-FIS-0524 | |



Richard Tea, Analyst
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Accreditation No. 198

12-JUN-2024

All results are expressed on an as received weight basis.

Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) as received and tested.

* Denotes the analyte or test method is not within our ISO/IEC 17025 scope of accreditation.

Measurement Uncertainty is available upon request.
The testing was undertaken at: 105 Delhi Road, North Ryde, NSW, 2113

# REPORT OF ANALYSIS



| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013207 | A1-CUC-0624 | BIOTA 06.06.2024 09:57 |
| N24/013208 | A2-CUC-0624 | BIOTA 06.06.2024 10:05 |
| N24/013209 | A3-CUC-0624 | BIOTA 06.06.2024 10:11 |
| N24/013210 | A5-CUC-0624 | BIOTA 06.06.2024 10:59 |

| Lab Reg No. | Units | N24/013207 | N24/013208 | N24/013209 | N24/013210 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | | A1-CUC-0624 | A2-CUC-0624 | A3-CUC-0624 | A5-CUC-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | 11 | 4.8 | 5.9 | 5.7 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | 1.2 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 85 | 85 | 87 | 93 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |

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Accreditation No. 198

12-JUL-2024

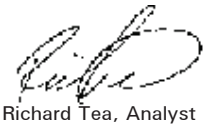
| Lab Reg No. | Units | N24/013207 | N24/013208 | N24/013209 | N24/013210 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | | A1-CUC-0624 | A2-CUC-0624 | A3-CUC-0624 | A5-CUC-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 1.4 | 2.5 | 1.5 | 1.2 | NT2_46 |
| Zinc | mg/kg | 18 | 13 | 15 | 13 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



Report No. RN1434592

| Lab Reg No. | | N24/013207 | N24/013208 | N24/013209 | N24/013210 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | Units | A1-CUC-0624 | A2-CUC-0624 | A3-CUC-0624 | A5-CUC-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 84.2 | 81.8 | 81.8 | 81.1 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013211 | A4-CUC-0624 | BIOTA 06.06.2024 10:20 |
| N24/013212 | A1-ALG-0624 | BIOTA 06.06.2024 09:57 |
| N24/013213 | A2-ALG-0624 | BIOTA 06.06.2024 10:05 |
| N24/013214 | A3-ALG-0624 | BIOTA 06.06.2024 10:11 |

| Lab Reg No. | Units | N24/013211 | N24/013212 | N24/013213 | N24/013214 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | | A4-CUC-0624 | A1-ALG-0624 | A2-ALG-0624 | A3-ALG-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | 3.5 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 89 | 88 | 80 | 86 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |

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Accreditation No. 198

12-JUL-2024

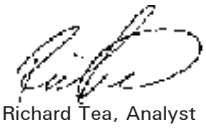
| Lab Reg No. | Units | N24/013211 | N24/013212 | N24/013213 | N24/013214 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | | A4-CUC-0624 | A1-ALG-0624 | A2-ALG-0624 | A3-ALG-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 1.8 | 2.1 | 0.81 | 0.99 | NT2_46 |
| Zinc | mg/kg | 16 | 1.4 | 0.86 | 1.4 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



Report No. RN1434592

| Lab Reg No. | | N24/013211 | N24/013212 | N24/013213 | N24/013214 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | Units | A4-CUC-0624 | A1-ALG-0624 | A2-ALG-0624 | A3-ALG-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 81.6 | 78.4 | 80.9 | 75.5 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013215 | A4-ALG-0624 | BIOTA 06.06.2024 10:20 |
| N24/013216 | A5-ALG-0624 | BIOTA 06.06.2024 10:59 |
| N24/013217 | C1-CUC-0624 | BIOTA 06.06.2024 12:18 |
| N24/013218 | C2-CUC-0624 | BIOTA 06.06.2024 12:21 |

| Lab Reg No. | Units | N24/013215 | N24/013216 | N24/013217 | N24/013218 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | | A4-ALG-0624 | A5-ALG-0624 | C1-CUC-0624 | C2-CUC-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 82 | 87 | 80 | 98 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |



Gabriela Saveluc, Analyst
Organics - NSW
Accreditation No. 198

12-JUL-2024

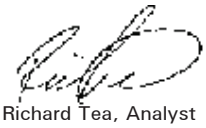
| Lab Reg No. | Units | N24/013215 | N24/013216 | N24/013217 | N24/013218 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | | A4-ALG-0624 | A5-ALG-0624 | C1-CUC-0624 | C2-CUC-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.79 | 0.84 | 1.6 | 1.5 | NT2_46 |
| Zinc | mg/kg | 2.5 | 1.1 | 5.6 | 6.3 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



Report No. RN1434592

| Lab Reg No. | | N24/013215 | N24/013216 | N24/013217 | N24/013218 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | Units | A4-ALG-0624 | A5-ALG-0624 | C1-CUC-0624 | C2-CUC-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 81.4 | 81.9 | 83.3 | 83.3 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013219 | C3-CUC-0624 | BIOTA 06.06.2024 12:24 |
| N24/013220 | C4-CUC-0624 | BIOTA 06.06.2024 12:27 |
| N24/013221 | C5-CUC-0624 | BIOTA 06.06.2024 12:29 |
| N24/013222 | C1-ALG-0624 | BIOTA 06.06.2024 12:18 |

| Lab Reg No. | Units | N24/013219 | N24/013220 | N24/013221 | N24/013222 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | | C3-CUC-0624 | C4-CUC-0624 | C5-CUC-0624 | C1-ALG-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 72 | 87 | 90 | 103 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |



Gabriela Saveluc, Analyst
Organics - NSW
Accreditation No. 198

12-JUL-2024

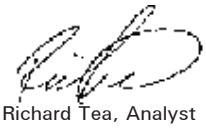
| Lab Reg No. | Units | N24/013219 | N24/013220 | N24/013221 | N24/013222 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | | C3-CUC-0624 | C4-CUC-0624 | C5-CUC-0624 | C1-ALG-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 2.6 | 1.4 | 1.2 | 0.51 | NT2_46 |
| Zinc | mg/kg | 12 | 6.4 | 6.5 | 0.98 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



Report No. RN1434592

| Lab Reg No. | | N24/013219 | N24/013220 | N24/013221 | N24/013222 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | Units | C3-CUC-0624 | C4-CUC-0624 | C5-CUC-0624 | C1-ALG-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 73.0 | 80.0 | 82.8 | 76.6 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013223 | C2-ALG-0624 | BIOTA 06.06.2024 12:21 |
| N24/013224 | C3-ALG-0624 | BIOTA 06.06.2024 12:24 |
| N24/013225 | C4-ALG-0624 | BIOTA 06.06.2024 12:27 |
| N24/013226 | C5-ALG-0624 | BIOTA 06.06.2024 12:29 |

| Lab Reg No. | Units | N24/013223 | N24/013224 | N24/013225 | N24/013226 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | | C2-ALG-0624 | C3-ALG-0624 | C4-ALG-0624 | C5-ALG-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 84 | 98 | 90 | 83 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |



Gabriela Saveluc, Analyst
Organics - NSW
Accreditation No. 198

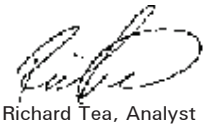
12-JUL-2024

| Lab Reg No. | Units | N24/013223 | N24/013224 | N24/013225 | N24/013226 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | | C2-ALG-0624 | C3-ALG-0624 | C4-ALG-0624 | C5-ALG-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.5 | 0.35 | 0.57 | 0.6 | NT2_46 |
| Zinc | mg/kg | 0.62 | 0.71 | 0.93 | 0.85 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



| Lab Reg No. | | N24/013223 | N24/013224 | N24/013225 | N24/013226 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | Units | C2-ALG-0624 | C3-ALG-0624 | C4-ALG-0624 | C5-ALG-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 82.1 | 78.0 | 78.0 | 78.7 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013227 | B1-CUC-0624 | BIOTA 06.06.2024 14:58 |
| N24/013228 | B2-CUC-0624 | BIOTA 06.06.2024 14:12 |
| N24/013229 | B3-CUC-0624 | BIOTA 06.06.2024 14:15 |
| N24/013230 | B4-CUC-0624 | BIOTA 06.06.2024 14:19 |

| Lab Reg No. | Units | N24/013227 | N24/013228 | N24/013229 | N24/013230 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | | B1-CUC-0624 | B2-CUC-0624 | B3-CUC-0624 | B4-CUC-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | 2.0 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 91 | 78 | 79 | 91 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |



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12-JUL-2024

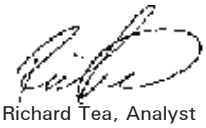
| Lab Reg No. | Units | N24/013227 | N24/013228 | N24/013229 | N24/013230 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | | B1-CUC-0624 | B2-CUC-0624 | B3-CUC-0624 | B4-CUC-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.9 | 1.2 | 1.8 | 1.2 | NT2_46 |
| Zinc | mg/kg | 5.8 | 5.5 | 7.2 | 7.1 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



Report No. RN1434592

| Lab Reg No. | | N24/013227 | N24/013228 | N24/013229 | N24/013230 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | Units | B1-CUC-0624 | B2-CUC-0624 | B3-CUC-0624 | B4-CUC-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 83.7 | 77.9 | 79.6 | 82.4 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013231 | B5-CUC-0624 | BIOTA 06.06.2024 14:22 |
| N24/013232 | D1-CUC-0624 | BIOTA 07.06.2024 09:47 |
| N24/013233 | D2-CUC-0624 | BIOTA 07.06.2024 09:50 |
| N24/013234 | D3-CUC-0624 | BIOTA 07.06.2024 09:52 |

| Lab Reg No. | | N24/013231 | N24/013232 | N24/013233 | N24/013234 | |
|---|---|---|---|---|---|---|
| **Date Sampled** | | 06-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| **Sample Reference** | | B5-CUC-0624 | D1-CUC-0624 | D2-CUC-0624 | D3-CUC-0624 | |
| | **Units** | | | | | **Method** |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 82 | 95 | 77 | 104 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |

Gabriela Saveluc, Analyst
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Accreditation No. 198

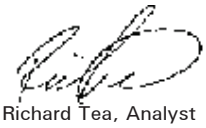
12-JUL-2024

| Lab Reg No. | | N24/013231 | N24/013232 | N24/013233 | N24/013234 | |
|---|---|---|---|---|---|---|
| **Date Sampled** | | 06-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| **Sample Reference** | | B5-CUC-0624 | D1-CUC-0624 | D2-CUC-0624 | D3-CUC-0624 | |
| | **Units** | | | | | **Method** |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 1.1 | 0.69 | 1.2 | 1.2 | NT2_46 |
| Zinc | mg/kg | 4.8 | 8.3 | 1.9 | 5.7 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



| Lab Reg No. | | N24/013231 | N24/013232 | N24/013233 | N24/013234 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | Units | B5-CUC-0624 | D1-CUC-0624 | D2-CUC-0624 | D3-CUC-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 83.9 | 87.9 | 86.3 | 83.2 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013235 | D4-CUC-0624 | BIOTA 07.06.2024 09:54 |
| N24/013236 | D5-CUC-0624 | BIOTA 07.06.2024 09:56 |
| N24/013237 | D1-ALG-0624 | BIOTA 07.06.2024 09:47 |
| N24/013238 | D2-ALG-0624 | BIOTA 07.06.2024 09:50 |

| Lab Reg No. | Units | N24/013235 | N24/013236 | N24/013237 | N24/013238 | Method |
|---|---|---|---|---|---|---|
| **Date Sampled** | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| **Sample Reference** | | D4-CUC-0624 | D5-CUC-0624 | D1-ALG-0624 | D2-ALG-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 99 | 101 | 95 | 93 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |

Gabriela Saveluc, Analyst
Organics - NSW
Accreditation No. 198

12-JUL-2024

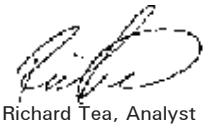
| Lab Reg No. | Units | N24/013235 | N24/013236 | N24/013237 | N24/013238 | Method |
|---|---|---|---|---|---|---|
| **Date Sampled** | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| **Sample Reference** | | D4-CUC-0624 | D5-CUC-0624 | D1-ALG-0624 | D2-ALG-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.74 | 1 | 0.26 | 0.59 | NT2_46 |
| Zinc | mg/kg | 4 | 3.2 | 0.48 | 0.96 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



Report No. RN1434592

| Lab Reg No. | | N24/013235 | N24/013236 | N24/013237 | N24/013238 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | Units | D4-CUC-0624 | D5-CUC-0624 | D1-ALG-0624 | D2-ALG-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 84.9 | 83.9 | 83.2 | 72.8 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013239 | D3-ALG-0624 | BIOTA 07.06.2024 09:52 |
| N24/013240 | D4-ALG-0624 | BIOTA 07.06.2024 09:54 |
| N24/013241 | D5-ALG-0624 | BIOTA 07.06.2024 09:56 |
| N24/013242 | G1-CUC-0624 | BIOTA 07.06.2024 11:28 |

| Lab Reg No. | Units | N24/013239 | N24/013240 | N24/013241 | N24/013242 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | | D3-ALG-0624 | D4-ALG-0624 | D5-ALG-0624 | G1-CUC-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 90 | 94 | 88 | 91 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |

Gabriela Saveluc, Analyst
Organics - NSW
Accreditation No. 198

12-JUL-2024

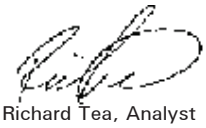
| Lab Reg No. | Units | N24/013239 | N24/013240 | N24/013241 | N24/013242 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | | D3-ALG-0624 | D4-ALG-0624 | D5-ALG-0624 | G1-CUC-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.68 | 0.5 | 0.3 | 0.93 | NT2_46 |
| Zinc | mg/kg | 1.5 | 0.97 | 0.85 | 9.6 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



Report No. RN1434592

| Lab Reg No. | | N24/013239 | N24/013240 | N24/013241 | N24/013242 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | Units | D3-ALG-0624 | D4-ALG-0624 | D5-ALG-0624 | G1-CUC-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 76.0 | 70.9 | 77.3 | 83.7 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013243 | G2-CUC-0624 | BIOTA 07.06.2024 11:31 |
| N24/013244 | G3-CUC-0624 | BIOTA 07.06.2024 11:37 |
| N24/013245 | G4-CUC-0624 | BIOTA 07.06.2024 11:42 |
| N24/013246 | G5-CUC-0624 | BIOTA 07.06.2024 11:48 |

| Lab Reg No. | Units | N24/013243 | N24/013244 | N24/013245 | N24/013246 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | | G2-CUC-0624 | G3-CUC-0624 | G4-CUC-0624 | G5-CUC-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 86 | 77 | 67 | 80 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |

Gabriela Saveluc, Analyst
Organics - NSW
Accreditation No. 198

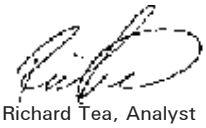
12-JUL-2024

| Lab Reg No. | Units | N24/013243 | N24/013244 | N24/013245 | N24/013246 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | | G2-CUC-0624 | G3-CUC-0624 | G4-CUC-0624 | G5-CUC-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.97 | 0.9 | 1.1 | 1.2 | NT2_46 |
| Zinc | mg/kg | 8.3 | 3.3 | 7.7 | 5.2 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



| Lab Reg No. | | N24/013243 | N24/013244 | N24/013245 | N24/013246 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | Units | G2-CUC-0624 | G3-CUC-0624 | G4-CUC-0624 | G5-CUC-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 83.0 | 80.9 | 81.0 | 84.1 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013247 | G1-ALG-0624 | BIOTA 07.06.2024 11:28 |
| N24/013248 | G2-ALG-0624 | BIOTA 07.06.2024 11:31 |
| N24/013249 | G3-ALG-0624 | BIOTA 07.06.2024 11:37 |
| N24/013250 | G4-ALG-0624 | BIOTA 07.06.2024 11:42 |

| Lab Reg No. | Units | N24/013247 | N24/013248 | N24/013249 | N24/013250 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | | G1-ALG-0624 | G2-ALG-0624 | G3-ALG-0624 | G4-ALG-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 81 | 89 | 89 | 87 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |

Gabriela Saveluc, Analyst
Organics - NSW
Accreditation No. 198

12-JUL-2024

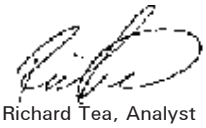
| Lab Reg No. | Units | N24/013247 | N24/013248 | N24/013249 | N24/013250 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | | G1-ALG-0624 | G2-ALG-0624 | G3-ALG-0624 | G4-ALG-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.28 | 0.4 | 0.34 | 0.45 | NT2_46 |
| Zinc | mg/kg | 0.69 | 0.88 | 0.62 | 0.81 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



Report No. RN1434592

| Lab Reg No. | | N24/013247 | N24/013248 | N24/013249 | N24/013250 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | Units | G1-ALG-0624 | G2-ALG-0624 | G3-ALG-0624 | G4-ALG-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 80.5 | 75.1 | 74.9 | 73.2 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013251 | G5-ALG-0624 | BIOTA 07.06.2024 11:48 |
| N24/013252 | E1-CUC-0624 | BIOTA 07.06.2024 13:13 |
| N24/013253 | E2-CUC-0624 | BIOTA 07.06.2024 13:17 |
| N24/013254 | E3-CUC-0624 | BIOTA 07.06.2024 13:19 |

| Lab Reg No. | Units | N24/013251 | N24/013252 | N24/013253 | N24/013254 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | | G5-ALG-0624 | E1-CUC-0624 | E2-CUC-0624 | E3-CUC-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 84 | 77 | 73 | 144 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |

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Accreditation No. 198

12-JUL-2024

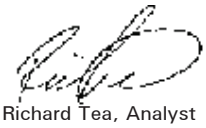
| Lab Reg No. | Units | N24/013251 | N24/013252 | N24/013253 | N24/013254 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | | G5-ALG-0624 | E1-CUC-0624 | E2-CUC-0624 | E3-CUC-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.39 | 0.86 | 1.1 | 1.1 | NT2_46 |
| Zinc | mg/kg | 0.67 | 3.2 | 6 | 5.5 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



Report No. RN1434592

| Lab Reg No. | | N24/013251 | N24/013252 | N24/013253 | N24/013254 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | Units | G5-ALG-0624 | E1-CUC-0624 | E2-CUC-0624 | E3-CUC-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 70.2 | 83.4 | 81.6 | 83.3 | NT2_49 |



Richard Tea, Analyst
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Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013255 | E4-CUC-0624 | BIOTA 07.06.2024 13:22 |
| N24/013256 | E5-CUC-0624 | BIOTA 09.06.2024 10:30 |
| N24/013257 | E1-ALG-0624 | BIOTA 07.06.2024 13:13 |
| N24/013258 | E2-ALG-0624 | BIOTA 07.06.2024 13:17 |

| Lab Reg No. | Units | N24/013255 | N24/013256 | N24/013257 | N24/013258 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 09-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | | E4-CUC-0624 | E5-CUC-0624 | E1-ALG-0624 | E2-ALG-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 90 | 88 | 91 | 84 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |

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Accreditation No. 198

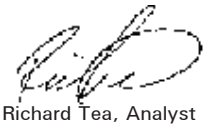
12-JUL-2024

| Lab Reg No. | Units | N24/013255 | N24/013256 | N24/013257 | N24/013258 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 09-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | | E4-CUC-0624 | E5-CUC-0624 | E1-ALG-0624 | E2-ALG-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.74 | 1.1 | 0.21 | 0.13 | NT2_46 |
| Zinc | mg/kg | 4.2 | 6.3 | 1.3 | 0.8 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



| Lab Reg No. | | N24/013255 | N24/013256 | N24/013257 | N24/013258 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 09-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | Units | E4-CUC-0624 | E5-CUC-0624 | E1-ALG-0624 | E2-ALG-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 82.6 | 83.6 | 85.9 | 82.9 | NT2_49 |



Richard Tea, Analyst
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12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013259 | E3-ALG-0624 | BIOTA 07.06.2024 13:19 |
| N24/013260 | E4-ALG-0624 | BIOTA 07.06.2024 13:20 |
| N24/013261 | E5-ALG-0624 | BIOTA 07.06.2024 13:20 |
| N24/013262 | I1-CUC-0624 | BIOTA 08.06.2024 12:50 |

| Lab Reg No. | Units | N24/013259 | N24/013260 | N24/013261 | N24/013262 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 08-JUN-2024 | |
| Sample Reference | | E3-ALG-0624 | E4-ALG-0624 | E5-ALG-0624 | I1-CUC-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 109 | 88 | 69 | 95 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |

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12-JUL-2024

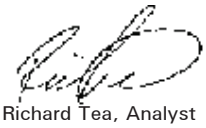
| Lab Reg No. | Units | N24/013259 | N24/013260 | N24/013261 | N24/013262 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 08-JUN-2024 | |
| Sample Reference | | E3-ALG-0624 | E4-ALG-0624 | E5-ALG-0624 | I1-CUC-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.54 | 0.22 | 0.61 | 1.1 | NT2_46 |
| Zinc | mg/kg | 3.2 | 0.69 | 1.5 | 4.4 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



Report No. RN1434592

| Lab Reg No. | | N24/013259 | N24/013260 | N24/013261 | N24/013262 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 08-JUN-2024 | |
| Sample Reference | Units | E3-ALG-0624 | E4-ALG-0624 | E5-ALG-0624 | I1-CUC-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 80.6 | 86.4 | 77.4 | 82.4 | NT2_49 |



Richard Tea, Analyst
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Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013263 | I2-CUC-0624 | BIOTA 08.06.2024 12:50 |
| N24/013264 | I3-CUC-0624 | BIOTA 08.06.2024 12:50 |
| N24/013265 | I4-CUC-0624 | BIOTA 08.06.2024 12:50 |
| N24/013266 | I5-CUC-0624 | BIOTA 08.06.2024 12:50 |

| Lab Reg No. | | N24/013263 | N24/013264 | N24/013265 | N24/013266 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | |
| Sample Reference | Units | I2-CUC-0624 | I3-CUC-0624 | I4-CUC-0624 | I5-CUC-0624 | Method |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 98 | 95 | 98 | 109 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |



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Accreditation No. 198

12-JUL-2024

| Lab Reg No. | | N24/013263 | N24/013264 | N24/013265 | N24/013266 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | |
| Sample Reference | Units | I2-CUC-0624 | I3-CUC-0624 | I4-CUC-0624 | I5-CUC-0624 | Method |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.81 | 1.2 | 1.6 | 0.13 | NT2_46 |
| Zinc | mg/kg | 7.4 | 3.7 | 15 | 0.25 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



Report No. RN1434592

| Lab Reg No. | | N24/013263 | N24/013264 | N24/013265 | N24/013266 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | |
| Sample Reference | Units | I2-CUC-0624 | I3-CUC-0624 | I4-CUC-0624 | I5-CUC-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 81.0 | 84.7 | 81.7 | 85.4 | NT2_49 |

Richard Tea, Analyst
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Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013267 | I1-ALG-0624 | BIOTA 08.06.2024 12:50 |
| N24/013268 | I2-ALG-0624 | BIOTA 08.06.2024 12:50 |
| N24/013269 | I3-ALG-0624 | BIOTA 08.06.2024 12:50 |
| N24/013270 | I4-ALG-0624 | BIOTA 08.06.2024 12:50 |

| Lab Reg No. | Units | N24/013267 | N24/013268 | N24/013269 | N24/013270 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | |
| Sample Reference | | I1-ALG-0624 | I2-ALG-0624 | I3-ALG-0624 | I4-ALG-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 93 | 89 | 99 | 95 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |

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Organics - NSW
Accreditation No. 198

12-JUL-2024

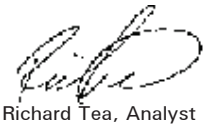
| Lab Reg No. | Units | N24/013267 | N24/013268 | N24/013269 | N24/013270 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | |
| Sample Reference | | I1-ALG-0624 | I2-ALG-0624 | I3-ALG-0624 | I4-ALG-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.2 | 0.2 | 0.24 | 0.11 | NT2_46 |
| Zinc | mg/kg | 0.46 | 0.42 | 0.44 | 0.3 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



Report No. RN1434592

| Lab Reg No. | | N24/013267 | N24/013268 | N24/013269 | N24/013270 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | |
| Sample Reference | Units | I1-ALG-0624 | I2-ALG-0624 | I3-ALG-0624 | I4-ALG-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 81.8 | 80.2 | 86.9 | 86.1 | NT2_49 |



Richard Tea, Analyst
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Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013271 | I5-ALG-0624 | BIOTA 08.06.2024 12:50 |
| N24/013272 | H1-CUC-0624 | BIOTA 08.06.2024 13:50 |
| N24/013273 | H2-CUC-0624 | BIOTA 08.06.2024 13:50 |
| N24/013274 | H3-CUC-0624 | BIOTA 08.06.2024 13:50 |

| Lab Reg No. | Units | N24/013271 | N24/013272 | N24/013273 | N24/013274 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | |
| Sample Reference | | I5-ALG-0624 | H1-CUC-0624 | H2-CUC-0624 | H3-CUC-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | 2.5 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 85 | 94 | 87 | 103 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |

Gabriela Saveluc, Analyst
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Accreditation No. 198

12-JUL-2024

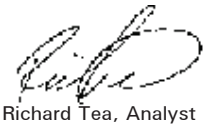
| Lab Reg No. | Units | N24/013271 | N24/013272 | N24/013273 | N24/013274 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | |
| Sample Reference | | I5-ALG-0624 | H1-CUC-0624 | H2-CUC-0624 | H3-CUC-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.16 | 1.2 | 1.2 | 1.2 | NT2_46 |
| Zinc | mg/kg | 0.3 | 5.2 | 7.1 | 5.2 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



Report No. RN1434592

| Lab Reg No. | | N24/013271 | N24/013272 | N24/013273 | N24/013274 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | |
| Sample Reference | Units | I5-ALG-0624 | H1-CUC-0624 | H2-CUC-0624 | H3-CUC-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 86.3 | 79.1 | 80.5 | 80.6 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013275 | H4-CUC-0624 | BIOTA 08.06.2024 13:50 |
| N24/013276 | H5-CUC-0624 | BIOTA 08.06.2024 13:50 |
| N24/013277 | H1-ALG-0624 | BIOTA 08.06.2024 13:50 |
| N24/013278 | H2-ALG-0624 | BIOTA 08.06.2024 13:50 |

| Lab Reg No. | Units | N24/013275 | N24/013276 | N24/013277 | N24/013278 | Method |
|---|---|---|---|---|---|---|
| **Date Sampled** | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | |
| **Sample Reference** | | H4-CUC-0624 | H5-CUC-0624 | H1-ALG-0624 | H2-ALG-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 97 | 100 | 100 | 107 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |

Gabriela Saveluc, Analyst
Organics - NSW
Accreditation No. 198

12-JUL-2024

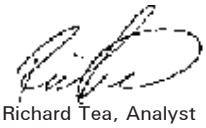
| Lab Reg No. | Units | N24/013275 | N24/013276 | N24/013277 | N24/013278 | Method |
|---|---|---|---|---|---|---|
| **Date Sampled** | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | |
| **Sample Reference** | | H4-CUC-0624 | H5-CUC-0624 | H1-ALG-0624 | H2-ALG-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 1.9 | 1.4 | 0.2 | 0.31 | NT2_46 |
| Zinc | mg/kg | 9.4 | 9.4 | 0.44 | 1.1 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



Report No. RN1434592

| Lab Reg No. | | N24/013275 | N24/013276 | N24/013277 | N24/013278 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | |
| Sample Reference | Units | H4-CUC-0624 | H5-CUC-0624 | H1-ALG-0624 | H2-ALG-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 81.3 | 79.3 | 83.5 | 78.5 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013279 | H3-ALG-0624 | BIOTA 08.06.2024 13:50 |
| N24/013280 | H4-ALG-0624 | BIOTA 08.06.2024 13:50 |
| N24/013281 | H5-ALG-0624 | BIOTA 08.06.2024 13:50 |

| Lab Reg No. | | N24/013279 | N24/013280 | N24/013281 | | |
|---|---|---|---|---|---|---|
| **Date Sampled** | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | | |
| **Sample Reference** | **Units** | H3-ALG-0624 | H4-ALG-0624 | H5-ALG-0624 | | **Method** |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | | NR_35 |
| Surrogate: Tripropyltin | %REC | 101 | 105 | 101 | | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | | |



Gabriela Saveluc, Analyst
Organics - NSW
Accreditation No. 198

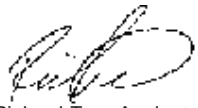
12-JUL-2024

| Lab Reg No. | | N24/013279 | N24/013280 | N24/013281 | | |
|---|---|---|---|---|---|---|
| **Date Sampled** | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | | |
| **Sample Reference** | **Units** | H3-ALG-0624 | H4-ALG-0624 | H5-ALG-0624 | | **Method** |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.23 | 0.31 | 0.13 | | NT2_46 |
| Zinc | mg/kg | 0.38 | 0.57 | 0.21 | | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | | |
| **Moisture Content** | | | | | | |
| Moisture | % | 79.7 | 71.3 | 79.1 | | NT2_49 |

# REPORT OF ANALYSIS



| Lab Reg No. | | N24/013279 | N24/013280 | N24/013281 | | |
|---|---|---|---|---|---|---|
| Date Sampled | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | | |
| Sample Reference | | H3-ALG-0624 | H4-ALG-0624 | H5-ALG-0624 | | |
| | Units | | | | | Method |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

All results are expressed on an as received weight basis.

NATA
WORLD RECOGNISED
ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) as received and tested.

* Denotes the analyte or test method is not within our ISO/IEC 17025 scope of accreditation.

Measurement Uncertainty is available upon request.
The testing was undertaken at: 105 Delhi Road, North Ryde, NSW, 2113

# REPORT OF ANALYSIS



| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013207 | A1-CUC-0624 | BIOTA 06.06.2024 09:57 |
| N24/013208 | A2-CUC-0624 | BIOTA 06.06.2024 10:05 |
| N24/013209 | A3-CUC-0624 | BIOTA 06.06.2024 10:11 |
| N24/013210 | A5-CUC-0624 | BIOTA 06.06.2024 10:59 |

| Lab Reg No. | Units | N24/013207 | N24/013208 | N24/013209 | N24/013210 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | | A1-CUC-0624 | A2-CUC-0624 | A3-CUC-0624 | A5-CUC-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | 11 | 4.8 | 5.9 | 5.7 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | 1.2 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 85 | 85 | 87 | 93 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |

Gabriela Saveluc, Analyst
Organics - NSW
Accreditation No. 198

12-JUL-2024

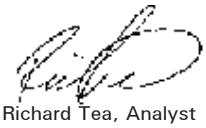
| Lab Reg No. | Units | N24/013207 | N24/013208 | N24/013209 | N24/013210 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | | A1-CUC-0624 | A2-CUC-0624 | A3-CUC-0624 | A5-CUC-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 1.4 | 2.5 | 1.5 | 1.2 | NT2_46 |
| Zinc | mg/kg | 18 | 13 | 15 | 13 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



Report No. RN1434592

| Lab Reg No. | | N24/013207 | N24/013208 | N24/013209 | N24/013210 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | Units | A1-CUC-0624 | A2-CUC-0624 | A3-CUC-0624 | A5-CUC-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 84.2 | 81.8 | 81.8 | 81.1 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013211 | A4-CUC-0624 | BIOTA 06.06.2024 10:20 |
| N24/013212 | A1-ALG-0624 | BIOTA 06.06.2024 09:57 |
| N24/013213 | A2-ALG-0624 | BIOTA 06.06.2024 10:05 |
| N24/013214 | A3-ALG-0624 | BIOTA 06.06.2024 10:11 |

| Lab Reg No. | Units | N24/013211 | N24/013212 | N24/013213 | N24/013214 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | | A4-CUC-0624 | A1-ALG-0624 | A2-ALG-0624 | A3-ALG-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | 3.5 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 89 | 88 | 80 | 86 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |

Gabriela Saveluc, Analyst
Organics - NSW
Accreditation No. 198

12-JUL-2024

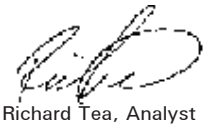
| Lab Reg No. | Units | N24/013211 | N24/013212 | N24/013213 | N24/013214 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | | A4-CUC-0624 | A1-ALG-0624 | A2-ALG-0624 | A3-ALG-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 1.8 | 2.1 | 0.81 | 0.99 | NT2_46 |
| Zinc | mg/kg | 16 | 1.4 | 0.86 | 1.4 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



Report No. RN1434592

| Lab Reg No. | | N24/013211 | N24/013212 | N24/013213 | N24/013214 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | Units | A4-CUC-0624 | A1-ALG-0624 | A2-ALG-0624 | A3-ALG-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 81.6 | 78.4 | 80.9 | 75.5 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013215 | A4-ALG-0624 | BIOTA 06.06.2024 10:20 |
| N24/013216 | A5-ALG-0624 | BIOTA 06.06.2024 10:59 |
| N24/013217 | C1-CUC-0624 | BIOTA 06.06.2024 12:18 |
| N24/013218 | C2-CUC-0624 | BIOTA 06.06.2024 12:21 |

| Lab Reg No. | Units | N24/013215 | N24/013216 | N24/013217 | N24/013218 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | | A4-ALG-0624 | A5-ALG-0624 | C1-CUC-0624 | C2-CUC-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 82 | 87 | 80 | 98 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |



Gabriela Saveluc, Analyst
Organics - NSW
Accreditation No. 198

12-JUL-2024

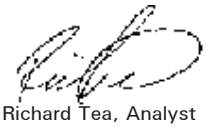
| Lab Reg No. | Units | N24/013215 | N24/013216 | N24/013217 | N24/013218 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | | A4-ALG-0624 | A5-ALG-0624 | C1-CUC-0624 | C2-CUC-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.79 | 0.84 | 1.6 | 1.5 | NT2_46 |
| Zinc | mg/kg | 2.5 | 1.1 | 5.6 | 6.3 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



Report No. RN1434592

| Lab Reg No. | | N24/013215 | N24/013216 | N24/013217 | N24/013218 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | Units | A4-ALG-0624 | A5-ALG-0624 | C1-CUC-0624 | C2-CUC-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 81.4 | 81.9 | 83.3 | 83.3 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013219 | C3-CUC-0624 | BIOTA 06.06.2024 12:24 |
| N24/013220 | C4-CUC-0624 | BIOTA 06.06.2024 12:27 |
| N24/013221 | C5-CUC-0624 | BIOTA 06.06.2024 12:29 |
| N24/013222 | C1-ALG-0624 | BIOTA 06.06.2024 12:18 |

| Lab Reg No. | Units | N24/013219 | N24/013220 | N24/013221 | N24/013222 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | | C3-CUC-0624 | C4-CUC-0624 | C5-CUC-0624 | C1-ALG-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 72 | 87 | 90 | 103 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |



Gabriela Saveluc, Analyst
Organics - NSW
Accreditation No. 198

12-JUL-2024

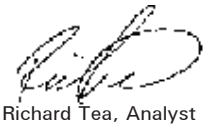
| Lab Reg No. | Units | N24/013219 | N24/013220 | N24/013221 | N24/013222 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | | C3-CUC-0624 | C4-CUC-0624 | C5-CUC-0624 | C1-ALG-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 2.6 | 1.4 | 1.2 | 0.51 | NT2_46 |
| Zinc | mg/kg | 12 | 6.4 | 6.5 | 0.98 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



Report No. RN1434592

| Lab Reg No. | | N24/013219 | N24/013220 | N24/013221 | N24/013222 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | Units | C3-CUC-0624 | C4-CUC-0624 | C5-CUC-0624 | C1-ALG-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 73.0 | 80.0 | 82.8 | 76.6 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013223 | C2-ALG-0624 | BIOTA 06.06.2024 12:21 |
| N24/013224 | C3-ALG-0624 | BIOTA 06.06.2024 12:24 |
| N24/013225 | C4-ALG-0624 | BIOTA 06.06.2024 12:27 |
| N24/013226 | C5-ALG-0624 | BIOTA 06.06.2024 12:29 |

| Lab Reg No. | Units | N24/013223 | N24/013224 | N24/013225 | N24/013226 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | | C2-ALG-0624 | C3-ALG-0624 | C4-ALG-0624 | C5-ALG-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 84 | 98 | 90 | 83 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |



Gabriela Saveluc, Analyst
Organics - NSW
Accreditation No. 198

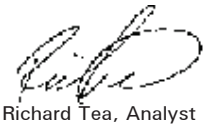
12-JUL-2024

| Lab Reg No. | Units | N24/013223 | N24/013224 | N24/013225 | N24/013226 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | | C2-ALG-0624 | C3-ALG-0624 | C4-ALG-0624 | C5-ALG-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.5 | 0.35 | 0.57 | 0.6 | NT2_46 |
| Zinc | mg/kg | 0.62 | 0.71 | 0.93 | 0.85 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



| Lab Reg No. | | N24/013223 | N24/013224 | N24/013225 | N24/013226 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | Units | C2-ALG-0624 | C3-ALG-0624 | C4-ALG-0624 | C5-ALG-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 82.1 | 78.0 | 78.0 | 78.7 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013227 | B1-CUC-0624 | BIOTA 06.06.2024 14:58 |
| N24/013228 | B2-CUC-0624 | BIOTA 06.06.2024 14:12 |
| N24/013229 | B3-CUC-0624 | BIOTA 06.06.2024 14:15 |
| N24/013230 | B4-CUC-0624 | BIOTA 06.06.2024 14:19 |

| Lab Reg No. | Units | N24/013227 | N24/013228 | N24/013229 | N24/013230 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | | B1-CUC-0624 | B2-CUC-0624 | B3-CUC-0624 | B4-CUC-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | 2.0 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 91 | 78 | 79 | 91 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |



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Organics - NSW
Accreditation No. 198

12-JUL-2024

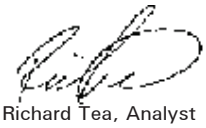
| Lab Reg No. | Units | N24/013227 | N24/013228 | N24/013229 | N24/013230 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | | B1-CUC-0624 | B2-CUC-0624 | B3-CUC-0624 | B4-CUC-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.9 | 1.2 | 1.8 | 1.2 | NT2_46 |
| Zinc | mg/kg | 5.8 | 5.5 | 7.2 | 7.1 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



Report No. RN1434592

| Lab Reg No. | | N24/013227 | N24/013228 | N24/013229 | N24/013230 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | 06-JUN-2024 | |
| Sample Reference | Units | B1-CUC-0624 | B2-CUC-0624 | B3-CUC-0624 | B4-CUC-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 83.7 | 77.9 | 79.6 | 82.4 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013231 | B5-CUC-0624 | BIOTA 06.06.2024 14:22 |
| N24/013232 | D1-CUC-0624 | BIOTA 07.06.2024 09:47 |
| N24/013233 | D2-CUC-0624 | BIOTA 07.06.2024 09:50 |
| N24/013234 | D3-CUC-0624 | BIOTA 07.06.2024 09:52 |

| Lab Reg No. | | N24/013231 | N24/013232 | N24/013233 | N24/013234 | |
|---|---|---|---|---|---|---|
| **Date Sampled** | | 06-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| **Sample Reference** | | B5-CUC-0624 | D1-CUC-0624 | D2-CUC-0624 | D3-CUC-0624 | |
| | **Units** | | | | | **Method** |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 82 | 95 | 77 | 104 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |

Gabriela Saveluc, Analyst
Organics - NSW
Accreditation No. 198

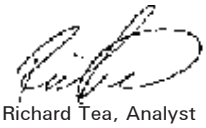
12-JUL-2024

| Lab Reg No. | | N24/013231 | N24/013232 | N24/013233 | N24/013234 | |
|---|---|---|---|---|---|---|
| **Date Sampled** | | 06-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| **Sample Reference** | | B5-CUC-0624 | D1-CUC-0624 | D2-CUC-0624 | D3-CUC-0624 | |
| | **Units** | | | | | **Method** |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 1.1 | 0.69 | 1.2 | 1.2 | NT2_46 |
| Zinc | mg/kg | 4.8 | 8.3 | 1.9 | 5.7 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



| Lab Reg No. | | N24/013231 | N24/013232 | N24/013233 | N24/013234 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 06-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | Units | B5-CUC-0624 | D1-CUC-0624 | D2-CUC-0624 | D3-CUC-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 83.9 | 87.9 | 86.3 | 83.2 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013235 | D4-CUC-0624 | BIOTA 07.06.2024 09:54 |
| N24/013236 | D5-CUC-0624 | BIOTA 07.06.2024 09:56 |
| N24/013237 | D1-ALG-0624 | BIOTA 07.06.2024 09:47 |
| N24/013238 | D2-ALG-0624 | BIOTA 07.06.2024 09:50 |

| Lab Reg No. | Units | N24/013235 | N24/013236 | N24/013237 | N24/013238 | Method |
|---|---|---|---|---|---|---|
| **Date Sampled** | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| **Sample Reference** | | D4-CUC-0624 | D5-CUC-0624 | D1-ALG-0624 | D2-ALG-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 99 | 101 | 95 | 93 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |

Gabriela Saveluc, Analyst
Organics - NSW
Accreditation No. 198

12-JUL-2024

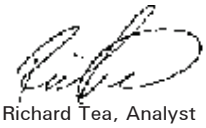
| Lab Reg No. | Units | N24/013235 | N24/013236 | N24/013237 | N24/013238 | Method |
|---|---|---|---|---|---|---|
| **Date Sampled** | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| **Sample Reference** | | D4-CUC-0624 | D5-CUC-0624 | D1-ALG-0624 | D2-ALG-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.74 | 1 | 0.26 | 0.59 | NT2_46 |
| Zinc | mg/kg | 4 | 3.2 | 0.48 | 0.96 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



Report No. RN1434592

| Lab Reg No. | | N24/013235 | N24/013236 | N24/013237 | N24/013238 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | Units | D4-CUC-0624 | D5-CUC-0624 | D1-ALG-0624 | D2-ALG-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 84.9 | 83.9 | 83.2 | 72.8 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013239 | D3-ALG-0624 | BIOTA 07.06.2024 09:52 |
| N24/013240 | D4-ALG-0624 | BIOTA 07.06.2024 09:54 |
| N24/013241 | D5-ALG-0624 | BIOTA 07.06.2024 09:56 |
| N24/013242 | G1-CUC-0624 | BIOTA 07.06.2024 11:28 |

| Lab Reg No. | Units | N24/013239 | N24/013240 | N24/013241 | N24/013242 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | | D3-ALG-0624 | D4-ALG-0624 | D5-ALG-0624 | G1-CUC-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 90 | 94 | 88 | 91 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |

Gabriela Saveluc, Analyst
Organics - NSW
Accreditation No. 198

12-JUL-2024

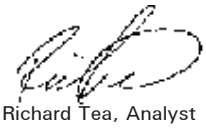
| Lab Reg No. | Units | N24/013239 | N24/013240 | N24/013241 | N24/013242 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | | D3-ALG-0624 | D4-ALG-0624 | D5-ALG-0624 | G1-CUC-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.68 | 0.5 | 0.3 | 0.93 | NT2_46 |
| Zinc | mg/kg | 1.5 | 0.97 | 0.85 | 9.6 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



Report No. RN1434592

| Lab Reg No. | | N24/013239 | N24/013240 | N24/013241 | N24/013242 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | Units | D3-ALG-0624 | D4-ALG-0624 | D5-ALG-0624 | G1-CUC-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 76.0 | 70.9 | 77.3 | 83.7 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013243 | G2-CUC-0624 | BIOTA 07.06.2024 11:31 |
| N24/013244 | G3-CUC-0624 | BIOTA 07.06.2024 11:37 |
| N24/013245 | G4-CUC-0624 | BIOTA 07.06.2024 11:42 |
| N24/013246 | G5-CUC-0624 | BIOTA 07.06.2024 11:48 |

| Lab Reg No. | Units | N24/013243 | N24/013244 | N24/013245 | N24/013246 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | | G2-CUC-0624 | G3-CUC-0624 | G4-CUC-0624 | G5-CUC-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 86 | 77 | 67 | 80 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |

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Accreditation No. 198

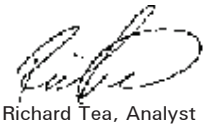
12-JUL-2024

| Lab Reg No. | Units | N24/013243 | N24/013244 | N24/013245 | N24/013246 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | | G2-CUC-0624 | G3-CUC-0624 | G4-CUC-0624 | G5-CUC-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.97 | 0.9 | 1.1 | 1.2 | NT2_46 |
| Zinc | mg/kg | 8.3 | 3.3 | 7.7 | 5.2 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



| Lab Reg No. | | N24/013243 | N24/013244 | N24/013245 | N24/013246 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | Units | G2-CUC-0624 | G3-CUC-0624 | G4-CUC-0624 | G5-CUC-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 83.0 | 80.9 | 81.0 | 84.1 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013247 | G1-ALG-0624 | BIOTA 07.06.2024 11:28 |
| N24/013248 | G2-ALG-0624 | BIOTA 07.06.2024 11:31 |
| N24/013249 | G3-ALG-0624 | BIOTA 07.06.2024 11:37 |
| N24/013250 | G4-ALG-0624 | BIOTA 07.06.2024 11:42 |

| Lab Reg No. | Units | N24/013247 | N24/013248 | N24/013249 | N24/013250 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | | G1-ALG-0624 | G2-ALG-0624 | G3-ALG-0624 | G4-ALG-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 81 | 89 | 89 | 87 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |

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12-JUL-2024

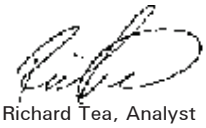
| Lab Reg No. | Units | N24/013247 | N24/013248 | N24/013249 | N24/013250 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | | G1-ALG-0624 | G2-ALG-0624 | G3-ALG-0624 | G4-ALG-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.28 | 0.4 | 0.34 | 0.45 | NT2_46 |
| Zinc | mg/kg | 0.69 | 0.88 | 0.62 | 0.81 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



Report No. RN1434592

| Lab Reg No. | | N24/013247 | N24/013248 | N24/013249 | N24/013250 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | Units | G1-ALG-0624 | G2-ALG-0624 | G3-ALG-0624 | G4-ALG-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 80.5 | 75.1 | 74.9 | 73.2 | NT2_49 |



Richard Tea, Analyst
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Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013251 | G5-ALG-0624 | BIOTA 07.06.2024 11:48 |
| N24/013252 | E1-CUC-0624 | BIOTA 07.06.2024 13:13 |
| N24/013253 | E2-CUC-0624 | BIOTA 07.06.2024 13:17 |
| N24/013254 | E3-CUC-0624 | BIOTA 07.06.2024 13:19 |

| Lab Reg No. | Units | N24/013251 | N24/013252 | N24/013253 | N24/013254 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | | G5-ALG-0624 | E1-CUC-0624 | E2-CUC-0624 | E3-CUC-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 84 | 77 | 73 | 144 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |

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Accreditation No. 198

12-JUL-2024

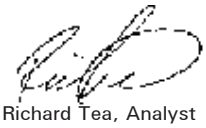
| Lab Reg No. | Units | N24/013251 | N24/013252 | N24/013253 | N24/013254 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | | G5-ALG-0624 | E1-CUC-0624 | E2-CUC-0624 | E3-CUC-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.39 | 0.86 | 1.1 | 1.1 | NT2_46 |
| Zinc | mg/kg | 0.67 | 3.2 | 6 | 5.5 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



Report No. RN1434592

| Lab Reg No. | | N24/013251 | N24/013252 | N24/013253 | N24/013254 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | Units | G5-ALG-0624 | E1-CUC-0624 | E2-CUC-0624 | E3-CUC-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 70.2 | 83.4 | 81.6 | 83.3 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013255 | E4-CUC-0624 | BIOTA 07.06.2024 13:22 |
| N24/013256 | E5-CUC-0624 | BIOTA 09.06.2024 10:30 |
| N24/013257 | E1-ALG-0624 | BIOTA 07.06.2024 13:13 |
| N24/013258 | E2-ALG-0624 | BIOTA 07.06.2024 13:17 |

| Lab Reg No. | Units | N24/013255 | N24/013256 | N24/013257 | N24/013258 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 09-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | | E4-CUC-0624 | E5-CUC-0624 | E1-ALG-0624 | E2-ALG-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 90 | 88 | 91 | 84 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |

Gabriela Saveluc, Analyst
Organics - NSW
Accreditation No. 198

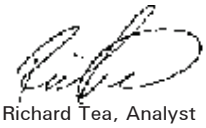
12-JUL-2024

| Lab Reg No. | Units | N24/013255 | N24/013256 | N24/013257 | N24/013258 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 09-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | | E4-CUC-0624 | E5-CUC-0624 | E1-ALG-0624 | E2-ALG-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.74 | 1.1 | 0.21 | 0.13 | NT2_46 |
| Zinc | mg/kg | 4.2 | 6.3 | 1.3 | 0.8 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



| Lab Reg No. | | N24/013255 | N24/013256 | N24/013257 | N24/013258 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 09-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | |
| Sample Reference | Units | E4-CUC-0624 | E5-CUC-0624 | E1-ALG-0624 | E2-ALG-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 82.6 | 83.6 | 85.9 | 82.9 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013259 | E3-ALG-0624 | BIOTA 07.06.2024 13:19 |
| N24/013260 | E4-ALG-0624 | BIOTA 07.06.2024 13:20 |
| N24/013261 | E5-ALG-0624 | BIOTA 07.06.2024 13:20 |
| N24/013262 | I1-CUC-0624 | BIOTA 08.06.2024 12:50 |

| Lab Reg No. | Units | N24/013259 | N24/013260 | N24/013261 | N24/013262 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 08-JUN-2024 | |
| Sample Reference | | E3-ALG-0624 | E4-ALG-0624 | E5-ALG-0624 | I1-CUC-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 109 | 88 | 69 | 95 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |

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Accreditation No. 198

12-JUL-2024

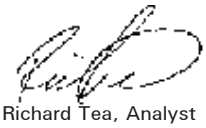
| Lab Reg No. | Units | N24/013259 | N24/013260 | N24/013261 | N24/013262 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 08-JUN-2024 | |
| Sample Reference | | E3-ALG-0624 | E4-ALG-0624 | E5-ALG-0624 | I1-CUC-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.54 | 0.22 | 0.61 | 1.1 | NT2_46 |
| Zinc | mg/kg | 3.2 | 0.69 | 1.5 | 4.4 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



Report No. RN1434592

| Lab Reg No. | | N24/013259 | N24/013260 | N24/013261 | N24/013262 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 07-JUN-2024 | 07-JUN-2024 | 07-JUN-2024 | 08-JUN-2024 | |
| Sample Reference | Units | E3-ALG-0624 | E4-ALG-0624 | E5-ALG-0624 | I1-CUC-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 80.6 | 86.4 | 77.4 | 82.4 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013263 | I2-CUC-0624 | BIOTA 08.06.2024 12:50 |
| N24/013264 | I3-CUC-0624 | BIOTA 08.06.2024 12:50 |
| N24/013265 | I4-CUC-0624 | BIOTA 08.06.2024 12:50 |
| N24/013266 | I5-CUC-0624 | BIOTA 08.06.2024 12:50 |

| Lab Reg No. | | N24/013263 | N24/013264 | N24/013265 | N24/013266 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | |
| Sample Reference | Units | I2-CUC-0624 | I3-CUC-0624 | I4-CUC-0624 | I5-CUC-0624 | Method |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 98 | 95 | 98 | 109 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |



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Accreditation No. 198

12-JUL-2024

| Lab Reg No. | | N24/013263 | N24/013264 | N24/013265 | N24/013266 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | |
| Sample Reference | Units | I2-CUC-0624 | I3-CUC-0624 | I4-CUC-0624 | I5-CUC-0624 | Method |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.81 | 1.2 | 1.6 | 0.13 | NT2_46 |
| Zinc | mg/kg | 7.4 | 3.7 | 15 | 0.25 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



Report No. RN1434592

| Lab Reg No. | | N24/013263 | N24/013264 | N24/013265 | N24/013266 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | |
| Sample Reference | Units | I2-CUC-0624 | I3-CUC-0624 | I4-CUC-0624 | I5-CUC-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 81.0 | 84.7 | 81.7 | 85.4 | NT2_49 |

Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013267 | I1-ALG-0624 | BIOTA 08.06.2024 12:50 |
| N24/013268 | I2-ALG-0624 | BIOTA 08.06.2024 12:50 |
| N24/013269 | I3-ALG-0624 | BIOTA 08.06.2024 12:50 |
| N24/013270 | I4-ALG-0624 | BIOTA 08.06.2024 12:50 |

| Lab Reg No. | Units | N24/013267 | N24/013268 | N24/013269 | N24/013270 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | |
| Sample Reference | | I1-ALG-0624 | I2-ALG-0624 | I3-ALG-0624 | I4-ALG-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 93 | 89 | 99 | 95 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |

Gabriela Saveluc, Analyst
Organics - NSW
Accreditation No. 198

12-JUL-2024

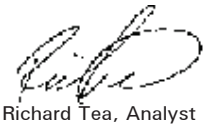
| Lab Reg No. | Units | N24/013267 | N24/013268 | N24/013269 | N24/013270 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | |
| Sample Reference | | I1-ALG-0624 | I2-ALG-0624 | I3-ALG-0624 | I4-ALG-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.2 | 0.2 | 0.24 | 0.11 | NT2_46 |
| Zinc | mg/kg | 0.46 | 0.42 | 0.44 | 0.3 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



Report No. RN1434592

| Lab Reg No. | | N24/013267 | N24/013268 | N24/013269 | N24/013270 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | |
| Sample Reference | Units | I1-ALG-0624 | I2-ALG-0624 | I3-ALG-0624 | I4-ALG-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 81.8 | 80.2 | 86.9 | 86.1 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013271 | I5-ALG-0624 | BIOTA 08.06.2024 12:50 |
| N24/013272 | H1-CUC-0624 | BIOTA 08.06.2024 13:50 |
| N24/013273 | H2-CUC-0624 | BIOTA 08.06.2024 13:50 |
| N24/013274 | H3-CUC-0624 | BIOTA 08.06.2024 13:50 |

| Lab Reg No. | Units | N24/013271 | N24/013272 | N24/013273 | N24/013274 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | |
| Sample Reference | | I5-ALG-0624 | H1-CUC-0624 | H2-CUC-0624 | H3-CUC-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | 2.5 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 85 | 94 | 87 | 103 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |

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Organics - NSW
Accreditation No. 198

12-JUL-2024

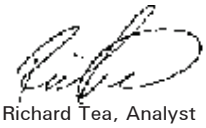
| Lab Reg No. | Units | N24/013271 | N24/013272 | N24/013273 | N24/013274 | Method |
|---|---|---|---|---|---|---|
| Date Sampled | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | |
| Sample Reference | | I5-ALG-0624 | H1-CUC-0624 | H2-CUC-0624 | H3-CUC-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.16 | 1.2 | 1.2 | 1.2 | NT2_46 |
| Zinc | mg/kg | 0.3 | 5.2 | 7.1 | 5.2 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



Report No. RN1434592

| Lab Reg No. | | N24/013271 | N24/013272 | N24/013273 | N24/013274 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | |
| Sample Reference | Units | I5-ALG-0624 | H1-CUC-0624 | H2-CUC-0624 | H3-CUC-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 86.3 | 79.1 | 80.5 | 80.6 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013275 | H4-CUC-0624 | BIOTA 08.06.2024 13:50 |
| N24/013276 | H5-CUC-0624 | BIOTA 08.06.2024 13:50 |
| N24/013277 | H1-ALG-0624 | BIOTA 08.06.2024 13:50 |
| N24/013278 | H2-ALG-0624 | BIOTA 08.06.2024 13:50 |

| Lab Reg No. | Units | N24/013275 | N24/013276 | N24/013277 | N24/013278 | Method |
|---|---|---|---|---|---|---|
| **Date Sampled** | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | |
| **Sample Reference** | | H4-CUC-0624 | H5-CUC-0624 | H1-ALG-0624 | H2-ALG-0624 | |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | <1 | NR_35 |
| Surrogate: Tripropyltin | %REC | 97 | 100 | 100 | 107 | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | |

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Organics - NSW
Accreditation No. 198

12-JUL-2024

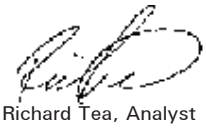
| Lab Reg No. | Units | N24/013275 | N24/013276 | N24/013277 | N24/013278 | Method |
|---|---|---|---|---|---|---|
| **Date Sampled** | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | |
| **Sample Reference** | | H4-CUC-0624 | H5-CUC-0624 | H1-ALG-0624 | H2-ALG-0624 | |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 1.9 | 1.4 | 0.2 | 0.31 | NT2_46 |
| Zinc | mg/kg | 9.4 | 9.4 | 0.44 | 1.1 | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | |

# REPORT OF ANALYSIS



Report No. RN1434592

| Lab Reg No. | | N24/013275 | N24/013276 | N24/013277 | N24/013278 | |
|---|---|---|---|---|---|---|
| Date Sampled | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | |
| Sample Reference | Units | H4-CUC-0624 | H5-CUC-0624 | H1-ALG-0624 | H2-ALG-0624 | Method |
| **Moisture Content** | | | | | | |
| Moisture | % | 81.3 | 79.3 | 83.5 | 78.5 | NT2_49 |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

# REPORT OF ANALYSIS



Report No. RN1434592

| | | | |
|---|---|---|---|
| **Client** | : BMT COMMERCIAL AUSTRALIA PTY LTD | **Job No.** | : BMTW01/240614 |
| | PO BOX 203 | **Quote No.** | : QT-02257 |
| | SPRING HILL QLD 4004 | **Order No.** | : |
| | | **Date Received** | : 14-JUN-2024 |
| **Attention** | : KATHERINE BAILEY | **Sampled By** | : CLIENT |
| **Project Name** | : | | |
| **Your Client Services Manager** | : Danny Slee | **Phone** | : 02 9449 0169 |

| Lab Reg No. | Sample Ref | Sample Description |
|---|---|---|
| N24/013279 | H3-ALG-0624 | BIOTA 08.06.2024 13:50 |
| N24/013280 | H4-ALG-0624 | BIOTA 08.06.2024 13:50 |
| N24/013281 | H5-ALG-0624 | BIOTA 08.06.2024 13:50 |

| Lab Reg No. | | N24/013279 | N24/013280 | N24/013281 | | |
|---|---|---|---|---|---|---|
| **Date Sampled** | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | | |
| **Sample Reference** | **Units** | H3-ALG-0624 | H4-ALG-0624 | H5-ALG-0624 | | **Method** |
| **Organotins** | | | | | | |
| Monobutyltin as Sn | ng/g | <1 | <1 | <1 | | NR_35 |
| Dibutyltin as Sn | ng/g | <1 | <1 | <1 | | NR_35 |
| Tributyltin as Sn | ng/g | <1 | <1 | <1 | | NR_35 |
| Surrogate: Tripropyltin | %REC | 101 | 105 | 101 | | NR_35 |
| **Dates** | | | | | | |
| Date extracted | | 3-JUL-2024 | 3-JUL-2024 | 3-JUL-2024 | | |
| Date analysed | | 5-JUL-2024 | 5-JUL-2024 | 5-JUL-2024 | | |



Gabriela Saveluc, Analyst
Organics - NSW
Accreditation No. 198

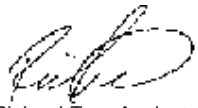
12-JUL-2024

| Lab Reg No. | | N24/013279 | N24/013280 | N24/013281 | | |
|---|---|---|---|---|---|---|
| **Date Sampled** | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | | |
| **Sample Reference** | **Units** | H3-ALG-0624 | H4-ALG-0624 | H5-ALG-0624 | | **Method** |
| **Total Recoverable Trace Elements by ICP** | | | | | | |
| Copper | mg/kg | 0.23 | 0.31 | 0.13 | | NT2_46 |
| Zinc | mg/kg | 0.38 | 0.57 | 0.21 | | NT2_46 |
| **Dates** | | | | | | |
| Date extracted | | 17-JUN-2024 | 17-JUN-2024 | 17-JUN-2024 | | |
| Date analysed | | 11-JUL-2024 | 11-JUL-2024 | 11-JUL-2024 | | |
| **Moisture Content** | | | | | | |
| Moisture | % | 79.7 | 71.3 | 79.1 | | NT2_49 |

# REPORT OF ANALYSIS



| Lab Reg No. | | N24/013279 | N24/013280 | N24/013281 | | |
|---|---|---|---|---|---|---|
| Date Sampled | | 08-JUN-2024 | 08-JUN-2024 | 08-JUN-2024 | | |
| Sample Reference | | H3-ALG-0624 | H4-ALG-0624 | H5-ALG-0624 | | |
| | Units | | | | | Method |



Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

12-JUL-2024

All results are expressed on an as received weight basis.

NATA
WORLD RECOGNISED
ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) as received and tested.

* Denotes the analyte or test method is not within our ISO/IEC 17025 scope of accreditation.

Measurement Uncertainty is available upon request.
The testing was undertaken at: 105 Delhi Road, North Ryde, NSW, 2113

## D.2 Laboratory QA/QC Reporting

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# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **EB2310032** | Page | : 1 of 5 |
| Client | : **BMT COMMERCIAL AUSTRALIA PTY LTD** | Laboratory | : Environmental Division Brisbane |
| Contact | : MS BETH TOKI | Contact | : Kimberly Hilton-Barber |
| Address | : PO BOX 203 SPRING HILL<br>BRISBANE QLD 4004 | Address | : 2 Byth Street Stafford QLD Australia 4053 |
| Telephone | : 07 3831 6744 | Telephone | : +61-7-3243 7222 |
| Project | : B23282 Douglas Shoal Survey 3 | Date Samples Received | : 03-Apr-2023 |
| Order number | : ---- | Date Analysis Commenced | : 04-Apr-2023 |
| C-O-C number | : ---- | Issue Date | : 17-Apr-2023 |
| Sampler | : C JONES/ A GIANNONI | | |
| Site | : ---- | | |
| Quote number | : BN/515/22 V2 | | |
| No. of samples received | : 11 | | |
| No. of samples analysed | : 11 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Kim McCabe | Senior Inorganic Chemist | Brisbane Acid Sulphate Soils, Stafford, QLD |
| Kim McCabe | Senior Inorganic Chemist | Brisbane Inorganics, Stafford, QLD |
| Timothy Creagh | Senior Chemist - Organics | Brisbane Inorganics, Stafford, QLD |
| Timothy Creagh | Senior Chemist - Organics | Brisbane Organics, Stafford, QLD |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

| | | | | Laboratory Duplicate (DUP) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
| **EG005(ED093)-SD: Total Metals in Sediments by ICP-AES (QC Lot: 4974138)** | | | | | | | | | |
| EB2310032-001 | A1-SED-0323 | EG005-SD: Aluminium | 7429-90-5 | 50 | mg/kg | 300 | # 560 | 59.5 | 0% - 50% |
| | | EG005-SD: Iron | 7439-89-6 | 50 | mg/kg | 380 | 570 | 39.9 | 0% - 50% |
| EB2310032-011 | QC01 | EG005-SD: Aluminium | 7429-90-5 | 50 | mg/kg | 440 | 280 | 46.8 | No Limit |
| | | EG005-SD: Iron | 7439-89-6 | 50 | mg/kg | 470 | 340 | 31.9 | No Limit |
| **EG035T: Total Recoverable Mercury by FIMS (Low Level) (QC Lot: 4974140)** | | | | | | | | | |
| EB2310032-001 | A1-SED-0323 | EG035T-LL: Mercury | 7439-97-6 | 0.01 | mg/kg | <0.01 | <0.01 | 0.0 | No Limit |
| EB2310032-011 | QC01 | EG035T-LL: Mercury | 7439-97-6 | 0.01 | mg/kg | <0.01 | <0.01 | 0.0 | No Limit |
| **EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4971657)** | | | | | | | | | |
| EB2310032-001 | A1-SED-0323 | EA055: Moisture Content | ---- | 0.1 | % | 37.6 | 37.4 | 0.6 | 0% - 20% |
| EB2310032-011 | QC01 | EA055: Moisture Content | ---- | 0.1 | % | 18.8 | 18.7 | 0.6 | 0% - 50% |
| **EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 4974139)** | | | | | | | | | |
| EB2310032-001 | A1-SED-0323 | EG020-SD: Cadmium | 7440-43-9 | 0.1 | mg/kg | <0.1 | <0.1 | 0.0 | No Limit |
| | | EG020-SD: Selenium | 7782-49-2 | 0.1 | mg/kg | <0.1 | <0.1 | 0.0 | No Limit |
| | | EG020-SD: Silver | 7440-22-4 | 0.1 | mg/kg | <0.1 | <0.1 | 0.0 | No Limit |
| | | EG020-SD: Antimony | 7440-36-0 | 0.5 | mg/kg | <0.50 | <0.50 | 0.0 | No Limit |
| | | EG020-SD: Cobalt | 7440-48-4 | 0.5 | mg/kg | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG020-SD: Arsenic | 7440-38-2 | 1 | mg/kg | 1.09 | 1.42 | 25.6 | No Limit |
| | | EG020-SD: Chromium | 7440-47-3 | 1 | mg/kg | 3.9 | 5.4 | 32.6 | No Limit |
| | | EG020-SD: Copper | 7440-50-8 | 1 | mg/kg | 9.3 | 9.9 | 6.2 | No Limit |
| | | EG020-SD: Lead | 7439-92-1 | 1 | mg/kg | <1.0 | <1.0 | 0.0 | No Limit |
| | | EG020-SD: Nickel | 7440-02-0 | 1 | mg/kg | <1.0 | 1.3 | 26.1 | No Limit |
| | | EG020-SD: Zinc | 7440-66-6 | 1 | mg/kg | 5.6 | 5.6 | 0.0 | No Limit |
| | | EG020-SD: Manganese | 7439-96-5 | 10 | mg/kg | 15 | 16 | 9.4 | No Limit |

Sub-Matrix: **SOIL**

| | | | | Laboratory Duplicate (DUP) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Laboratory sample ID* | *Sample ID* | *Method: Compound* | *CAS Number* | *LOR* | *Unit* | *Original Result* | *Duplicate Result* | *RPD (%)* | *Acceptable RPD (%)* |
| **EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 4974139) - continued** | | | | | | | | | |
| EB2310032-001 | A1-SED-0323 | EG020-SD: Vanadium | 7440-62-2 | 2 | mg/kg | <2.0 | <2.0 | 0.0 | No Limit |
| EB2310032-011 | QC01 | EG020-SD: Cadmium | 7440-43-9 | 0.1 | mg/kg | <0.1 | <0.1 | 0.0 | No Limit |
| | | EG020-SD: Selenium | 7782-49-2 | 0.1 | mg/kg | <0.1 | <0.1 | 0.0 | No Limit |
| | | EG020-SD: Silver | 7440-22-4 | 0.1 | mg/kg | <0.1 | <0.1 | 0.0 | No Limit |
| | | EG020-SD: Antimony | 7440-36-0 | 0.5 | mg/kg | <0.50 | <0.50 | 0.0 | No Limit |
| | | EG020-SD: Cobalt | 7440-48-4 | 0.5 | mg/kg | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG020-SD: Arsenic | 7440-38-2 | 1 | mg/kg | 1.11 | 1.12 | 1.2 | No Limit |
| | | EG020-SD: Chromium | 7440-47-3 | 1 | mg/kg | 5.3 | 3.6 | 38.1 | No Limit |
| | | EG020-SD: Copper | 7440-50-8 | 1 | mg/kg | 2.6 | 2.0 | 27.9 | No Limit |
| | | EG020-SD: Lead | 7439-92-1 | 1 | mg/kg | <1.0 | <1.0 | 0.0 | No Limit |
| | | EG020-SD: Nickel | 7440-02-0 | 1 | mg/kg | 1.2 | <1.0 | 14.1 | No Limit |
| | | EG020-SD: Zinc | 7440-66-6 | 1 | mg/kg | 2.3 | 2.0 | 15.3 | No Limit |
| | | EG020-SD: Manganese | 7439-96-5 | 10 | mg/kg | 13 | <10 | 24.2 | No Limit |
| | | EG020-SD: Vanadium | 7440-62-2 | 2 | mg/kg | <2.0 | <2.0 | 0.0 | No Limit |
| **EG020T: Total Metals by ICP-MS (QC Lot: 4974137)** | | | | | | | | | |
| EB2310032-009 | A9-SED-0323 | EG020X-T: Barium | 7440-39-3 | 0.1 | mg/kg | 5.2 | 4.6 | 13.6 | 0% - 20% |
| EB2309600-004 | Anonymous | EG020X-T: Barium | 7440-39-3 | 0.1 | mg/kg | 182 | 192 | 5.1 | 0% - 20% |
| **EP003: Total Organic Carbon (TOC) in Soil (QC Lot: 4990432)** | | | | | | | | | |
| EB2310032-001 | A1-SED-0323 | EP003: Total Organic Carbon | ---- | 0.02 | % | 0.16 | 0.18 | 6.8 | No Limit |
| EB2310032-011 | QC01 | EP003: Total Organic Carbon | ---- | 0.02 | % | 0.18 | 0.18 | 0.0 | No Limit |
| **EP090: Organotin Compounds (QC Lot: 4971656)** | | | | | | | | | |
| EB2310032-001 | A1-SED-0323 | EP090: Tributyltin | 56573-85-4 | 0.5 | µgSn/kg | 4.9 | # 95.8 | 180 | 0% - 20% |
| EB2310032-011 | QC01 | EP090: Tributyltin | 56573-85-4 | 0.5 | µgSn/kg | 0.9 | 0.7 | 29.1 | No Limit |

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EG005(ED093)-SD: Total Metals in Sediments by ICP-AES (QCLot: 4974138)** | | | | | | | | |
| EG005-SD: Aluminium | 7429-90-5 | 50 | mg/kg | <50 | 13100 mg/kg | 106 | 70.0 | 130 |
| EG005-SD: Iron | 7439-89-6 | 50 | mg/kg | <50 | 31000 mg/kg | 98.6 | 70.0 | 130 |
| **EG035T: Total Recoverable Mercury by FIMS (Low Level) (QCLot: 4974140)** | | | | | | | | |
| EG035T-LL: Mercury | 7439-97-6 | 0.01 | mg/kg | <0.01 | 0.087 mg/kg | 97.1 | 70.0 | 130 |
| **EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 4974139)** | | | | | | | | |
| EG020-SD: Antimony | 7440-36-0 | 0.5 | mg/kg | <0.50 | ---- | ---- | ---- | ---- |
| EG020-SD: Arsenic | 7440-38-2 | 1 | mg/kg | <1.00 | 68.98449 mg/kg | 92.7 | 80.0 | 124 |
| EG020-SD: Cadmium | 7440-43-9 | 0.1 | mg/kg | <0.1 | 1.36 mg/kg | 108 | 87.0 | 122 |
| EG020-SD: Chromium | 7440-47-3 | 1 | mg/kg | <1.0 | 18.5 mg/kg | 85.4 | 79.0 | 129 |
| EG020-SD: Copper | 7440-50-8 | 1 | mg/kg | <1.0 | 46.8 mg/kg | 85.1 | 85.0 | 118 |
| EG020-SD: Cobalt | 7440-48-4 | 0.5 | mg/kg | <0.5 | 10.3 mg/kg | 87.6 | 70.0 | 130 |
| EG020-SD: Lead | 7439-92-1 | 1 | mg/kg | <1.0 | 63 mg/kg | 87.2 | 86.0 | 119 |
| EG020-SD: Manganese | 7439-96-5 | 10 | mg/kg | <10 | 545 mg/kg | 87.2 | 70.0 | 130 |
| EG020-SD: Nickel | 7440-02-0 | 1 | mg/kg | <1.0 | 13.5 mg/kg | 96.9 | 77.0 | 123 |
| EG020-SD: Selenium | 7782-49-2 | 0.1 | mg/kg | <0.1 | ---- | ---- | ---- | ---- |
| EG020-SD: Silver | 7440-22-4 | 0.1 | mg/kg | <0.1 | 2.68 mg/kg | 95.3 | 70.0 | 130 |
| EG020-SD: Vanadium | 7440-62-2 | 2 | mg/kg | <2.0 | 49.8 mg/kg | 93.6 | 70.0 | 130 |
| EG020-SD: Zinc | 7440-66-6 | 1 | mg/kg | <1.0 | 159 mg/kg | 104 | 71.0 | 127 |
| **EG020T: Total Metals by ICP-MS (QCLot: 4974137)** | | | | | | | | |
| EG020X-T: Barium | 7440-39-3 | 0.1 | mg/kg | <0.1 | 83.06098 mg/kg | 101 | 86.0 | 123 |
| **EP003: Total Organic Carbon (TOC) in Soil (QCLot: 4990432)** | | | | | | | | |
| EP003: Total Organic Carbon | ---- | 0.02 | % | <0.02 | 0.2 % | 108 | 80.0 | 120 |
| | | | | <0.02 | 20 % | 95.3 | 80.0 | 120 |
| **EP090: Organotin Compounds (QCLot: 4971656)** | | | | | | | | |
| EP090: Tributyltin | 56573-85-4 | 0.5 | µgSn/kg | <0.5 | 1.25 µgSn/kg | 112 | 52.0 | 139 |

## Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

| Matrix Spike (MS) Report |
|---|

Sub-Matrix: **SOIL**

| | | | | Matrix Spike (MS) Report | | | |
|---|---|---|---|---|---|---|---|
| | | | | Spike | SpikeRecovery(%) | Acceptable Limits (%) | |
| *Laboratory sample ID* | *Sample ID* | *Method: Compound* | *CAS Number* | *Concentration* | *MS* | *Low* | *High* |
| **EG035T: Total Recoverable Mercury by FIMS (Low Level) (QCLot: 4974140)** | | | | | | | |
| EB2310032-002 | A2-SED-0323 | EG035T-LL: Mercury | 7439-97-6 | 0.5 mg/kg | 87.7 | 70.0 | 130 |
| **EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 4974139)** | | | | | | | |
| EB2310032-002 | A2-SED-0323 | EG020-SD: Arsenic | 7440-38-2 | 100 mg/kg | 93.8 | 70.0 | 130 |
| | | EG020-SD: Cadmium | 7440-43-9 | 25 mg/kg | 90.9 | 70.0 | 130 |
| | | EG020-SD: Chromium | 7440-47-3 | 100 mg/kg | 95.4 | 70.0 | 130 |
| | | EG020-SD: Copper | 7440-50-8 | 100 mg/kg | 89.1 | 70.0 | 130 |
| | | EG020-SD: Cobalt | 7440-48-4 | 100 mg/kg | 91.0 | 70.0 | 130 |
| | | EG020-SD: Lead | 7439-92-1 | 100 mg/kg | 89.4 | 70.0 | 130 |
| | | EG020-SD: Manganese | 7439-96-5 | 100 mg/kg | 96.2 | 70.0 | 130 |
| | | EG020-SD: Nickel | 7440-02-0 | 100 mg/kg | 87.2 | 70.0 | 130 |
| | | EG020-SD: Vanadium | 7440-62-2 | 100 mg/kg | 95.6 | 70.0 | 130 |
| | | EG020-SD: Zinc | 7440-66-6 | 100 mg/kg | 81.4 | 70.0 | 130 |
| **EG020T: Total Metals by ICP-MS (QCLot: 4974137)** | | | | | | | |
| EB2309600-006 | Anonymous | EG020X-T: Barium | 7440-39-3 | 100 mg/kg | 82.0 | 70.0 | 130 |
| **EP090: Organotin Compounds (QCLot: 4971656)** | | | | | | | |
| EB2310032-002 | A2-SED-0323 | EP090: Tributyltin | 56573-85-4 | 1.25 µgSn/kg | 58.0 | 20.0 | 130 |

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **EB2310032** | Page | : 1 of 5 |
| Client | : **BMT COMMERCIAL AUSTRALIA PTY LTD** | Laboratory | : Environmental Division Brisbane |
| Contact | : MS BETH TOKI | Telephone | : +61-7-3243 7222 |
| Project | : B23282 Douglas Shoal Survey 3 | Date Samples Received | : 03-Apr-2023 |
| Site | : ---- | Issue Date | : 17-Apr-2023 |
| Sampler | : C JONES/ A GIANNONI | No. of samples received | : 11 |
| Order number | : ---- | No. of samples analysed | : 11 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **Duplicate outliers exist - please see following pages for full details.**
- **Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.**

### *Outliers : Analysis Holding Time Compliance*

- **NO Analysis Holding Time Outliers exist.**

### *Outliers : Frequency of Quality Control Samples*

- **NO Quality Control Sample Frequency Outliers exist.**

## Outliers : Quality Control Samples

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **SOIL**

| Compound Group Name | Laboratory Sample ID | Client Sample ID | Analyte | CAS Number | Data | Limits | Comment |
|---|---|---|---|---|---|---|---|
| **Duplicate (DUP) RPDs** | | | | | | | |
| EG005(ED093)-SD: Total Metals in Sediments by ICP-A | EB2310032--001 | A1-SED-0323 | **Aluminium** | 7429-90-5 | 59.5 % | 0% - 50% | **RPD exceeds LOR based limits** |
| EP090: Organotin Compounds | EB2310032--001 | A1-SED-0323 | **Tributyltin** | 56573-85-4 | 180 % | 0% - 20% | **RPD exceeds LOR based limits** |

### Regular Sample Surrogates

Sub-Matrix: **SOIL**

| Compound Group Name | Laboratory Sample ID | Client Sample ID | Analyte | CAS Number | Data | Limits | Comment |
|---|---|---|---|---|---|---|---|
| **Samples Submitted** | | | | | | | |
| EP090S: Organotin Surrogate | EB2310032-001 | A1-SED-0323 | **Tripropyltin** | ---- | 9.4 % | 35.0-130 % | **Recovery less than lower data quality objective** |

## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL** Evaluation: × = Holding time breach ; ✓ = Within holding time.

| ***Method*** / ***Container*** / Client Sample ID(s) | ***Sample Date*** | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|
| | | ***Date extracted*** | *Due for extraction* | *Evaluation* | ***Date analysed*** | *Due for analysis* | *Evaluation* |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | |
| **Soil Glass Jar - Unpreserved (EA055)** | | | | | | | |
| A1-SED-0323, A2-SED-0323, A3-SED-0323, A4-SED-0323, A5-SED-0323, A6-SED-0323, A7-SED-0323, A8-SED-0323, A9-SED-0323, A10-SED-0323, QC01 | **27-Mar-2023** | **----** | ---- | ---- | **04-Apr-2023** | 10-Apr-2023 | ✓ |
| **EG005(ED093)-SD: Total Metals in Sediments by ICP-AES** | | | | | | | |
| **Soil Glass Jar - Unpreserved (EG005-SD)** | | | | | | | |
| A1-SED-0323, A2-SED-0323, A3-SED-0323, A4-SED-0323, A5-SED-0323, A6-SED-0323, A7-SED-0323, A8-SED-0323, A9-SED-0323, A10-SED-0323, QC01 | **27-Mar-2023** | **11-Apr-2023** | 23-Sep-2023 | ✓ | **13-Apr-2023** | 23-Sep-2023 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EG020-SD: Total Metals in Sediments by ICPMS** | | | | | | | |
| **Soil Glass Jar - Unpreserved (EG020-SD)** | | | | | | | |
| A1-SED-0323, A2-SED-0323, A3-SED-0323, A4-SED-0323, A5-SED-0323, A6-SED-0323, A7-SED-0323, A8-SED-0323, A9-SED-0323, A10-SED-0323, QC01 | **27-Mar-2023** | **11-Apr-2023** | 23-Sep-2023 | ✓ | **14-Apr-2023** | 23-Sep-2023 | ✓ |
| **EG020T: Total Metals by ICP-MS** | | | | | | | |
| **Soil Glass Jar - Unpreserved (EG020X-T)** | | | | | | | |
| A1-SED-0323, A2-SED-0323, A3-SED-0323, A4-SED-0323, A5-SED-0323, A6-SED-0323, A7-SED-0323, A8-SED-0323, A9-SED-0323, A10-SED-0323, QC01 | **27-Mar-2023** | **11-Apr-2023** | 23-Sep-2023 | ✓ | **14-Apr-2023** | 23-Sep-2023 | ✓ |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | |
| **Soil Glass Jar - Unpreserved (EG035T-LL)** | | | | | | | |
| A1-SED-0323, A2-SED-0323, A3-SED-0323, A4-SED-0323, A5-SED-0323, A6-SED-0323, A7-SED-0323, A8-SED-0323, A9-SED-0323, A10-SED-0323, QC01 | **27-Mar-2023** | **11-Apr-2023** | 24-Apr-2023 | ✓ | **13-Apr-2023** | 24-Apr-2023 | ✓ |
| **EP003: Total Organic Carbon (TOC) in Soil** | | | | | | | |
| **Soil Glass Jar - Unpreserved (EP003)** | | | | | | | |
| A1-SED-0323, A2-SED-0323, A3-SED-0323, A4-SED-0323, A5-SED-0323, A6-SED-0323, A7-SED-0323, A8-SED-0323, A9-SED-0323, A10-SED-0323, QC01 | **27-Mar-2023** | **14-Apr-2023** | 24-Apr-2023 | ✓ | **14-Apr-2023** | 24-Apr-2023 | ✓ |
| **EP090: Organotin Compounds** | | | | | | | |
| **Soil Glass Jar - Unpreserved (EP090)** | | | | | | | |
| A1-SED-0323, A2-SED-0323, A3-SED-0323, A4-SED-0323, A5-SED-0323, A6-SED-0323, A7-SED-0323, A8-SED-0323, A9-SED-0323, A10-SED-0323, QC01 | **27-Mar-2023** | **04-Apr-2023** | 10-Apr-2023 | ✓ | **06-Apr-2023** | 14-May-2023 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Moisture Content | EA055 | 2 | 11 | **18.18** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Organotin Analysis | EP090 | 2 | 11 | **18.18** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Fe and Al in Sediments by ICPAES | EG005-SD | 2 | 11 | **18.18** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Mercury by FIMS (Low Level) | EG035T-LL | 2 | 11 | **18.18** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals by ICP-MS - Suite X | EG020X-T | 2 | 11 | **18.18** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals in Sediments by ICPMS | EG020-SD | 2 | 11 | **18.18** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Organic Carbon | EP003 | 2 | 11 | **18.18** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Organotin Analysis | EP090 | 1 | 11 | **9.09** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Fe and Al in Sediments by ICPAES | EG005-SD | 1 | 11 | **9.09** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Mercury by FIMS (Low Level) | EG035T-LL | 1 | 11 | **9.09** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals by ICP-MS - Suite X | EG020X-T | 1 | 11 | **9.09** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals in Sediments by ICPMS | EG020-SD | 1 | 11 | **9.09** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Organic Carbon | EP003 | 2 | 11 | **18.18** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Organotin Analysis | EP090 | 1 | 11 | **9.09** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Fe and Al in Sediments by ICPAES | EG005-SD | 1 | 11 | **9.09** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Mercury by FIMS (Low Level) | EG035T-LL | 1 | 11 | **9.09** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals by ICP-MS - Suite X | EG020X-T | 1 | 11 | **9.09** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals in Sediments by ICPMS | EG020-SD | 1 | 11 | **9.09** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Organic Carbon | EP003 | 1 | 11 | **9.09** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Organotin Analysis | EP090 | 1 | 11 | **9.09** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Mercury by FIMS (Low Level) | EG035T-LL | 1 | 11 | **9.09** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals by ICP-MS - Suite X | EG020X-T | 1 | 11 | **9.09** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals in Sediments by ICPMS | EG020-SD | 1 | 11 | **9.09** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Moisture Content | EA055 | SOIL | In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3). |
| Total Fe and Al in Sediments by ICPAES | EG005-SD | SOIL | In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3). LORs per NODG |
| Total Metals in Sediments by ICPMS | EG020-SD | SOIL | In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector. Analyte list and LORs per NODG. |
| Total Metals by ICP-MS - Suite X | EG020X-T | SOIL | In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector. |
| Total Mercury by FIMS (Low Level) | EG035T-LL | SOIL | In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3) |
| Total Organic Carbon | EP003 | SOIL | In house C-IR17. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automatically measured by infra-red detector. |
| Organotin Analysis | EP090 | SOIL | In house: Referenced to USEPA SW 846 - 8270 Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quanitified against an established calibration curve. |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Hot Block Digest for metals in soils sediments and sludges | EN69 | SOIL | In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3). |
| Dry and Pulverise (up to 100g) | GEO30 | SOIL | # |
| Organotin Sample Preparation | ORG35 | SOIL | In house: 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis. |

# QUALITY ASSURANCE REPORT

Client: **BMT COMMERCIAL PTY LTD**
QA Report No: **BMTW01/231108** Matrix: Food

| Analyte | Method | Units | LOR | Blank | Duplicates | | | Recoveries | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Sample | Duplicate | RPD | LCS | Matrix Spike |
| | | | | | | | % | % | % |
| **Inorganics Section** | | | | | **N23/023369** | | | | **N23/023369** |
| Copper | NT2_46 | mg/kg | 0.01 | <0.01 | 0.23 | 0.35 | 41 | 98 | 100 |
| Zinc | NT2_46 | mg/kg | 0.01 | <0.01 | 2.9 | 3 | 3 | 100 | # |
| | | | | | | | | | |
| **Inorganics Section** | | | | | **N23/023384** | | | | **N23/023384** |
| Copper | NT2_46 | mg/kg | 0.01 | <0.01 | 0.096 | 0.11 | 14 | 98 | 100 |
| Zinc | NT2_46 | mg/kg | 0.01 | <0.01 | 2.7 | 3.4 | 23 | 100 | # |
| | | | | | | | | | |

LOR = Limit Of Reporting RPD = Relative Percent Difference LCS = Laboratory Control Sample NA = Not Applicable
Acceptable recoveries for the LCS and Matrix Spike are 80 - 120%.
Acceptable RPDs on duplicates is 44 % at concentrations more than 5 times LOR. Greater RPD may be expected at less than 5 times LOR.
#: Spike level is less than 50% of the sample's concentration, hence the recovery data is not reliable.
**: reference value not available

Signed: 
Dr Andrew Evans
Inorganics, NMI (North Ryde)
Date: 21/11/2023

**Australian Government**

**National Measurement Institute**

# QUALITY ASSURANCE REPORT

**Client:** BMT COMMERCIAL PTY LTD

**NMI QA Report No:** BMTW01/231108 **Sample Matrix:** Solid

| Analyte | Method | LOR | Blank | Sample Duplicates | | | Recoveries | |
|---|---|---|---|---|---|---|---|---|
| | | | | Sample | Duplicate | RPD | LCS | Matrix Spike |
| | | ng/g | ng/g | ng/g | ng/g | % | % | % |
| **Organics Section** | | | | | | | | |
| **Organotin** | | | | **N23/023350** | | | | **N23/023351** |
| Monobutyltin | NR_35 | 1 | <1 | <1 | <1 | - | 134 | 113 |
| Dibutyltin | NR_35 | 1 | <1 | <1 | <1 | - | 130 | 88 |
| Tributyltin | NR_35 | 1 | <1 | <1 | <1 | - | 105 | 102 |
| **Organotin Surrogate** | | | | | | | | |
| Tripropyltin (%Rec) | NR_35 | - | - | 104 | 103 | 0.97 | 107 | 79 |

Results expressed in percentage (%) or ng/g wherever appropriate.
Acceptable Spike recovery is 30-150% (monobutyltin and Tripropyltin); 40-160% (dibutyltin and tributyltin)
Maximum acceptable RPDs on spikes and duplicates is 60%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference, LCS = Laboratory Control Spike, LOR = Limit of Reporting.
This report shall not be reproduced except in full.

**Signed:**

**Danny Slee**
**Organics Manager, NMI-North Ryde**

**Date:** **21/11/2023**

**Australian Government**

**National Measurement Institute**

# QUALITY ASSURANCE REPORT

**Client:** BMT COMMERCIAL PTY LTD

**NMI QA Report No:** BMTW01/231108 **Sample Matrix:** Solid

| Analyte | Method | LOR | Blank | Sample Duplicates | | | Recoveries | |
|---|---|---|---|---|---|---|---|---|
| | | | | Sample | Duplicate | RPD | LCS | Matrix Spike |
| | | ng/g | ng/g | ng/g | ng/g | % | % | % |
| **Organics Section** | | | | | | | | |
| **Organotin** | | | | **N23/023370** | | | | **N23/023371** |
| Monobutyltin | NR_35 | 1 | <1 | <1 | <1 | - | 87 | 62 |
| Dibutyltin | NR_35 | 1 | <1 | <1 | <1 | - | 101 | 72 |
| Tributyltin | NR_35 | 1 | <1 | <1 | <1 | - | 95 | 87 |
| **Organotin Surrogate** | | | | | | | | |
| Tripropyltin (%Rec) | NR_35 | - | - | 98 | 80 | 20 | 97 | 95 |

Results expressed in percentage (%) or ng/g wherever appropriate.
Acceptable Spike recovery is 30-150% (monobutyltin and Tripropyltin); 40-160% (dibutyltin and tributyltin)
Maximum acceptable RPDs on spikes and duplicates is 60%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference, LCS = Laboratory Control Spike, LOR = Limit of Reporting.
This report shall not be reproduced except in full.

**Signed:**

**Danny Slee**
**Organics Manager, NMI-North Ryde**

**Date:** **21/11/2023**

**Australian Government**

**National Measurement Institute**

# QUALITY ASSURANCE REPORT

**Client:** BMT COMMERCIAL PTY LTD

**NMI QA Report No:** BMTW01/231108 **Sample Matrix:** Solid

| Analyte | Method | LOR | Blank | Sample Duplicates | | | Recoveries | |
|---|---|---|---|---|---|---|---|---|
| | | | | Sample | Duplicate | RPD | LCS | Matrix Spike |
| | | ng/g | ng/g | ng/g | ng/g | % | % | % |
| **Organics Section** | | | | | | | | |
| **Organotin** | | | | **N23/023380** | | | | **N23/023381** |
| Monobutyltin | NR_35 | 1 | <1 | <1 | <1 | - | 87 | 73 |
| Dibutyltin | NR_35 | 1 | <1 | <1 | <1 | - | 101 | 84 |
| Tributyltin | NR_35 | 1 | <1 | <1 | <1 | - | 95 | 93 |
| **Organotin Surrogate** | | | | | | | | |
| Tripropyltin (%Rec) | NR_35 | - | - | 121 | 104 | 15 | 97 | 91 |

Results expressed in percentage (%) or ng/g wherever appropriate.
Acceptable Spike recovery is 30-150% (monobutyltin and Tripropyltin); 40-160% (dibutyltin and tributyltin)
Maximum acceptable RPDs on spikes and duplicates is 60%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference, LCS = Laboratory Control Spike, LOR = Limit of Reporting.
This report shall not be reproduced except in full.

**Signed:**

**Danny Slee**
**Organics Manager, NMI-North Ryde**

**Date:** **21/11/2023**

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **EB2420000** | Page | : 1 of 19 |
| **Amendment** | : **1** | | |
| Client | : **BMT COMMERCIAL AUSTRALIA PTY LTD** | Laboratory | : Environmental Division Brisbane |
| Contact | : MR CONOR JONES | Telephone | : +61-7-3243 7222 |
| Project | : B23282 Douglas Shoal | Date Samples Received | : 13-Jun-2024 |
| Site | : ---- | Issue Date | : 03-Jul-2024 |
| Sampler | : CONOR JONES | No. of samples received | : 100 |
| Order number | : 214 | No. of samples analysed | : 100 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Duplicate outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.**

### *Outliers : Analysis Holding Time Compliance*

- **NO Analysis Holding Time Outliers exist.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

## Outliers : Quality Control Samples

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **SOIL**

| Compound Group Name | Laboratory Sample ID | Client Sample ID | Analyte | CAS Number | Data | Limits | Comment |
|---|---|---|---|---|---|---|---|
| **Duplicate (DUP) RPDs** | | | | | | | |
| EG005(ED093)-SD: Total Metals in Sediments by ICP-A | EB2420000--061 | E4-SED-0624 | **Aluminium** | 7429-90-5 | 60.3 % | 0% - 50% | **RPD exceeds LOR based limits** |
| EG005(ED093)-SD: Total Metals in Sediments by ICP-A | EB2420000--011 | A11-SED-0624 | **Aluminium** | 7429-90-5 | 29.0 % | 0% - 20% | **RPD exceeds LOR based limits** |
| EG005(ED093)-SD: Total Metals in Sediments by ICP-A | EB2420000--061 | E4-SED-0624 | **Iron** | 7439-89-6 | 53.6 % | 0% - 50% | **RPD exceeds LOR based limits** |
| EG020-SD: Total Metals in Sediments by ICPMS | EB2420000--001 | A1-SED-0624 | **Copper** | 7440-50-8 | 154 % | 0% - 20% | **RPD exceeds LOR based limits** |
| EG020T: Total Metals by ICP-MS | EB2420000--071 | G7-SED-0624 | **Barium** | 7440-39-3 | 33.2 % | 0% - 20% | **RPD exceeds LOR based limits** |
| EP090: Organotin Compounds | EB2420000--011 | A11-SED-0624 | **Tributyltin** | 56573-85-4 | 55.8 % | 0% - 20% | **RPD exceeds LOR based limits** |
| **Matrix Spike (MS) Recoveries** | | | | | | | |
| EP090: Organotin Compounds | EB2420000--042 | D3-SED-0624 | **Monobutyltin** | 78763-54-9 | 7.5 % | 20.0-130% | **Recovery less than lower data quality objective** |

## Regular Sample Surrogates

Sub-Matrix: **SEDIMENT**

| Compound Group Name | Laboratory Sample ID | Client Sample ID | Analyte | CAS Number | Data | Limits | Comment |
|---|---|---|---|---|---|---|---|
| **Samples Submitted** | | | | | | | |
| EP090S: Organotin Surrogate | EB2420000-001 | A1-SED-0624 | **Tripropyltin** | ---- | 22.7 % | 35.0-130 % | **Recovery less than lower data quality objective** |
| EP090S: Organotin Surrogate | EB2420000-003 | A3-SED-0624 | **Tripropyltin** | ---- | 22.3 % | 35.0-130 % | **Recovery less than lower data quality objective** |
| EP090S: Organotin Surrogate | EB2420000-005 | A5-SED-0624 | **Tripropyltin** | ---- | 13.2 % | 35.0-130 % | **Recovery less than lower data quality objective** |
| EP090S: Organotin Surrogate | EB2420000-025 | A14-SED-0624 | **Tripropyltin** | ---- | 29.6 % | 35.0-130 % | **Recovery less than lower data quality objective** |
| EP090S: Organotin Surrogate | EB2420000-006 | A6-SED-0624 | **Tripropyltin** | ---- | 15.7 % | 35.0-130 % | **Recovery less than lower data quality objective** |

## Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

| Quality Control Sample Type | | Count | | Rate (%) | | Quality Control Specification |
|---|---|---|---|---|---|---|
| Analytical Methods | Method | QC | Regular | Actual | Expected | |
| Matrix Spikes (MS) | | | | | | |
| Total Metals by ICP-MS - Suite X | EG020X-T | 0 | 100 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

# Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EA055: Moisture Content (Dried @ 105-110°C)** | | | | | | | |
| **Soil Glass Jar - Unpreserved (EA055)** | | | | | | | |
| A1-SED-0624, A2-SED-0624, A3-SED-0624, A4-SED-0624, A5-SED-0624, A6-SED-0624, A7-SED-0624, A8-SED-0624, A9-SED-0624, A10-SED-0624, A11-SED-0624, A13-SED-0624, C13-SED-0624, C14-SED-0624, B1-SED-0624, B2-SED-0624, B3-SED-0624, B4-SED-0624, B5-SED-0624, B6-SED-0624, B7-SED-0624, B8-SED-0624, B9-SED-0624, B10-SED-0624, A14-SED-0624, C1-SED-0624, C2-SED-0624, C3-SED-0624, C4-SED-0624, C5-SED-0624, C6-SED-0624, C7-SED-0624, C8-SED-0624, C9-SED-0624, C10-SED-0624, C11-SED-0624, B11-SED-0624, B13-SED-0624, B14-SED-0624 | **06-Jun-2024** | **----** | ---- | **----** | **19-Jun-2024** | 20-Jun-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EA055)** | | | | | | | |
| D1-SED-0624 | **07-Jun-2024** | **----** | ---- | **----** | **19-Jun-2024** | 21-Jun-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EA055)** | | | | | | | |
| D2-SED-0624, D3-SED-0624, D4-SED-0624, D5-SED-0624, D6-SED-0624, D7-SED-0624, D8-SED-0624, D9-SED-0624, D10-SED-0624, D11-SED-0624, D13-SED-0624, D14-SED-0624, G1-SED-0624, G2-SED-0624, G3-SED-0624, G4-SED-0624, G5-SED-0624, E1-SED-0624, E2-SED-0624, E3-SED-0624, E4-SED-0624, E5-SED-0624, E6-SED-0624, E7-SED-0624, E8-SED-0624, E9-SED-0624, E10-SED-0624, E13-SED-0624, E14-SED-0624, G6-SED-0624, G7-SED-0624, G8-SED-0624, G9-SED-0624, G10-SED-0624, G13-SED-0624, G14-SED-0624 | **07-Jun-2024** | **----** | ---- | **----** | **20-Jun-2024** | 21-Jun-2024 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EA055: Moisture Content (Dried @ 105-110°C) - Continued** | | | | | | | |
| **Soil Glass Jar - Unpreserved (EA055)**<br>I5-SED-0624, I6-SED-0624, I7-SED-0624, I8-SED-0624, I9-SED-0624, I13-SED-0624, I14-SED-0624, H1-SED-0624, H2-SED-0624, H3-SED-0624, H4-SED-0624, H5-SED-0624, H6-SED-0624, H7-SED-0624, H10-SED-0624, H13-SED-0624, H14-SED-0624 | **08-Jun-2024** | **----** | ---- | ---- | **19-Jun-2024** | 22-Jun-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EA055)**<br>I1-SED-0624, I2-SED-0624, I3-SED-0624, I4-SED-0624 | **08-Jun-2024** | **----** | ---- | ---- | **20-Jun-2024** | 22-Jun-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EA055)**<br>I10-SED-0624 | **09-Jun-2024** | **----** | ---- | ---- | **19-Jun-2024** | 23-Jun-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EA055)**<br>H8-SED-0624, H9-SED-0624 | **10-Jun-2024** | **----** | ---- | ---- | **19-Jun-2024** | 24-Jun-2024 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EG005(ED093)-SD: Total Metals in Sediments by ICP-AES** | | | | | | | |
| **Soil Glass Jar - Unpreserved (EG005-SD)** | | | | | | | |
| A1-SED-0624, A2-SED-0624, A3-SED-0624, A4-SED-0624, A5-SED-0624, A6-SED-0624, A7-SED-0624, A8-SED-0624, A9-SED-0624, A10-SED-0624, A11-SED-0624, A13-SED-0624, C13-SED-0624, C14-SED-0624, B1-SED-0624, B2-SED-0624, B3-SED-0624, B4-SED-0624, B5-SED-0624, B6-SED-0624, B7-SED-0624, B8-SED-0624, B9-SED-0624, B10-SED-0624, A14-SED-0624, C1-SED-0624, C2-SED-0624, C3-SED-0624, C4-SED-0624, C5-SED-0624, C6-SED-0624, C7-SED-0624, C8-SED-0624, C9-SED-0624, C10-SED-0624, C11-SED-0624, B11-SED-0624, B13-SED-0624, B14-SED-0624 | **06-Jun-2024** | **21-Jun-2024** | 03-Dec-2024 | ✓ | **21-Jun-2024** | 03-Dec-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EG005-SD)** | | | | | | | |
| D1-SED-0624 | **07-Jun-2024** | **21-Jun-2024** | 04-Dec-2024 | ✓ | **21-Jun-2024** | 04-Dec-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EG005-SD)** | | | | | | | |
| D2-SED-0624, D3-SED-0624, D4-SED-0624, D5-SED-0624, D6-SED-0624, D7-SED-0624, D8-SED-0624, D9-SED-0624, D10-SED-0624, D11-SED-0624, D13-SED-0624, D14-SED-0624, G1-SED-0624, G2-SED-0624, G3-SED-0624, G4-SED-0624, G5-SED-0624, E1-SED-0624, E2-SED-0624, E3-SED-0624, E4-SED-0624, E5-SED-0624, E6-SED-0624, E7-SED-0624, E8-SED-0624, E9-SED-0624, E10-SED-0624, E13-SED-0624, E14-SED-0624, G6-SED-0624, G7-SED-0624, G8-SED-0624, G9-SED-0624, G10-SED-0624, G13-SED-0624, G14-SED-0624 | **07-Jun-2024** | **21-Jun-2024** | 04-Dec-2024 | ✓ | **24-Jun-2024** | 04-Dec-2024 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EG005(ED093)-SD: Total Metals in Sediments by ICP-AES - Continued** | | | | | | | |
| **Soil Glass Jar - Unpreserved (EG005-SD)**<br>I1-SED-0624, I2-SED-0624,<br>I3-SED-0624, I4-SED-0624 | **08-Jun-2024** | **21-Jun-2024** | 05-Dec-2024 | ✓ | **24-Jun-2024** | 05-Dec-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EG005-SD)**<br>I5-SED-0624, I6-SED-0624,<br>I7-SED-0624, I8-SED-0624,<br>I9-SED-0624, I13-SED-0624,<br>I14-SED-0624, H1-SED-0624,<br>H2-SED-0624, H3-SED-0624,<br>H4-SED-0624, H5-SED-0624,<br>H6-SED-0624, H7-SED-0624,<br>H10-SED-0624, H13-SED-0624,<br>H14-SED-0624 | **08-Jun-2024** | **21-Jun-2024** | 05-Dec-2024 | ✓ | **25-Jun-2024** | 05-Dec-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EG005-SD)**<br>I10-SED-0624 | **09-Jun-2024** | **21-Jun-2024** | 06-Dec-2024 | ✓ | **25-Jun-2024** | 06-Dec-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EG005-SD)**<br>H8-SED-0624, H9-SED-0624 | **10-Jun-2024** | **21-Jun-2024** | 07-Dec-2024 | ✓ | **25-Jun-2024** | 07-Dec-2024 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EG020-SD: Total Metals in Sediments by ICPMS** | | | | | | | |
| **Soil Glass Jar - Unpreserved (EG020-SD)** | | | | | | | |
| A1-SED-0624, A2-SED-0624, A3-SED-0624, A4-SED-0624, A5-SED-0624, A6-SED-0624, A7-SED-0624, A8-SED-0624, A9-SED-0624, A10-SED-0624, A11-SED-0624, A13-SED-0624, C13-SED-0624, C14-SED-0624, B1-SED-0624, B2-SED-0624, B3-SED-0624, B4-SED-0624, B5-SED-0624, B6-SED-0624, B7-SED-0624, B8-SED-0624, B9-SED-0624, B10-SED-0624, A14-SED-0624, C1-SED-0624, C2-SED-0624, C3-SED-0624, C4-SED-0624, C5-SED-0624, C6-SED-0624, C7-SED-0624, C8-SED-0624, C9-SED-0624, C10-SED-0624, C11-SED-0624, B11-SED-0624, B13-SED-0624, B14-SED-0624 | **06-Jun-2024** | **21-Jun-2024** | 03-Dec-2024 | ✓ | **22-Jun-2024** | 03-Dec-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EG020-SD)** | | | | | | | |
| D1-SED-0624 | **07-Jun-2024** | **21-Jun-2024** | 04-Dec-2024 | ✓ | **22-Jun-2024** | 04-Dec-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EG020-SD)** | | | | | | | |
| D2-SED-0624, D3-SED-0624, D4-SED-0624, D5-SED-0624, D6-SED-0624, D7-SED-0624, D8-SED-0624, D9-SED-0624, D10-SED-0624, D11-SED-0624, D13-SED-0624, D14-SED-0624, G1-SED-0624, G2-SED-0624, G3-SED-0624, G4-SED-0624, G5-SED-0624, E1-SED-0624, E2-SED-0624, E3-SED-0624, E4-SED-0624, E5-SED-0624, E6-SED-0624, E7-SED-0624, E8-SED-0624, E9-SED-0624, E10-SED-0624, E13-SED-0624, E14-SED-0624, G6-SED-0624, G7-SED-0624, G8-SED-0624, G9-SED-0624, G10-SED-0624, G13-SED-0624, G14-SED-0624 | **07-Jun-2024** | **21-Jun-2024** | 04-Dec-2024 | ✓ | **24-Jun-2024** | 04-Dec-2024 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EG020-SD: Total Metals in Sediments by ICPMS - Continued** | | | | | | | |
| **Soil Glass Jar - Unpreserved (EG020-SD)**<br>I1-SED-0624, I2-SED-0624, I3-SED-0624, I4-SED-0624 | **08-Jun-2024** | **21-Jun-2024** | 05-Dec-2024 | ✓ | **24-Jun-2024** | 05-Dec-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EG020-SD)**<br>I5-SED-0624, I6-SED-0624, I7-SED-0624, I8-SED-0624, I9-SED-0624, I13-SED-0624, I14-SED-0624, H1-SED-0624, H2-SED-0624, H3-SED-0624, H4-SED-0624, H5-SED-0624, H6-SED-0624, H7-SED-0624, H10-SED-0624, H13-SED-0624, H14-SED-0624 | **08-Jun-2024** | **21-Jun-2024** | 05-Dec-2024 | ✓ | **26-Jun-2024** | 05-Dec-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EG020-SD)**<br>I10-SED-0624 | **09-Jun-2024** | **21-Jun-2024** | 06-Dec-2024 | ✓ | **26-Jun-2024** | 06-Dec-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EG020-SD)**<br>H8-SED-0624, H9-SED-0624 | **10-Jun-2024** | **21-Jun-2024** | 07-Dec-2024 | ✓ | **26-Jun-2024** | 07-Dec-2024 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EG020T: Total Metals by ICP-MS** | | | | | | | |
| **Soil Glass Jar - Unpreserved (EG020X-T)** | | | | | | | |
| A1-SED-0624, A2-SED-0624, A3-SED-0624, A4-SED-0624, A5-SED-0624, A6-SED-0624, A7-SED-0624, A8-SED-0624, A9-SED-0624, A10-SED-0624, A11-SED-0624, A13-SED-0624, C13-SED-0624, C14-SED-0624, B1-SED-0624, B2-SED-0624, B3-SED-0624, B4-SED-0624, B5-SED-0624, B6-SED-0624, B7-SED-0624, B8-SED-0624, B9-SED-0624, B10-SED-0624, A14-SED-0624, C1-SED-0624, C2-SED-0624, C3-SED-0624, C4-SED-0624, C5-SED-0624, C6-SED-0624, C7-SED-0624, C8-SED-0624, C9-SED-0624, C10-SED-0624, C11-SED-0624, B11-SED-0624, B13-SED-0624, B14-SED-0624 | **06-Jun-2024** | **21-Jun-2024** | 03-Dec-2024 | ✓ | **22-Jun-2024** | 03-Dec-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EG020X-T)** | | | | | | | |
| D1-SED-0624 | **07-Jun-2024** | **21-Jun-2024** | 04-Dec-2024 | ✓ | **22-Jun-2024** | 04-Dec-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EG020X-T)** | | | | | | | |
| D2-SED-0624, D3-SED-0624, D4-SED-0624, D5-SED-0624, D6-SED-0624, D7-SED-0624, D8-SED-0624, D9-SED-0624, D10-SED-0624, D11-SED-0624, D13-SED-0624, D14-SED-0624, G1-SED-0624, G2-SED-0624, G3-SED-0624, G4-SED-0624, G5-SED-0624, E1-SED-0624, E2-SED-0624, E3-SED-0624, E4-SED-0624, E5-SED-0624, E6-SED-0624, E7-SED-0624, E8-SED-0624, E9-SED-0624, E10-SED-0624, E13-SED-0624, E14-SED-0624, G6-SED-0624, G7-SED-0624, G8-SED-0624, G9-SED-0624, G10-SED-0624, G13-SED-0624, G14-SED-0624 | **07-Jun-2024** | **21-Jun-2024** | 04-Dec-2024 | ✓ | **24-Jun-2024** | 04-Dec-2024 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EG020T: Total Metals by ICP-MS - Continued** | | | | | | | |
| **Soil Glass Jar - Unpreserved (EG020X-T)**<br>I1-SED-0624, I2-SED-0624, I3-SED-0624, I4-SED-0624 | **08-Jun-2024** | **21-Jun-2024** | 05-Dec-2024 | ✓ | **24-Jun-2024** | 05-Dec-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EG020X-T)**<br>I5-SED-0624, I6-SED-0624, I7-SED-0624, I8-SED-0624, I9-SED-0624, I13-SED-0624, I14-SED-0624, H1-SED-0624, H2-SED-0624, H3-SED-0624, H4-SED-0624, H5-SED-0624, H6-SED-0624, H7-SED-0624, H10-SED-0624, H13-SED-0624, H14-SED-0624 | **08-Jun-2024** | **21-Jun-2024** | 05-Dec-2024 | ✓ | **26-Jun-2024** | 05-Dec-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EG020X-T)**<br>I10-SED-0624 | **09-Jun-2024** | **21-Jun-2024** | 06-Dec-2024 | ✓ | **26-Jun-2024** | 06-Dec-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EG020X-T)**<br>H8-SED-0624, H9-SED-0624 | **10-Jun-2024** | **21-Jun-2024** | 07-Dec-2024 | ✓ | **26-Jun-2024** | 07-Dec-2024 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EG035T: Total Recoverable Mercury by FIMS** | | | | | | | |
| **Soil Glass Jar - Unpreserved (EG035T-LL)** | | | | | | | |
| A1-SED-0624, A2-SED-0624, A3-SED-0624, A4-SED-0624, A5-SED-0624, A6-SED-0624, A7-SED-0624, A8-SED-0624, A9-SED-0624, A10-SED-0624, A11-SED-0624, A13-SED-0624, C13-SED-0624, C14-SED-0624, B1-SED-0624, B2-SED-0624, B3-SED-0624, B4-SED-0624, B5-SED-0624, B6-SED-0624, B7-SED-0624, B8-SED-0624, B9-SED-0624, B10-SED-0624, A14-SED-0624, C1-SED-0624, C2-SED-0624, C3-SED-0624, C4-SED-0624, C5-SED-0624, C6-SED-0624, C7-SED-0624, C8-SED-0624, C9-SED-0624, C10-SED-0624, C11-SED-0624, B11-SED-0624, B13-SED-0624, B14-SED-0624 | **06-Jun-2024** | **21-Jun-2024** | 04-Jul-2024 | ✓ | **21-Jun-2024** | 04-Jul-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EG035T-LL)** | | | | | | | |
| D1-SED-0624 | **07-Jun-2024** | **21-Jun-2024** | 05-Jul-2024 | ✓ | **21-Jun-2024** | 05-Jul-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EG035T-LL)** | | | | | | | |
| D2-SED-0624, D3-SED-0624, D4-SED-0624, D5-SED-0624, D6-SED-0624, D7-SED-0624, D8-SED-0624, D9-SED-0624, D10-SED-0624, D11-SED-0624, D13-SED-0624, D14-SED-0624, G1-SED-0624, G2-SED-0624, G3-SED-0624, G4-SED-0624, G5-SED-0624, E1-SED-0624, E2-SED-0624, E3-SED-0624, E4-SED-0624, E5-SED-0624, E6-SED-0624, E7-SED-0624, E8-SED-0624, E9-SED-0624, E10-SED-0624, E13-SED-0624, E14-SED-0624, G6-SED-0624, G7-SED-0624, G8-SED-0624, G9-SED-0624, G10-SED-0624, G13-SED-0624, G14-SED-0624 | **07-Jun-2024** | **21-Jun-2024** | 05-Jul-2024 | ✓ | **24-Jun-2024** | 05-Jul-2024 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EG035T: Total Recoverable Mercury by FIMS - Continued** | | | | | | | |
| **Soil Glass Jar - Unpreserved (EG035T-LL)**<br>I1-SED-0624, I2-SED-0624, I3-SED-0624, I4-SED-0624 | **08-Jun-2024** | **21-Jun-2024** | 06-Jul-2024 | ✓ | **24-Jun-2024** | 06-Jul-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EG035T-LL)**<br>I5-SED-0624, I6-SED-0624, I7-SED-0624, I8-SED-0624, I9-SED-0624, I13-SED-0624, I14-SED-0624, H1-SED-0624, H2-SED-0624, H3-SED-0624, H4-SED-0624, H5-SED-0624, H6-SED-0624, H7-SED-0624, H10-SED-0624, H13-SED-0624, H14-SED-0624 | **08-Jun-2024** | **21-Jun-2024** | 06-Jul-2024 | ✓ | **25-Jun-2024** | 06-Jul-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EG035T-LL)**<br>I10-SED-0624 | **09-Jun-2024** | **21-Jun-2024** | 07-Jul-2024 | ✓ | **25-Jun-2024** | 07-Jul-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EG035T-LL)**<br>H8-SED-0624, H9-SED-0624 | **10-Jun-2024** | **21-Jun-2024** | 08-Jul-2024 | ✓ | **25-Jun-2024** | 08-Jul-2024 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP090: Organotin Compounds** | | | | | | | |
| **Soil Glass Jar - Frozen (EP090)** | | | | | | | |
| A1-SED-0624, A2-SED-0624, A3-SED-0624, A4-SED-0624, A5-SED-0624, A6-SED-0624, A7-SED-0624, A8-SED-0624, A9-SED-0624, A10-SED-0624, A11-SED-0624, A13-SED-0624, C13-SED-0624, C14-SED-0624, B1-SED-0624, B2-SED-0624, B3-SED-0624, B4-SED-0624, B5-SED-0624, B6-SED-0624 | **06-Jun-2024** | **14-Jun-2024** | 01-Aug-2024 | ✓ | **16-Jun-2024** | 24-Jul-2024 | ✓ |
| **Soil Glass Jar - Frozen (EP090)** | | | | | | | |
| B7-SED-0624, B8-SED-0624, B9-SED-0624, B10-SED-0624, A14-SED-0624, C1-SED-0624, C2-SED-0624, C3-SED-0624, C4-SED-0624, C5-SED-0624, C6-SED-0624, C7-SED-0624, C8-SED-0624, C9-SED-0624, C10-SED-0624, C11-SED-0624 | **06-Jun-2024** | **14-Jun-2024** | 01-Aug-2024 | ✓ | **19-Jun-2024** | 24-Jul-2024 | ✓ |
| **Soil Glass Jar - Frozen (EP090)** | | | | | | | |
| B11-SED-0624, B13-SED-0624, B14-SED-0624 | **06-Jun-2024** | **14-Jun-2024** | 01-Aug-2024 | ✓ | **20-Jun-2024** | 24-Jul-2024 | ✓ |
| **Soil Glass Jar - Frozen (EP090)** | | | | | | | |
| D1-SED-0624 | **07-Jun-2024** | **14-Jun-2024** | 02-Aug-2024 | ✓ | **20-Jun-2024** | 24-Jul-2024 | ✓ |
| **Soil Glass Jar - Frozen (EP090)** | | | | | | | |
| D2-SED-0624, D3-SED-0624, D4-SED-0624, D5-SED-0624, D6-SED-0624, D7-SED-0624, D8-SED-0624, D9-SED-0624, D10-SED-0624, D11-SED-0624, D13-SED-0624, D14-SED-0624, G1-SED-0624, G2-SED-0624, G3-SED-0624, G4-SED-0624, G5-SED-0624, E1-SED-0624, E2-SED-0624, E3-SED-0624 | **07-Jun-2024** | **20-Jun-2024** | 02-Aug-2024 | ✓ | **22-Jun-2024** | 30-Jul-2024 | ✓ |
| **Soil Glass Jar - Frozen (EP090)** | | | | | | | |
| E4-SED-0624 | **07-Jun-2024** | **21-Jun-2024** | 02-Aug-2024 | ✓ | **25-Jun-2024** | 31-Jul-2024 | ✓ |
| **Soil Glass Jar - Frozen (EP090)** | | | | | | | |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP090: Organotin Compounds - Continued** | | | | | | | |
| E5-SED-0624, E6-SED-0624, E7-SED-0624, E8-SED-0624, E9-SED-0624, E10-SED-0624, E13-SED-0624, E14-SED-0624, G6-SED-0624, G7-SED-0624, G8-SED-0624, G9-SED-0624, G10-SED-0624, G13-SED-0624, G14-SED-0624 | **07-Jun-2024** | **21-Jun-2024** | 02-Aug-2024 | ✓ | **26-Jun-2024** | 31-Jul-2024 | ✓ |
| **Soil Glass Jar - Frozen (EP090)** I1-SED-0624, I2-SED-0624, I3-SED-0624, I4-SED-0624, I5-SED-0624, I6-SED-0624, I7-SED-0624, I8-SED-0624, I9-SED-0624, I13-SED-0624, I14-SED-0624 | **08-Jun-2024** | **21-Jun-2024** | 03-Aug-2024 | ✓ | **26-Jun-2024** | 31-Jul-2024 | ✓ |
| **Soil Glass Jar - Frozen (EP090)** H1-SED-0624, H2-SED-0624, H3-SED-0624, H4-SED-0624, H5-SED-0624, H6-SED-0624, H7-SED-0624, H10-SED-0624, H13-SED-0624, H14-SED-0624 | **08-Jun-2024** | **21-Jun-2024** | 03-Aug-2024 | ✓ | **27-Jun-2024** | 31-Jul-2024 | ✓ |
| **Soil Glass Jar - Frozen (EP090)** I10-SED-0624 | **09-Jun-2024** | **21-Jun-2024** | 04-Aug-2024 | ✓ | **26-Jun-2024** | 31-Jul-2024 | ✓ |
| **Soil Glass Jar - Frozen (EP090)** H8-SED-0624, H9-SED-0624 | **10-Jun-2024** | **21-Jun-2024** | 05-Aug-2024 | ✓ | **27-Jun-2024** | 31-Jul-2024 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides** | | | | | | | |
| **Soil Glass Jar - Unpreserved (EP234-Diuron)** | | | | | | | |
| A1-SED-0624, A2-SED-0624, A3-SED-0624, A4-SED-0624, A5-SED-0624, A6-SED-0624, A7-SED-0624, A8-SED-0624, A9-SED-0624, A10-SED-0624, A11-SED-0624, A13-SED-0624, C13-SED-0624, C14-SED-0624, B1-SED-0624, B2-SED-0624, B3-SED-0624, B4-SED-0624, B5-SED-0624, B6-SED-0624, B9-SED-0624, B10-SED-0624, A14-SED-0624, C1-SED-0624, C2-SED-0624, C3-SED-0624, C4-SED-0624, C5-SED-0624, C6-SED-0624, C7-SED-0624, C8-SED-0624, C9-SED-0624, C10-SED-0624, C11-SED-0624, B11-SED-0624, B13-SED-0624, B14-SED-0624 | **06-Jun-2024** | **18-Jun-2024** | 20-Jun-2024 | ✓ | **18-Jun-2024** | 28-Jul-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EP234-Diuron)** | | | | | | | |
| B7-SED-0624, B8-SED-0624 | **06-Jun-2024** | **19-Jun-2024** | 20-Jun-2024 | ✓ | **19-Jun-2024** | 29-Jul-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EP234-Diuron)** | | | | | | | |
| D1-SED-0624, D11-SED-0624, E10-SED-0624 | **07-Jun-2024** | **18-Jun-2024** | 21-Jun-2024 | ✓ | **18-Jun-2024** | 28-Jul-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EP234-Diuron)** | | | | | | | |
| D2-SED-0624, D3-SED-0624, D4-SED-0624, D5-SED-0624, D6-SED-0624, D7-SED-0624, D8-SED-0624, D9-SED-0624, D10-SED-0624, D13-SED-0624, D14-SED-0624, G1-SED-0624, G2-SED-0624, G13-SED-0624, G14-SED-0624 | **07-Jun-2024** | **19-Jun-2024** | 21-Jun-2024 | ✓ | **19-Jun-2024** | 29-Jul-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EP234-Diuron)** | | | | | | | |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylurea Herbicides - Continued** | | | | | | | |
| G3-SED-0624, G4-SED-0624, G5-SED-0624, E1-SED-0624, E2-SED-0624, E3-SED-0624, E4-SED-0624, E5-SED-0624, E6-SED-0624, E7-SED-0624, E8-SED-0624, E9-SED-0624, E13-SED-0624, E14-SED-0624, G6-SED-0624, G7-SED-0624, G8-SED-0624, G9-SED-0624, G10-SED-0624 | **07-Jun-2024** | **19-Jun-2024** | 21-Jun-2024 | ✓ | **21-Jun-2024** | 29-Jul-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EP234-Diuron)** | | | | | | | |
| I1-SED-0624, I2-SED-0624, I3-SED-0624, I4-SED-0624, I5-SED-0624, I6-SED-0624, I7-SED-0624, I8-SED-0624, I9-SED-0624, I13-SED-0624, I14-SED-0624, H1-SED-0624, H2-SED-0624, H3-SED-0624, H4-SED-0624, H5-SED-0624, H6-SED-0624, H7-SED-0624, H10-SED-0624, H13-SED-0624, H14-SED-0624 | **08-Jun-2024** | **19-Jun-2024** | 22-Jun-2024 | ✓ | **21-Jun-2024** | 29-Jul-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EP234-Diuron)** | | | | | | | |
| I10-SED-0624 | **09-Jun-2024** | **19-Jun-2024** | 23-Jun-2024 | ✓ | **19-Jun-2024** | 29-Jul-2024 | ✓ |
| **Soil Glass Jar - Unpreserved (EP234-Diuron)** | | | | | | | |
| H8-SED-0624, H9-SED-0624 | **10-Jun-2024** | **19-Jun-2024** | 24-Jun-2024 | ✓ | **19-Jun-2024** | 29-Jul-2024 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| **Laboratory Duplicates (DUP)** | | | | | | | |
| Diuron by LCMSMS | EP234-Diuron | 10 | 100 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Moisture Content | EA055 | 10 | 100 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Organotin Analysis | EP090 | 10 | 100 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Fe and Al in Sediments by ICPAES | EG005-SD | 10 | 100 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Mercury by FIMS (Low Level) | EG035T-LL | 10 | 100 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals by ICP-MS - Suite X | EG020X-T | 10 | 100 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals in Sediments by ICPMS | EG020-SD | 11 | 100 | **11.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Laboratory Control Samples (LCS)** | | | | | | | |
| Diuron by LCMSMS | EP234-Diuron | 5 | 100 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Organotin Analysis | EP090 | 5 | 100 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Fe and Al in Sediments by ICPAES | EG005-SD | 5 | 100 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Mercury by FIMS (Low Level) | EG035T-LL | 5 | 100 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals by ICP-MS - Suite X | EG020X-T | 5 | 100 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals in Sediments by ICPMS | EG020-SD | 6 | 100 | **6.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Method Blanks (MB)** | | | | | | | |
| Diuron by LCMSMS | EP234-Diuron | 5 | 100 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Organotin Analysis | EP090 | 5 | 100 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Fe and Al in Sediments by ICPAES | EG005-SD | 5 | 100 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Mercury by FIMS (Low Level) | EG035T-LL | 5 | 100 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals by ICP-MS - Suite X | EG020X-T | 5 | 100 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals in Sediments by ICPMS | EG020-SD | 6 | 100 | **6.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Matrix Spikes (MS)** | | | | | | | |
| Diuron by LCMSMS | EP234-Diuron | 5 | 100 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Organotin Analysis | EP090 | 5 | 100 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Mercury by FIMS (Low Level) | EG035T-LL | 5 | 100 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals by ICP-MS - Suite X | EG020X-T | 0 | 100 | **0.00** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Total Metals in Sediments by ICPMS | EG020-SD | 5 | 100 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Moisture Content | EA055 | SOIL | In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3). |
| Total Fe and Al in Sediments by ICPAES | EG005-SD | SOIL | In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3). LORs per NODG |
| Total Metals in Sediments by ICPMS | EG020-SD | SOIL | In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector. Analyte list and LORs per NODG. |
| Total Metals by ICP-MS - Suite X | EG020X-T | SOIL | In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector. |
| Total Mercury by FIMS (Low Level) | EG035T-LL | SOIL | In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3) |
| Organotin Analysis | EP090 | SOIL | In house: Referenced to USEPA SW 846 - 8270 Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quanitified against an established calibration curve. |
| Diuron by LCMSMS | EP234-Diuron | SOIL | In-House variation on EP234. 5 g of sample is extracted into 20 mL of an ACN mix. A 250 µL aliquot of sample extract is made up to 1 mL final volume. |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Hot Block Digest for metals in soils sediments and sludges | EN69 | SOIL | In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3). |
| Sample preparation for Pesticides by LCMSMS | EP234-PR | SOIL | In house |
| Organotin Sample Preparation | ORG35 | SOIL | In house: 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis. |

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **EB2420357** | Page | : 1 of 3 |
| Client | : **BMT COMMERCIAL AUSTRALIA PTY LTD** | Laboratory | : Environmental Division Brisbane |
| Contact | : MR CONOR JONES | Contact | : Nathan King |
| Address | : PO BOX 203 SPRING HILL<br>BRISBANE QLD 4004 | Address | : 2 Byth Street Stafford QLD Australia 4053 |
| Telephone | : ---- | Telephone | : +61-7-3243 7222 |
| Project | : B23282 Douglas Shoal | Date Samples Received | : 14-Jun-2024 |
| Order number | : 214 | Date Analysis Commenced | : 17-Jul-2024 |
| C-O-C number | : ---- | Issue Date | : 22-Jul-2024 |
| Sampler | : CONOR JONES | | |
| Site | : ---- | | |
| Quote number | : EB24BMTWBM0001 | | |
| No. of samples received | : 80 | | |
| No. of samples analysed | : 70 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Layla Hafner | Acid Sulphate Soils - Chemist | Brisbane Acid Sulphate Soils, Stafford, QLD |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EA152: Soil Particle Density (QCLot: 5914665)** | | | | | | | | |
| EA152: Soil Particle Density (Clay/Silt/Sand) | ---- | ---- | g/cm3 | ---- | 2.68 g/cm3 | 99.2 | 80.0 | 120 |
| **EA152: Soil Particle Density (QCLot: 5914667)** | | | | | | | | |
| EA152: Soil Particle Density (Clay/Silt/Sand) | ---- | ---- | g/cm3 | ---- | 2.68 g/cm3 | 98.5 | 80.0 | 120 |
| **EA152: Soil Particle Density (QCLot: 5914669)** | | | | | | | | |
| EA152: Soil Particle Density (Clay/Silt/Sand) | ---- | ---- | g/cm3 | ---- | 2.68 g/cm3 | 98.5 | 80.0 | 120 |
| **EA152: Soil Particle Density (QCLot: 5914797)** | | | | | | | | |
| EA152: Soil Particle Density (Clay/Silt/Sand) | ---- | ---- | g/cm3 | ---- | 2.68 g/cm3 | 98.5 | 80.0 | 120 |
| **EA152: Soil Particle Density (QCLot: 5914799)** | | | | | | | | |
| EA152: Soil Particle Density (Clay/Silt/Sand) | ---- | ---- | g/cm3 | ---- | 2.68 g/cm3 | 98.5 | 80.0 | 120 |

## Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **EB2420357** | Page | : 1 of 7 |
| Client | : **BMT COMMERCIAL AUSTRALIA PTY LTD** | Laboratory | : Environmental Division Brisbane |
| Contact | : MR CONOR JONES | Telephone | : +61-7-3243 7222 |
| Project | : B23282 Douglas Shoal | Date Samples Received | : 14-Jun-2024 |
| Site | : ---- | Issue Date | : 22-Jul-2024 |
| Sampler | : CONOR JONES | No. of samples received | : 80 |
| Order number | : 214 | No. of samples analysed | : 70 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **NO Analysis Holding Time Outliers exist.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

## Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

| Quality Control Sample Type | | Count | | Rate (%) | | Quality Control Specification |
|---|---|---|---|---|---|---|
| Analytical Methods | Method | QC | Regular | Actual | Expected | |
| Laboratory Duplicates (DUP) | | | | | | |
| Soil Particle Density | EA152 | 0 | 70 | 0.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |

# Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| ***Method*** | ***Sample Date*** | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|
| ***Container*** / *Client Sample ID(s)* | | ***Date extracted*** | *Due for extraction* | *Evaluation* | ***Date analysed*** | *Due for analysis* | *Evaluation* |
| **EA150: Particle Sizing** | | | | | | | |
| **Snap Lock Bag (EA150H)** | | | | | | | |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EA150: Particle Sizing - Continued** | | | | | | | |
| A1-SED-0624, A2-SED-0624, A3-SED-0624, A4-SED-0624, A5-SED-0624, A7-SED-0624, A8-SED-0624, A10-SED-0624, B1-SED-0624, B2-SED-0624, B3-SED-0624, B4-SED-0624, B5-SED-0624, B6-SED-0624, B9-SED-0624, B10-SED-0624, C1-SED-0624, C2-SED-0624, C4-SED-0624, C5-SED-0624, C6-SED-0624, C7-SED-0624, C8-SED-0624, C9-SED-0624, C10-SED-0624, D1-SED-0624, D2-SED-0624, D3-SED-0624, D6-SED-0624, D7-SED-0624, D8-SED-0624, D9-SED-0624, D10-SED-0624, G1-SED-0624, G2-SED-0624, G3-SED-0624, G4-SED-0624, G5-SED-0624, E3-SED-0624, E4-SED-0624, E5-SED-0624, E6-SED-0624, E7-SED-0624, E8-SED-0624, E9-SED-0624, E10-SED-0624, G6-SED-0624, G7-SED-0624, G8-SED-0624, G9-SED-0624, G10-SED-0624, I1-SED-0624, I2-SED-0624, I3-SED-0624, I4-SED-0624, I5-SED-0624, I6-SED-0624, I7-SED-0624, I8-SED-0624, I9-SED-0624, I10-SED-0624, H2-SED-0624, H3-SED-0624, H4-SED-0624, H5-SED-0624, H6-SED-0624, H7-SED-0624, H8-SED-0624, H9-SED-0624, H10-SED-0624 | **06-Jun-2024** | **----** | ---- | **----** | **22-Jul-2024** | 03-Dec-2024 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EA150: Soil Classification based on Particle Size** | | | | | | | |
| **Snap Lock Bag (EA150H)** | | | | | | | |
| A1-SED-0624, A2-SED-0624, A3-SED-0624, A4-SED-0624, A5-SED-0624, A7-SED-0624, A8-SED-0624, A10-SED-0624, B1-SED-0624, B2-SED-0624, B3-SED-0624, B4-SED-0624, B5-SED-0624, B6-SED-0624, B9-SED-0624, B10-SED-0624, C1-SED-0624, C2-SED-0624, C4-SED-0624, C5-SED-0624, C6-SED-0624, C7-SED-0624, C8-SED-0624, C9-SED-0624, C10-SED-0624, D1-SED-0624, D2-SED-0624, D3-SED-0624, D6-SED-0624, D7-SED-0624, D8-SED-0624, D9-SED-0624, D10-SED-0624, G1-SED-0624, G2-SED-0624, G3-SED-0624, G4-SED-0624, G5-SED-0624, E3-SED-0624, E4-SED-0624, E5-SED-0624, E6-SED-0624, E7-SED-0624, E8-SED-0624, E9-SED-0624, E10-SED-0624, G6-SED-0624, G7-SED-0624, G8-SED-0624, G9-SED-0624, G10-SED-0624, I1-SED-0624, I2-SED-0624, I3-SED-0624, I4-SED-0624, I5-SED-0624, I6-SED-0624, I7-SED-0624, I8-SED-0624, I9-SED-0624, I10-SED-0624, H2-SED-0624, H3-SED-0624, H4-SED-0624, H5-SED-0624, H6-SED-0624, H7-SED-0624, H8-SED-0624, H9-SED-0624, H10-SED-0624 | **06-Jun-2024** | **----** | ---- | **----** | **22-Jul-2024** | 03-Dec-2024 | ✓ |

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EA152: Soil Particle Density** | | | | | | | |
| **Snap Lock Bag (EA152)** | | | | | | | |
| A1-SED-0624, A2-SED-0624, A3-SED-0624, A4-SED-0624, A5-SED-0624, A7-SED-0624, A8-SED-0624, A10-SED-0624, B1-SED-0624, B2-SED-0624, B3-SED-0624, B4-SED-0624, B5-SED-0624, B6-SED-0624, B9-SED-0624, B10-SED-0624, C1-SED-0624, C2-SED-0624, C4-SED-0624, C5-SED-0624, C6-SED-0624, C7-SED-0624, C8-SED-0624, C9-SED-0624, C10-SED-0624, D1-SED-0624, D2-SED-0624, D3-SED-0624, D6-SED-0624, D7-SED-0624, D8-SED-0624, D9-SED-0624, D10-SED-0624, G1-SED-0624 | **06-Jun-2024** | **----** | ---- | **----** | **17-Jul-2024** | 03-Dec-2024 | ✓ |
| **Snap Lock Bag (EA152)** | | | | | | | |
| G2-SED-0624, G3-SED-0624, G4-SED-0624, G5-SED-0624, E3-SED-0624, E4-SED-0624, E5-SED-0624, E6-SED-0624, E7-SED-0624, E8-SED-0624, E9-SED-0624, E10-SED-0624, G6-SED-0624, G7-SED-0624, G8-SED-0624, G9-SED-0624, G10-SED-0624, I1-SED-0624, I2-SED-0624, I3-SED-0624, I4-SED-0624, I5-SED-0624, I6-SED-0624, I7-SED-0624, I8-SED-0624, I9-SED-0624, I10-SED-0624, H2-SED-0624, H3-SED-0624, H4-SED-0624, H5-SED-0624, H6-SED-0624, H7-SED-0624, H8-SED-0624, H9-SED-0624, H10-SED-0624 | **06-Jun-2024** | **----** | ---- | **----** | **18-Jul-2024** | 03-Dec-2024 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Soil Particle Density | EA152 | 0 | 70 | **0.00** | **10.00** | ✗ | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Soil Particle Density | EA152 | 5 | 70 | **7.14** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| *Analytical Methods* | *Method* | *Matrix* | *Method Descriptions* |
|---|---|---|---|
| Particle Size Analysis by Hydrometer | EA150H | SOIL | Particle Size Analysis by Hydrometer according to AS1289.3.6.3 |
| Soil Particle Density | EA152 | SOIL | Soil Particle Density by AS 1289.3.5.1: Methods of testing soils for engineering purposes - Soil classification tests - Determination of the soil particle density of a soil - Standard method |

# Symbio LABORATORIES

## QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Certificate Number** | B1559551 | **Page** | 1 of 5 |
| **Client** | BMT Commercial Australia Pty Ltd | **Laboratory** | Brisbane |
| **Contact** | Katherine Bailey | **Contact** | Customer Service Team |
| **Address** | Level 8  200 Creek Street Brisbane, QLD 4000 | **Address** | 52 Brandl Street, Eight Mile Plains, QLD 4113 |
| | | **Email** | admin@symbiolabs.com.au |
| **Telephone** | 07 3831 6744 | **Telephone** | 1300 703 166 |
| **Order Number** | --- | **Date Samples Received** | 21/06/2024 15:25 |
| **Project ID** | Sediment | **Date Analysis Commenced** | 21/06/2024 15:44 |
| **Sampler** | Customer | **Issue Date** | 08/07/2024 |
| **Client Job Reference** | --- | **Receipt Temperature (°C)** | 22.5°C |
| **Number of Samples Received** | 4 | **Storage Temperature (°C)** | 21°C |
| **Number of Samples Analysed** | 4 | **Quote Number** | --- |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

1. Method Blank (MB) Report; Limit of Detection and QC Result
2. Method Laboratory Control Sample (LCS) Report; QC Result and Acceptance Criteria
3. Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits

## General Comments

The analytical methods used by the Environmental Department have been developed from established internationally recognized methods such as those published by the USEPA, APHA, AS and NEPM. In-house developed analytical methods are employed in the absence of documented standards or by client request.

Where a reported less than (<) result is higher than the LOD, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOD of a reported result differs from standard LOD, this may be due to high moisture content

Abbreviation:

QC Sample = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CRM = Certified Referenced Material; Used to verify in-house LCS
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOD = Limit of detection
RPD = Relative Percentage Difference

| | |
|---|---|
| **Client** | BMT Commercial Australia Pty Ltd |
| **Contact** | Katherine Bailey |
| **Certificate Number** | B1559551 |
| **Page** | 2 of 5 |

## Method Blank Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination.

| Method:Compound / QC Sample ID | Analyte | LOD | Units | QC Result |
|---|---|---|---|---|
| **Lab Method: IND041 (BatchID - 0147913)** | | | | |
| Method Blank - 0147913 | Aluminium | 1 | mg/kg | <1 |
| Method Blank - 0147913 | Boron | 5 | mg/kg | <5 |
| Method Blank - 0147913 | Calcium | 10 | mg/kg | <10 |
| Method Blank - 0147913 | Cobalt | 0.5 | mg/kg | <0.5 |
| Method Blank - 0147913 | Copper | 1 | mg/kg | <1 |
| Method Blank - 0147913 | Iron | 2 | mg/kg | <2 |
| Method Blank - 0147913 | Magnesium | 5 | mg/kg | <5 |
| Method Blank - 0147913 | Manganese | 1 | mg/kg | <1 |
| Method Blank - 0147913 | Molybdenum | 0.5 | mg/kg | <0.5 |
| Method Blank - 0147913 | Phosphorus | 5 | mg/kg | <5 |
| Method Blank - 0147913 | Potassium | 20 | mg/kg | <20 |
| Method Blank - 0147913 | Selenium | 5 | mg/kg | <5 |
| Method Blank - 0147913 | Sodium | 100 | mg/kg | <100 |
| Method Blank - 0147913 | Sulphur | 20 | mg/kg | <20 |
| Method Blank - 0147913 | Zinc | 5 | mg/kg | <5 |

| | |
|---|---|
| **Client** | BMT Commercial Australia Pty Ltd |
| **Contact** | Katherine Bailey |
| **Certificate Number** | B1559551 |
| **Page** | 3 of 5 |

## Method Laboratory Control Sample Report

The quality control term Laboratory Control Sample (LCS) refers to a certified reference material (CRM) or a sample with known parameters that have been verified against a CRM. The quality control term Spike (SPK) refers to a known interference free matrix spiked with target analytes. The purpose of these QC parameters is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

| Method : Compound / QC Sample ID | Analyte | LOD | Units | QC Test Results | Expected Value | QC Recovery | QC Criteria |
|---|---|---|---|---|---|---|---|
| **Lab Method: IND041 (BatchID - 0147913 - CRM_CBNE00001)** | | | | | | | |
| CRM_CBNE00001 | Aluminium | 1 | mg/kg | 9505 | 8920 | 106% | 50% - 150% |
| CRM_CBNE00001 | Boron | 5 | mg/kg | 8.0 | 13 | 61% | 50% - 150% |
| CRM_CBNE00001 | Calcium | 10 | mg/kg | 24590 | 22600 | 108% | 85% - 115% |
| CRM_CBNE00001 | Cobalt | 0.5 | mg/kg | 5.3 | 5.96 | 88% | 70% - 130% |
| CRM_CBNE00001 | Copper | 1 | mg/kg | 14.3 | 15.5 | 92% | 80% - 120% |
| CRM_CBNE00001 | Iron | 2 | mg/kg | 18130 | 16800 | 107% | 80% - 120% |
| CRM_CBNE00001 | Magnesium | 5 | mg/kg | 13400 | 13200 | 101% | 80% - 120% |
| CRM_CBNE00001 | Manganese | 1 | mg/kg | 192.7 | 180 | 107% | 90% - 110% |
| CRM_CBNE00001 | Molybdenum | 0.5 | mg/kg | 0.98 | 0.97 | 101% | 50% - 150% |
| CRM_CBNE00001 | Potassium | 20 | mg/kg | 2048 | 1960 | 104% | 50% - 150% |
| CRM_CBNE00001 | Selenium | 5 | mg/kg | 0.87 | 1 | 87% | 50% - 150% |
| CRM_CBNE00001 | Sodium | 100 | mg/kg | 356.8 | 292 | 122% | 60% - 140% |
| CRM_CBNE00001 | Zinc | 5 | mg/kg | 75.6 | 69.7 | 108% | 80% - 120% |

| | |
|---|---|
| **Client** | BMT Commercial Australia Pty Ltd |
| **Contact** | Katherine Bailey |
| **Certificate Number** | B1559551 |
| **Page** | 4 of 5 |

Symbio LABORATORIES
quality solutions assured

## Laboratory Duplicate Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in the relavant technical method manuals and are dependent on the magnitude of results in comparison to the level of reporting.

| Method : Compound / QC Sample ID | Analyte | LOD | Units | Original Result | Dup Result | RPD | RPD Acceptance Criteria |
|---|---|---|---|---|---|---|---|
| **Lab Method: IND041 (BatchID - 0147913)** | | | | | | | |
| Laboratory Duplicate Sample - 0147913 | Aluminium | 1 | mg/kg | 904.7 | 912.2 | 0.8% | <30% |
| Laboratory Duplicate Sample - 0147913 | Boron | 5 | mg/kg | 29.9 | 29.7 | 0.7% | No Limit |
| Laboratory Duplicate Sample - 0147913 | Cobalt | 0.5 | mg/kg | 9.4 | 9.3 | 1.1% | <30% |
| Laboratory Duplicate Sample - 0147913 | Copper | 1 | mg/kg | 6.8 | 6.8 | 0.0% | No Limit |
| Laboratory Duplicate Sample - 0147913 | Iron | 2 | mg/kg | 544.1 | 551.0 | 1.3% | <30% |
| Laboratory Duplicate Sample - 0147913 | Magnesium | 5 | mg/kg | 9889 | 9807 | 0.8% | <30% |
| Laboratory Duplicate Sample - 0147913 | Manganese | 1 | mg/kg | 14.2 | 14.1 | 0.7% | <30% |
| Laboratory Duplicate Sample - 0147913 | Molybdenum | 0.5 | mg/kg | <0.5 | <0.5 | - | N/A |
| Laboratory Duplicate Sample - 0147913 | Phosphorus | 5 | mg/kg | 258.1 | 259.6 | 0.6% | <30% |
| Laboratory Duplicate Sample - 0147913 | Potassium | 20 | mg/kg | 320.1 | 326.5 | 2.0% | <30% |
| Laboratory Duplicate Sample - 0147913 | Selenium | 5 | mg/kg | <5 | <5 | - | N/A |
| Laboratory Duplicate Sample - 0147913 | Sodium | 100 | mg/kg | 5742 | 5702 | 0.7% | <30% |
| Laboratory Duplicate Sample - 0147913 | Zinc | 5 | mg/kg | 5.9 | <5 | 16.5% | No Limit |
| **Lab Method: IND042 (BatchID - 0147911)** | | | | | | | |
| Laboratory Duplicate Sample - 0147911 | Antimony | 0.1 | mg/kg | 31.9 | 29.3 | 8.5% | <30% |
| Laboratory Duplicate Sample - 0147911 | Arsenic | 0.5 | mg/kg | 952.6 | 979.3 | 2.8% | <30% |
| Laboratory Duplicate Sample - 0147911 | Barium | 0.1 | mg/kg | 7725 | 8211 | 6.1% | <30% |
| Laboratory Duplicate Sample - 0147911 | Cadmium | 0.1 | mg/kg | 42.0 | 44.1 | 4.9% | <30% |
| Laboratory Duplicate Sample - 0147911 | Chromium | 0.5 | mg/kg | 4535 | 4564 | 0.6% | <30% |
| Laboratory Duplicate Sample - 0147911 | Cobalt | 0.1 | mg/kg | 7979 | 8078 | 1.2% | <30% |
| Laboratory Duplicate Sample - 0147911 | Copper | 0.5 | mg/kg | 4755 | 4888 | 2.8% | <30% |
| Laboratory Duplicate Sample - 0147911 | Lead | 0.1 | mg/kg | 434.4 | 430.5 | 0.9% | <30% |
| Laboratory Duplicate Sample - 0147911 | Manganese | 0.5 | mg/kg | 12300 | 12360 | 0.5% | <30% |
| Laboratory Duplicate Sample - 0147911 | Mercury | 0.1 | mg/kg | 441.7 | 464.3 | 5.0% | <30% |

| | |
|---|---|
| **Client** | BMT Commercial Australia Pty Ltd |
| **Contact** | Katherine Bailey |
| **Certificate Number** | B1559551 |
| **Page** | 5 of 5 |

## Laboratory Duplicate Report - Continued

| Method:Compound / QC Sample ID | Analyte | LOD | Units | Original Result | DUP Result | RPD | RPD Acceptance Criteria |
|---|---|---|---|---|---|---|---|
| **Lab Method: IND042 (BatchID - 0147911) - Continued** | | | | | | | |
| Laboratory Duplicate Sample - 0147911 | Nickel | 0.1 | mg/kg | 1293 | 1298 | 0.4% | <30% |
| Laboratory Duplicate Sample - 0147911 | Selenium | 0.5 | mg/kg | 63.8 | 63.7 | 0.2% | <30% |
| Laboratory Duplicate Sample - 0147911 | Silver | 0.1 | mg/kg | 19.4 | 21.6 | 10.7% | <30% |
| Laboratory Duplicate Sample - 0147911 | Vanadium | 0.1 | mg/kg | 1656 | 1715 | 3.5% | <30% |

# QUALITY ASSURANCE REPORT

Client: **BMT COMMERCIAL AUSTRALIA PTY LTD**
QA Report No: **BMTW01/240515** Matrix: Food

| Analyte | Method | Units | LOR | Blank | Duplicates | | | Recoveries | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Sample | Duplicate | RPD | LCS | Matrix Spike |
| | | | | | | | % | % | % |
| **Inorganics Section** | | | | | **N24/010540** | | | | **N24/010540** |
| Copper | NT2_46 | mg/kg | 0.01 | <0.01 | 0.12 | 0.12 | 0 | 94 | 102 |
| Zinc | NT2_46 | mg/kg | 0.01 | <0.01 | 4 | 2.5 | 46 | 100 | # |
| | | | | | | | | | |
| **Inorganics Section** | | | | | **N24/010558** | | | | **N24/010558** |
| Copper | NT2_46 | mg/kg | 0.01 | <0.01 | 0.3 | 0.31 | 3 | 94 | 105 |
| Zinc | NT2_46 | mg/kg | 0.01 | <0.01 | 3.3 | 3.4 | 3 | 100 | # |
| | | | | | | | | | |

LOR = Limit Of Reporting RPD = Relative Percent Difference LCS = Laboratory Control Sample NA = Not Applicable
Acceptable recoveries for the LCS and Matrix Spike are 80 - 120%.
Acceptable RPDs on duplicates is 30 % at concentrations more than 5 times LOR. Greater RPD may be expected at less than 5 times LOR.
#: Spike level is less than 50% of the sample's concentration, hence the recovery data is not reliable.
**: reference value not available

Signed: 
Dr Andrew Evans
Inorganics, NMI (North Ryde)
Date: 12/06/2024

**Australian Government**
**National Measurement Institute**

# QUALITY ASSURANCE REPORT

**Client:** BMT COMMERCIAL AUSTRALIA PTY LTD

**NMI QA Report No:** BMTW01/240515 **Sample Matrix:** Solid

| Analyte | Method | LOR | Blank | Sample Duplicates | | | Recoveries | |
|---|---|---|---|---|---|---|---|---|
| | | | | Sample | Duplicate | RPD | LCS | Matrix Spike |
| | | ng/g | ng/g | ng/g | ng/g | % | % | % |
| **Organics Section** | | | | | | | | |
| **Organotin** | | | | **N24/010519** | | | | **N24/010519** |
| Monobutyltin | NR_35 | 1 | <1 | <1 | <1 | - | 103 | 58 |
| Dibutyltin | NR_35 | 1 | <1 | <1 | <1 | - | 110 | 115 |
| Tributyltin | NR_35 | 1 | <1 | <1 | <1 | - | 106 | 120 |
| **Organotin Surrogate** | | | | | | | | |
| Tripropyltin (%Rec) | NR_35 | - | - | 140 | 144 | 2.8 | 108 | 131 |

Results expressed in percentage (%) or ng/g wherever appropriate.
Acceptable Spike recovery is 30-150% (monobutyltin and Tripropyltin); 40-160% (dibutyltin and tributyltin)
Maximum acceptable RPDs on spikes and duplicates is 60%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference, LCS = Laboratory Control Spike, LOR = Limit of Reporting.
This report shall not be reproduced except in full.

**Signed:**

**Danny Slee**
**Organics Manager, NMI-North Ryde**

**Date:** **12/06/2024**

**Australian Government**
**National Measurement Institute**

# QUALITY ASSURANCE REPORT

**Client:** BMT COMMERCIAL AUSTRALIA PTY LTD

**NMI QA Report No:** BMTW01/240515 **Sample Matrix:** Solid

| Analyte | Method | LOR | Blank | Sample Duplicates | | | Recoveries | |
|---|---|---|---|---|---|---|---|---|
| | | | | Sample | Duplicate | RPD | LCS | Matrix Spike |
| | | ng/g | ng/g | ng/g | ng/g | % | % | % |
| **Organics Section** | | | | | | | | |
| **Organotin** | | | | **N24/010530** | | | | **N24/010530** |
| Monobutyltin | NR_35 | 1 | <1 | <1 | <1 | - | 103 | 72 |
| Dibutyltin | NR_35 | 1 | <1 | <1 | <1 | - | 110 | 150 |
| Tributyltin | NR_35 | 1 | <1 | <1 | <1 | - | 106 | 123 |
| **Organotin Surrogate** | | | | | | | | |
| Tripropyltin (%Rec) | NR_35 | - | - | 144 | 141 | 2.1 | 108 | 141 |

Results expressed in percentage (%) or ng/g wherever appropriate.
Acceptable Spike recovery is 30-150% (monobutyltin and Tripropyltin); 40-160% (dibutyltin and tributyltin)
Maximum acceptable RPDs on spikes and duplicates is 60%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference, LCS = Laboratory Control Spike, LOR = Limit of Reporting.
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**Signed:**

**Danny Slee**
**Organics Manager, NMI-North Ryde**

**Date:** **12/06/2024**

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# QUALITY ASSURANCE REPORT

**Client:** BMT COMMERCIAL AUSTRALIA PTY LTD

**NMI QA Report No:** BMTW01/240515 **Sample Matrix:** Solid

| Analyte | Method | LOR | Blank | Sample Duplicates | | | Recoveries | |
|---|---|---|---|---|---|---|---|---|
| | | | | Sample | Duplicate | RPD | LCS | Matrix Spike |
| | | ng/g | ng/g | ng/g | ng/g | % | % | % |
| **Organics Section** | | | | | | | | |
| **Organotin** | | | | **N24/010543** | | | | **N24/010543** |
| Monobutyltin | NR_35 | 1 | <1 | <1 | <1 | - | 110 | 145 |
| Dibutyltin | NR_35 | 1 | <1 | <1 | <1 | - | 110 | 150 |
| Tributyltin | NR_35 | 1 | <1 | <1 | <1 | - | 102 | 156 |
| **Organotin Surrogate** | | | | | | | | |
| Tripropyltin (%Rec) | NR_35 | - | - | 124 | 122 | 1.6 | 146 | 148 |

Results expressed in percentage (%) or ng/g wherever appropriate.
Acceptable Spike recovery is 30-150% (monobutyltin and Tripropyltin); 40-160% (dibutyltin and tributyltin)
Maximum acceptable RPDs on spikes and duplicates is 60%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference, LCS = Laboratory Control Spike, LOR = Limit of Reporting.
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**Signed:**

**Danny Slee**
**Organics Manager, NMI-North Ryde**

**Date:** **12/06/2024**

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**National Measurement Institute**

# QUALITY ASSURANCE REPORT

**Client:** BMT COMMERCIAL AUSTRALIA PTY LTD

**NMI QA Report No:** BMTW01/240515 **Sample Matrix:** Solid

| Analyte | Method | LOR | Blank | Sample Duplicates | | | Recoveries | |
|---|---|---|---|---|---|---|---|---|
| | | | | Sample | Duplicate | RPD | LCS | Matrix Spike |
| | | ng/g | ng/g | ng/g | ng/g | % | % | % |
| **Organics Section** | | | | | | | | |
| **Organotin** | | | | **N24/010555** | | | | **N24/010555** |
| Monobutyltin | NR_35 | 1 | <1 | <0.5 | <0.5 | - | 110 | 93 |
| Dibutyltin | NR_35 | 1 | <1 | <0.5 | <0.5 | - | 110 | 99 |
| Tributyltin | NR_35 | 1 | <1 | <0.5 | <0.5 | - | 102 | 104 |
| **Organotin Surrogate** | | | | | | | | |
| Tripropyltin (%Rec) | NR_35 | - | - | 82 | 67 | 20 | 146 | 149 |

Results expressed in percentage (%) or ng/g wherever appropriate.
Acceptable Spike recovery is 30-150% (monobutyltin and Tripropyltin); 40-160% (dibutyltin and tributyltin)
Maximum acceptable RPDs on spikes and duplicates is 60%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference, LCS = Laboratory Control Spike, LOR = Limit of Reporting.
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**Signed:**

**Danny Slee**
**Organics Manager, NMI-North Ryde**

**Date:** **12/06/2024**

# QUALITY ASSURANCE REPORT

Client: **BMT COMMERCIAL AUSTRALIA PTY LTD**
QA Report No: **BMTW01/240614** Matrix:

| Analyte | Method | Units | LOR | Blank | Duplicates | | | Recoveries | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Sample | Duplicate | RPD | LCS | Matrix Spike |
| | | | | | | | % | % | % |
| **Inorganics Section** | | | | | **N24/013213** | | | | **N24/013213** |
| Copper | NT2_46 | mg/kg | 0.01 | <0.01 | 0.76 | 0.85 | 11 | 100 | 100 |
| Zinc | NT2_46 | mg/kg | 0.01 | <0.01 | 0.84 | 0.88 | 5 | 99 | 102 |
| | | | | | | | | | |
| **Inorganics Section** | | | | | **N24/013232** | | | | **N24/013232** |
| Copper | NT2_46 | mg/kg | 0.01 | <0.01 | 0.67 | 0.71 | 6 | 100 | 98 |
| Zinc | NT2_46 | mg/kg | 0.01 | <0.01 | 8 | 8.6 | 7 | 99 | 99 |
| | | | | | | | | | |
| **Inorganics Section** | | | | | **N24/013245** | | | | **N24/013245** |
| Copper | NT2_46 | mg/kg | 0.01 | <0.01 | 1.1 | 1.1 | 0 | 100 | 99 |
| Zinc | NT2_46 | mg/kg | 0.01 | <0.01 | 7.9 | 7.5 | 5 | 99 | 98 |
| | | | | | | | | | |
| **Inorganics Section** | | | | | **N24/013259** | | | | **N24/013259** |
| Copper | NT2_46 | mg/kg | 0.01 | <0.01 | 0.57 | 0.51 | 11 | 100 | 101 |
| Zinc | NT2_46 | mg/kg | 0.01 | <0.01 | 3 | 3.4 | 13 | 99 | 103 |
| | | | | | | | | | |
| **Inorganics Section** | | | | | **N24/013278** | | | | **N24/013278** |
| Copper | NT2_46 | mg/kg | 0.01 | <0.01 | 0.33 | 0.29 | 13 | 100 | 103 |
| Zinc | NT2_46 | mg/kg | 0.01 | <0.01 | 1.7 | 0.56 | 101 | 99 | 103 |
| | | | | | | | | | |

LOR = Limit Of Reporting RPD = Relative Percent Difference LCS = Laboratory Control Sample NA = Not Applicable
Acceptable recoveries for the LCS and Matrix Spike are 80 - 120%.
Acceptable RPDs on duplicates is 30 % at concentrations more than 5 times LOR. Greater RPD may be expected at less than 5 times LOR.
#: Spike level is less than 50% of the sample's concentration, hence the recovery data is not reliable.
**: reference value not available

Signed: 
Dr Andrew Evans
Inorganics, NMI (North Ryde)
Date: 12/07/2024

**Australian Government**
**National Measurement Institute**

# QUALITY ASSURANCE REPORT

**Client:** BMT COMMERCIAL AUSTRALIA PTY LTD

**NMI QA Report No:** BMTW01/240614 **Sample Matrix:** Solid

| Analyte | Method | LOR | Blank | Sample Duplicates | | | Recoveries | |
|---|---|---|---|---|---|---|---|---|
| | | | | Sample | Duplicate | RPD | LCS | Matrix Spike |
| | | ng/g | ng/g | ng/g | ng/g | % | % | % |
| **Organics Section** | | | | | | | | |
| **Organotin** | | | | **N24/013212** | | | | **N24/013212** |
| Monobutyltin | NR_35 | 1.0 | <1 | <1 | <1 | - | 94 | 101 |
| Dibutyltin | NR_35 | 1.0 | <1 | <1 | <1 | - | 97 | 84 |
| Tributyltin | NR_35 | 1.0 | <1 | <1 | <1 | - | 106 | 97 |
| **Organotin Surrogate** | | | | | | | | |
| Tripropyltin (%Rec) | NR_35 | - | - | 88 | 87 | 1.1 | 97 | 89 |

Results expressed in percentage (%) or ng/g wherever appropriate.
Acceptable Spike recovery is 30-150% (monobutyltin and Tripropyltin); 40-160% (dibutyltin and tributyltin)
Maximum acceptable RPDs on spikes and duplicates is 60%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference, LCS = Laboratory Control Spike, LOR = Limit of Reporting.
This report shall not be reproduced except in full.

**Signed:**

**Danny Slee**
**Organics Manager, NMI-North Ryde**
**Date:** **12/07/2024**

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**National Measurement Institute**

# QUALITY ASSURANCE REPORT

**Client:** BMT COMMERCIAL AUSTRALIA PTY LTD

**NMI QA Report No:** BMTW01/240614 **Sample Matrix:** Solid

| Analyte | Method | LOR | Blank | Sample Duplicates | | | Recoveries | |
|---|---|---|---|---|---|---|---|---|
| | | | | Sample | Duplicate | RPD | LCS | Matrix Spike |
| | | ng/g | ng/g | ng/g | ng/g | % | % | % |
| **Organics Section** | | | | | | | | |
| **Organotin** | | | | **N24/013222** | | | | **N24/013223** |
| Monobutyltin | NR_35 | 1.0 | <1 | <1 | <1 | - | 94 | 79 |
| Dibutyltin | NR_35 | 1.0 | <1 | <1 | <1 | - | 97 | 107 |
| Tributyltin | NR_35 | 1.0 | <1 | <1 | <1 | - | 106 | 97 |
| **Organotin Surrogate** | | | | | | | | |
| Tripropyltin (%Rec) | NR_35 | - | - | 103 | 90 | 13 | 97 | 86 |

Results expressed in percentage (%) or ng/g wherever appropriate.
Acceptable Spike recovery is 30-150% (monobutyltin and Tripropyltin); 40-160% (dibutyltin and tributyltin)
Maximum acceptable RPDs on spikes and duplicates is 60%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference, LCS = Laboratory Control Spike, LOR = Limit of Reporting.
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**Signed:**

**Danny Slee**
**Organics Manager, NMI-North Ryde**
**Date:** **12/07/2024**

**Australian Government**
**National Measurement Institute**

# QUALITY ASSURANCE REPORT

**Client:** BMT COMMERCIAL AUSTRALIA PTY LTD

**NMI QA Report No:** BMTW01/240614 **Sample Matrix:** Solid

| Analyte | Method | LOR | Blank | Sample Duplicates | | | Recoveries | |
|---|---|---|---|---|---|---|---|---|
| | | | | Sample | Duplicate | RPD | LCS | Matrix Spike |
| | | ng/g | ng/g | ng/g | ng/g | % | % | % |
| **Organics Section** | | | | | | | | |
| **Organotin** | | | | **N24/013232** | | | | **N24/013238** |
| Monobutyltin | NR_35 | 1.0 | <1 | <1 | <1 | - | 94 | 74 |
| Dibutyltin | NR_35 | 1.0 | <1 | <1 | <1 | - | 97 | 89 |
| Tributyltin | NR_35 | 1.0 | <1 | <1 | <1 | - | 106 | 92 |
| **Organotin Surrogate** | | | | | | | | |
| Tripropyltin (%Rec) | NR_35 | - | - | 95 | 85 | 11 | 104 | 88 |

Results expressed in percentage (%) or ng/g wherever appropriate.
Acceptable Spike recovery is 30-150% (monobutyltin and Tripropyltin); 40-160% (dibutyltin and tributyltin)
Maximum acceptable RPDs on spikes and duplicates is 60%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference, LCS = Laboratory Control Spike, LOR = Limit of Reporting.
This report shall not be reproduced except in full.

**Signed:**

**Danny Slee**
**Organics Manager, NMI-North Ryde**

**Date:** **12/07/2024**

**Australian Government**
**National Measurement Institute**

# QUALITY ASSURANCE REPORT

**Client:** BMT COMMERCIAL AUSTRALIA PTY LTD

**NMI QA Report No:** BMTW01/240614 **Sample Matrix:** Solid

| Analyte | Method | LOR | Blank | Sample Duplicates | | | Recoveries | |
|---|---|---|---|---|---|---|---|---|
| | | | | Sample | Duplicate | RPD | LCS | Matrix Spike |
| | | ng/g | ng/g | ng/g | ng/g | % | % | % |
| **Organics Section** | | | | | | | | |
| **Organotin** | | | | **N24/013240** | | | | **N24/013240** |
| Monobutyltin | NR_35 | 1.0 | <1 | <1 | <1 | - | 94 | 107 |
| Dibutyltin | NR_35 | 1.0 | <1 | <1 | <1 | - | 97 | 100 |
| Tributyltin | NR_35 | 1.0 | <1 | <1 | <1 | - | 106 | 99 |
| **Organotin Surrogate** | | | | | | | | |
| Tripropyltin (%Rec) | NR_35 | - | - | 94 | 91 | 3.2 | 104 | 86 |

Results expressed in percentage (%) or ng/g wherever appropriate.
Acceptable Spike recovery is 30-150% (monobutyltin and Tripropyltin); 40-160% (dibutyltin and tributyltin)
Maximum acceptable RPDs on spikes and duplicates is 60%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference, LCS = Laboratory Control Spike, LOR = Limit of Reporting.
This report shall not be reproduced except in full.

**Signed:**

**Danny Slee**
**Organics Manager, NMI-North Ryde**
**Date:** **12/07/2024**

**Australian Government**
**National Measurement Institute**

# QUALITY ASSURANCE REPORT

**Client:** BMT COMMERCIAL AUSTRALIA PTY LTD

**NMI QA Report No:** BMTW01/240614 **Sample Matrix:** Solid

| Analyte | Method | LOR | Blank | Sample Duplicates | | | Recoveries | |
|---|---|---|---|---|---|---|---|---|
| | | | | Sample | Duplicate | RPD | LCS | Matrix Spike |
| | | ng/g | ng/g | ng/g | ng/g | % | % | % |
| **Organics Section** | | | | | | | | |
| **Organotin** | | | | **N24/013249** | | | | **N24/013249** |
| Monobutyltin | NR_35 | 1.0 | <1 | <1 | <1 | - | 94 | 91 |
| Dibutyltin | NR_35 | 1.0 | <1 | <1 | <1 | - | 93 | 96 |
| Tributyltin | NR_35 | 1.0 | <1 | <1 | <1 | - | 93 | 97 |
| **Organotin Surrogate** | | | | | | | | |
| Tripropyltin (%Rec) | NR_35 | - | - | 89 | 83 | 7.0 | 100 | 83 |

Results expressed in percentage (%) or ng/g wherever appropriate.
Acceptable Spike recovery is 30-150% (monobutyltin and Tripropyltin); 40-160% (dibutyltin and tributyltin)
Maximum acceptable RPDs on spikes and duplicates is 60%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference, LCS = Laboratory Control Spike, LOR = Limit of Reporting.
This report shall not be reproduced except in full.

**Signed:**

**Danny Slee**
**Organics Manager, NMI-North Ryde**
**Date:** **12/07/2024**

**Australian Government**
**National Measurement Institute**

# QUALITY ASSURANCE REPORT

**Client:** BMT COMMERCIAL AUSTRALIA PTY LTD

**NMI QA Report No:** BMTW01/240614 **Sample Matrix:** Solid

| Analyte | Method | LOR | Blank | Sample Duplicates | | | Recoveries | |
|---|---|---|---|---|---|---|---|---|
| | | | | Sample | Duplicate | RPD | LCS | Matrix Spike |
| | | ng/g | ng/g | ng/g | ng/g | % | % | % |
| **Organics Section** | | | | | | | | |
| **Organotin** | | | | **N24/013237** | | | | **N24/013250** |
| Monobutyltin | NR_35 | 1.0 | <1 | <1 | <1 | - | 94 | 98 |
| Dibutyltin | NR_35 | 1.0 | <1 | <1 | <1 | - | 93 | 104 |
| Tributyltin | NR_35 | 1.0 | <1 | <1 | <1 | - | 93 | 102 |
| **Organotin Surrogate** | | | | | | | | |
| Tripropyltin (%Rec) | NR_35 | - | - | 95 | 84 | 12 | 100 | 87 |

Results expressed in percentage (%) or ng/g wherever appropriate.
Acceptable Spike recovery is 30-150% (monobutyltin and Tripropyltin); 40-160% (dibutyltin and tributyltin)
Maximum acceptable RPDs on spikes and duplicates is 60%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference, LCS = Laboratory Control Spike, LOR = Limit of Reporting.
This report shall not be reproduced except in full.

**Signed:**

**Danny Slee**
**Organics Manager, NMI-North Ryde**
**Date:** **12/07/2024**

**Australian Government**
**National Measurement Institute**

# QUALITY ASSURANCE REPORT

**Client:** BMT COMMERCIAL AUSTRALIA PTY LTD

**NMI QA Report No:** BMTW01/240614 **Sample Matrix:** Solid

| Analyte | Method | LOR | Blank | Sample Duplicates | | | Recoveries | |
|---|---|---|---|---|---|---|---|---|
| | | | | Sample | Duplicate | RPD | LCS | Matrix Spike |
| | | ng/g | ng/g | ng/g | ng/g | % | % | % |
| **Organics Section** | | | | | | | | |
| **Organotin** | | | | **N24/013251** | | | | **N24/013251** |
| Monobutyltin | NR_35 | 1.0 | <1 | <1 | <1 | - | 101 | 94 |
| Dibutyltin | NR_35 | 1.0 | <1 | <1 | <1 | - | 98 | 101 |
| Tributyltin | NR_35 | 1.0 | <1 | <1 | <1 | - | 102 | 103 |
| **Organotin Surrogate** | | | | | | | | |
| Tripropyltin (%Rec) | NR_35 | - | - | 84 | 93 | 10.2 | 98 | 88 |

Results expressed in percentage (%) or ng/g wherever appropriate.
Acceptable Spike recovery is 30-150% (monobutyltin and Tripropyltin); 40-160% (dibutyltin and tributyltin)
Maximum acceptable RPDs on spikes and duplicates is 60%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference, LCS = Laboratory Control Spike, LOR = Limit of Reporting.
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**Organics Manager, NMI-North Ryde**
**Date:** **12/07/2024**

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# QUALITY ASSURANCE REPORT

**Client:** BMT COMMERCIAL AUSTRALIA PTY LTD

**NMI QA Report No:** BMTW01/240614 **Sample Matrix:** Solid

| Analyte | Method | LOR | Blank | Sample Duplicates | | | Recoveries | |
|---|---|---|---|---|---|---|---|---|
| | | | | Sample | Duplicate | RPD | LCS | Matrix Spike |
| | | ng/g | ng/g | ng/g | ng/g | % | % | % |
| **Organics Section** | | | | | | | | |
| **Organotin** | | | | **N24/013251** | | | | **N24/013281** |
| Monobutyltin | NR_35 | 1.0 | <1 | <1 | <1 | - | 101 | 95 |
| Dibutyltin | NR_35 | 1.0 | <1 | <1 | <1 | - | 98 | 97 |
| Tributyltin | NR_35 | 1.0 | <1 | <1 | <1 | - | 102 | 91 |
| **Organotin Surrogate** | | | | | | | | |
| Tripropyltin (%Rec) | NR_35 | - | - | 86 | 87 | 1.2 | 98 | 81 |

Results expressed in percentage (%) or ng/g wherever appropriate.
Acceptable Spike recovery is 30-150% (monobutyltin and Tripropyltin); 40-160% (dibutyltin and tributyltin)
Maximum acceptable RPDs on spikes and duplicates is 60%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference, LCS = Laboratory Control Spike, LOR = Limit of Reporting.
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**Signed:**

**Danny Slee**
**Organics Manager, NMI-North Ryde**
**Date:** **12/07/2024**

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **EB2420133** | Page | : 1 of 14 |
| Client | : **BMT COMMERCIAL AUSTRALIA PTY LTD** | Laboratory | : Environmental Division Brisbane |
| Contact | : MR CONOR JONES | Contact | : Nathan King |
| Address | : PO BOX 203 SPRING HILL<br>BRISBANE QLD 4004 | Address | : 2 Byth Street Stafford QLD Australia 4053 |
| Telephone | : ---- | Telephone | : +61-7-3243 7222 |
| Project | : B23282 Douglas Shoal | Date Samples Received | : 13-Jun-2024 |
| Order number | : 214 | Date Analysis Commenced | : 14-Jun-2024 |
| C-O-C number | : ---- | Issue Date | : 24-Jun-2024 |
| Sampler | : CONOR JONES | | |
| Site | : ---- | | |
| Quote number | : EB24BMTWBM0001 | | |
| No. of samples received | : 51 | | |
| No. of samples analysed | : 51 | | |

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Beatriz Llarinas | Senior Chemist - Inorganics | Brisbane Inorganics, Stafford, QLD |
| Kim McCabe | Senior Inorganic Chemist | Brisbane Inorganics, Stafford, QLD |
| Morgan Lennox | Senior Organic Chemist | Brisbane Organics, Stafford, QLD |

## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

| | | | | Laboratory Duplicate (DUP) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
| **EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 5858124)** | | | | | | | | | |
| EB2420133-001 | C3-WQ-0624 | EA025H: Suspended Solids (SS) | ---- | 5 | mg/L | <5 | <5 | 0.0 | No Limit |
| EB2420133-012 | E2-WQ-0624 | EA025H: Suspended Solids (SS) | ---- | 5 | mg/L | <5 | <5 | 0.0 | No Limit |
| **EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 5858125)** | | | | | | | | | |
| EB2420133-024 | C2-WQ-0624 | EA025H: Suspended Solids (SS) | ---- | 5 | mg/L | <5 | <5 | 0.0 | No Limit |
| EB2420133-034 | H5-WQ-0624 | EA025H: Suspended Solids (SS) | ---- | 5 | mg/L | <5 | <5 | 0.0 | No Limit |
| **EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 5858126)** | | | | | | | | | |
| EB2420133-045 | A1-WQ-0624 | EA025H: Suspended Solids (SS) | ---- | 5 | mg/L | <5 | <5 | 0.0 | No Limit |
| **EG035F: Dissolved Mercury by FIMS (QC Lot: 5860939)** | | | | | | | | | |
| EB2420133-001 | C3-WQ-0624 | EG035F-LL: Mercury | 7439-97-6 | 0.00004 | mg/L | <0.00004 | <0.00004 | 0.0 | No Limit |
| EB2420133-012 | E2-WQ-0624 | EG035F-LL: Mercury | 7439-97-6 | 0.00004 | mg/L | <0.00004 | <0.00004 | 0.0 | No Limit |
| **EG035F: Dissolved Mercury by FIMS (QC Lot: 5860940)** | | | | | | | | | |
| EB2420133-024 | C2-WQ-0624 | EG035F-LL: Mercury | 7439-97-6 | 0.00004 | mg/L | <0.00004 | <0.00004 | 0.0 | No Limit |
| EB2420133-034 | H5-WQ-0624 | EG035F-LL: Mercury | 7439-97-6 | 0.00004 | mg/L | <0.00004 | <0.00004 | 0.0 | No Limit |
| **EG035F: Dissolved Mercury by FIMS (QC Lot: 5860945)** | | | | | | | | | |
| EB2420133-041 | B4-WQ-0624 | EG035F-LL: Mercury | 7439-97-6 | 0.00004 | mg/L | <0.00004 | <0.00004 | 0.0 | No Limit |
| **EG035T: Total Mercury by FIMS (QC Lot: 5857475)** | | | | | | | | | |
| EB2420133-001 | C3-WQ-0624 | EG035T-LL: Mercury | 7439-97-6 | 0.00004 | mg/L | <0.00004 | <0.00004 | 0.0 | No Limit |
| EB2420133-012 | E2-WQ-0624 | EG035T-LL: Mercury | 7439-97-6 | 0.00004 | mg/L | <0.00004 | <0.00004 | 0.0 | No Limit |
| **EG035T: Total Mercury by FIMS (QC Lot: 5857476)** | | | | | | | | | |
| EB2420133-024 | C2-WQ-0624 | EG035T-LL: Mercury | 7439-97-6 | 0.00004 | mg/L | <0.00004 | <0.00004 | 0.0 | No Limit |
| **EG035T: Total Mercury by FIMS (QC Lot: 5857478)** | | | | | | | | | |

Sub-Matrix: **WATER**

| | | | | Laboratory Duplicate (DUP) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Laboratory sample ID* | *Sample ID* | *Method: Compound* | *CAS Number* | *LOR* | *Unit* | *Original Result* | *Duplicate Result* | *RPD (%)* | *Acceptable RPD (%)* |
| **EG035T: Total Mercury by FIMS (QC Lot: 5857478) - continued** | | | | | | | | | |
| EB2420133-029 | I5-WQ-0624 | EG035T-LL: Mercury | 7439-97-6 | 0.00004 | mg/L | <0.00004 | <0.00004 | 0.0 | No Limit |
| EB2420133-039 | B2-WQ-0624 | EG035T-LL: Mercury | 7439-97-6 | 0.00004 | mg/L | <0.00004 | <0.00004 | 0.0 | No Limit |
| **EG035T: Total Mercury by FIMS (QC Lot: 5857479)** | | | | | | | | | |
| EB2420133-050 | E4-WQ-0624 | EG035T-LL: Mercury | 7439-97-6 | 0.00004 | mg/L | <0.00004 | <0.00004 | 0.0 | No Limit |
| **EG093F: Dissolved Metals in Saline Water by ORC-ICPMS (QC Lot: 5857237)** | | | | | | | | | |
| EB2420133-001 | C3-WQ-0624 | EG093A-F: Cadmium | 7440-43-9 | 0.2 | µg/L | <0.2 | <0.2 | 0.0 | No Limit |
| | | EG093A-F: Lead | 7439-92-1 | 0.2 | µg/L | <0.2 | <0.2 | 0.0 | No Limit |
| | | EG093A-F: Antimony | 7440-36-0 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-F: Arsenic | 7440-38-2 | 0.5 | µg/L | 1.4 | 1.3 | 0.0 | No Limit |
| | | EG093A-F: Chromium | 7440-47-3 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-F: Nickel | 7440-02-0 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-F: Barium | 7440-39-3 | 1 | µg/L | 4 | 4 | 0.0 | No Limit |
| | | EG093A-F: Copper | 7440-50-8 | 1 | µg/L | <1 | <1 | 0.0 | No Limit |
| | | EG093A-F: Aluminium | 7429-90-5 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| | | EG093A-F: Zinc | 7440-66-6 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| EB2420133-011 | E1-WQ-0624 | EG093A-F: Cadmium | 7440-43-9 | 0.2 | µg/L | <0.2 | <0.2 | 0.0 | No Limit |
| | | EG093A-F: Lead | 7439-92-1 | 0.2 | µg/L | <0.2 | <0.2 | 0.0 | No Limit |
| | | EG093A-F: Antimony | 7440-36-0 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-F: Arsenic | 7440-38-2 | 0.5 | µg/L | 1.1 | 1.2 | 0.0 | No Limit |
| | | EG093A-F: Chromium | 7440-47-3 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-F: Nickel | 7440-02-0 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-F: Barium | 7440-39-3 | 1 | µg/L | 4 | 4 | 0.0 | No Limit |
| | | EG093A-F: Copper | 7440-50-8 | 1 | µg/L | <1 | <1 | 0.0 | No Limit |
| | | EG093A-F: Aluminium | 7429-90-5 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| | | EG093A-F: Zinc | 7440-66-6 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| **EG093F: Dissolved Metals in Saline Water by ORC-ICPMS (QC Lot: 5857238)** | | | | | | | | | |
| EB2420133-001 | C3-WQ-0624 | EG093B-F: Iron | 7439-89-6 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| EB2420133-011 | E1-WQ-0624 | EG093B-F: Iron | 7439-89-6 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| **EG093F: Dissolved Metals in Saline Water by ORC-ICPMS (QC Lot: 5857240)** | | | | | | | | | |
| EB2420133-024 | C2-WQ-0624 | EG093B-F: Iron | 7439-89-6 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| EB2420133-033 | H4-WQ-0624 | EG093B-F: Iron | 7439-89-6 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| **EG093F: Dissolved Metals in Saline Water by ORC-ICPMS (QC Lot: 5857241)** | | | | | | | | | |
| EB2420133-024 | C2-WQ-0624 | EG093A-F: Cadmium | 7440-43-9 | 0.2 | µg/L | <0.2 | <0.2 | 0.0 | No Limit |
| | | EG093A-F: Lead | 7439-92-1 | 0.2 | µg/L | <0.2 | <0.2 | 0.0 | No Limit |
| | | EG093A-F: Antimony | 7440-36-0 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-F: Arsenic | 7440-38-2 | 0.5 | µg/L | 1.6 | 1.6 | 0.0 | No Limit |
| | | EG093A-F: Chromium | 7440-47-3 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
| **EG093F: Dissolved Metals in Saline Water by ORC-ICPMS (QC Lot: 5857241) - continued** | | | | | | | | | |
| EB2420133-024 | C2-WQ-0624 | EG093A-F: Nickel | 7440-02-0 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-F: Barium | 7440-39-3 | 1 | µg/L | 4 | 4 | 0.0 | No Limit |
| | | EG093A-F: Copper | 7440-50-8 | 1 | µg/L | <1 | <1 | 0.0 | No Limit |
| | | EG093A-F: Aluminium | 7429-90-5 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| | | EG093A-F: Zinc | 7440-66-6 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| EB2420133-033 | H4-WQ-0624 | EG093A-F: Cadmium | 7440-43-9 | 0.2 | µg/L | <0.2 | <0.2 | 0.0 | No Limit |
| | | EG093A-F: Lead | 7439-92-1 | 0.2 | µg/L | <0.2 | <0.2 | 0.0 | No Limit |
| | | EG093A-F: Antimony | 7440-36-0 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-F: Arsenic | 7440-38-2 | 0.5 | µg/L | 1.6 | 1.6 | 0.0 | No Limit |
| | | EG093A-F: Chromium | 7440-47-3 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-F: Nickel | 7440-02-0 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-F: Barium | 7440-39-3 | 1 | µg/L | 4 | 4 | 0.0 | No Limit |
| | | EG093A-F: Copper | 7440-50-8 | 1 | µg/L | <1 | <1 | 0.0 | No Limit |
| | | EG093A-F: Aluminium | 7429-90-5 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| | | EG093A-F: Zinc | 7440-66-6 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| **EG093F: Dissolved Metals in Saline Water by ORC-ICPMS (QC Lot: 5857246)** | | | | | | | | | |
| EB2420133-045 | A1-WQ-0624 | EG093B-F: Iron | 7439-89-6 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| **EG093F: Dissolved Metals in Saline Water by ORC-ICPMS (QC Lot: 5857247)** | | | | | | | | | |
| EB2420133-045 | A1-WQ-0624 | EG093A-F: Cadmium | 7440-43-9 | 0.2 | µg/L | <0.2 | <0.2 | 0.0 | No Limit |
| | | EG093A-F: Lead | 7439-92-1 | 0.2 | µg/L | <0.2 | <0.2 | 0.0 | No Limit |
| | | EG093A-F: Antimony | 7440-36-0 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-F: Arsenic | 7440-38-2 | 0.5 | µg/L | 1.6 | 1.5 | 0.0 | No Limit |
| | | EG093A-F: Chromium | 7440-47-3 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-F: Nickel | 7440-02-0 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-F: Barium | 7440-39-3 | 1 | µg/L | 4 | 4 | 0.0 | No Limit |
| | | EG093A-F: Copper | 7440-50-8 | 1 | µg/L | <1 | <1 | 0.0 | No Limit |
| | | EG093A-F: Aluminium | 7429-90-5 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| | | EG093A-F: Zinc | 7440-66-6 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| **EG093T: Total Metals in Saline Water by ORC-ICPMS (QC Lot: 5857398)** | | | | | | | | | |
| EB2420133-001 | C3-WQ-0624 | EG093A-T: Cadmium | 7440-43-9 | 0.2 | µg/L | <0.2 | <0.2 | 0.0 | No Limit |
| | | EG093A-T: Lead | 7439-92-1 | 0.2 | µg/L | 0.2 | 0.2 | 0.0 | No Limit |
| | | EG093A-T: Antimony | 7440-36-0 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-T: Arsenic | 7440-38-2 | 0.5 | µg/L | 1.8 | 1.8 | 0.0 | No Limit |
| | | EG093A-T: Chromium | 7440-47-3 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-T: Nickel | 7440-02-0 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-T: Barium | 7440-39-3 | 1 | µg/L | 5 | 4 | 0.0 | No Limit |
| | | EG093A-T: Copper | 7440-50-8 | 1 | µg/L | <1 | <1 | 0.0 | No Limit |

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | LOR | Unit | Original Result | Duplicate Result | RPD (%) | Acceptable RPD (%) |
| **EG093T: Total Metals in Saline Water by ORC-ICPMS (QC Lot: 5857398) - continued** | | | | | | | | | |
| EB2420133-001 | C3-WQ-0624 | EG093A-T: Aluminium | 7429-90-5 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| | | EG093A-T: Zinc | 7440-66-6 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| EB2420133-011 | E1-WQ-0624 | EG093A-T: Cadmium | 7440-43-9 | 0.2 | µg/L | <0.2 | <0.2 | 0.0 | No Limit |
| | | EG093A-T: Lead | 7439-92-1 | 0.2 | µg/L | <0.2 | <0.2 | 0.0 | No Limit |
| | | EG093A-T: Antimony | 7440-36-0 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-T: Arsenic | 7440-38-2 | 0.5 | µg/L | 1.7 | 1.7 | 0.0 | No Limit |
| | | EG093A-T: Chromium | 7440-47-3 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-T: Nickel | 7440-02-0 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-T: Barium | 7440-39-3 | 1 | µg/L | 4 | 4 | 0.0 | No Limit |
| | | EG093A-T: Copper | 7440-50-8 | 1 | µg/L | <1 | <1 | 0.0 | No Limit |
| | | EG093A-T: Aluminium | 7429-90-5 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| | | EG093A-T: Zinc | 7440-66-6 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| **EG093T: Total Metals in Saline Water by ORC-ICPMS (QC Lot: 5857399)** | | | | | | | | | |
| EB2420133-001 | C3-WQ-0624 | EG093B-T: Iron | 7439-89-6 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| EB2420133-011 | E1-WQ-0624 | EG093B-T: Iron | 7439-89-6 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| **EG093T: Total Metals in Saline Water by ORC-ICPMS (QC Lot: 5857402)** | | | | | | | | | |
| EB2420133-024 | C2-WQ-0624 | EG093B-T: Iron | 7439-89-6 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| EB2420133-033 | H4-WQ-0624 | EG093B-T: Iron | 7439-89-6 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| **EG093T: Total Metals in Saline Water by ORC-ICPMS (QC Lot: 5857403)** | | | | | | | | | |
| EB2420133-024 | C2-WQ-0624 | EG093A-T: Cadmium | 7440-43-9 | 0.2 | µg/L | <0.2 | <0.2 | 0.0 | No Limit |
| | | EG093A-T: Lead | 7439-92-1 | 0.2 | µg/L | <0.2 | <0.2 | 0.0 | No Limit |
| | | EG093A-T: Antimony | 7440-36-0 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-T: Arsenic | 7440-38-2 | 0.5 | µg/L | 1.6 | 1.5 | 7.1 | No Limit |
| | | EG093A-T: Chromium | 7440-47-3 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-T: Nickel | 7440-02-0 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-T: Barium | 7440-39-3 | 1 | µg/L | 4 | 4 | 0.0 | No Limit |
| | | EG093A-T: Copper | 7440-50-8 | 1 | µg/L | <1 | <1 | 0.0 | No Limit |
| | | EG093A-T: Aluminium | 7429-90-5 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| | | EG093A-T: Zinc | 7440-66-6 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| EB2420133-033 | H4-WQ-0624 | EG093A-T: Cadmium | 7440-43-9 | 0.2 | µg/L | <0.2 | <0.2 | 0.0 | No Limit |
| | | EG093A-T: Lead | 7439-92-1 | 0.2 | µg/L | <0.2 | <0.2 | 0.0 | No Limit |
| | | EG093A-T: Antimony | 7440-36-0 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-T: Arsenic | 7440-38-2 | 0.5 | µg/L | 1.5 | 1.4 | 0.0 | No Limit |
| | | EG093A-T: Chromium | 7440-47-3 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-T: Nickel | 7440-02-0 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-T: Barium | 7440-39-3 | 1 | µg/L | 4 | 4 | 0.0 | No Limit |
| | | EG093A-T: Copper | 7440-50-8 | 1 | µg/L | <1 | <1 | 0.0 | No Limit |

Sub-Matrix: **WATER**

| | | | | Laboratory Duplicate (DUP) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Laboratory sample ID* | *Sample ID* | *Method: Compound* | *CAS Number* | *LOR* | *Unit* | *Original Result* | *Duplicate Result* | *RPD (%)* | *Acceptable RPD (%)* |
| **EG093T: Total Metals in Saline Water by ORC-ICPMS (QC Lot: 5857403) - continued** | | | | | | | | | |
| EB2420133-033 | H4-WQ-0624 | EG093A-T: Aluminium | 7429-90-5 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| | | EG093A-T: Zinc | 7440-66-6 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| **EG093T: Total Metals in Saline Water by ORC-ICPMS (QC Lot: 5857404)** | | | | | | | | | |
| EB2420133-045 | A1-WQ-0624 | EG093B-T: Iron | 7439-89-6 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| **EG093T: Total Metals in Saline Water by ORC-ICPMS (QC Lot: 5857405)** | | | | | | | | | |
| EB2420133-045 | A1-WQ-0624 | EG093A-T: Cadmium | 7440-43-9 | 0.2 | µg/L | <0.2 | <0.2 | 0.0 | No Limit |
| | | EG093A-T: Lead | 7439-92-1 | 0.2 | µg/L | <0.2 | <0.2 | 0.0 | No Limit |
| | | EG093A-T: Antimony | 7440-36-0 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-T: Arsenic | 7440-38-2 | 0.5 | µg/L | 1.4 | 1.4 | 0.0 | No Limit |
| | | EG093A-T: Chromium | 7440-47-3 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-T: Nickel | 7440-02-0 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG093A-T: Barium | 7440-39-3 | 1 | µg/L | 4 | 4 | 0.0 | No Limit |
| | | EG093A-T: Copper | 7440-50-8 | 1 | µg/L | <1 | <1 | 0.0 | No Limit |
| | | EG093A-T: Aluminium | 7429-90-5 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| | | EG093A-T: Zinc | 7440-66-6 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| **EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 5876875)** | | | | | | | | | |
| EB2420133-035 | Rinsate | EG094A-F: Cadmium | 7440-43-9 | 0.05 | µg/L | <0.05 | <0.05 | 0.0 | No Limit |
| | | EG094A-F: Lead | 7439-92-1 | 0.1 | µg/L | <0.1 | <0.1 | 0.0 | No Limit |
| | | EG094A-F: Antimony | 7440-36-0 | 0.2 | µg/L | <0.2 | <0.2 | 0.0 | No Limit |
| | | EG094A-F: Arsenic | 7440-38-2 | 0.2 | µg/L | <0.2 | <0.2 | 0.0 | No Limit |
| | | EG094A-F: Chromium | 7440-47-3 | 0.2 | µg/L | <0.2 | <0.2 | 0.0 | No Limit |
| | | EG094A-F: Barium | 7440-39-3 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG094A-F: Copper | 7440-50-8 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG094A-F: Nickel | 7440-02-0 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG094A-F: Zinc | 7440-66-6 | 1 | µg/L | <1 | 2 | 0.0 | No Limit |
| | | EG094A-F: Aluminium | 7429-90-5 | 5 | µg/L | <5 | <5 | 0.0 | No Limit |
| **EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 5876876)** | | | | | | | | | |
| EB2420133-035 | Rinsate | EG094B-F: Iron | 7439-89-6 | 2 | µg/L | <2 | <2 | 0.0 | No Limit |
| **EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 5876873)** | | | | | | | | | |
| EB2420133-035 | Rinsate | EG094A-T: Cadmium | 7440-43-9 | 0.05 | µg/L | <0.05 | <0.05 | 0.0 | No Limit |
| | | EG094A-T: Lead | 7439-92-1 | 0.1 | µg/L | <0.1 | 0.1 | 0.0 | No Limit |
| | | EG094A-T: Antimony | 7440-36-0 | 0.2 | µg/L | <0.2 | <0.2 | 0.0 | No Limit |
| | | EG094A-T: Arsenic | 7440-38-2 | 0.2 | µg/L | <0.2 | <0.2 | 0.0 | No Limit |
| | | EG094A-T: Chromium | 7440-47-3 | 0.2 | µg/L | <0.2 | <0.2 | 0.0 | No Limit |
| | | EG094A-T: Barium | 7440-39-3 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG094A-T: Copper | 7440-50-8 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |
| | | EG094A-T: Nickel | 7440-02-0 | 0.5 | µg/L | <0.5 | <0.5 | 0.0 | No Limit |

Sub-Matrix: **WATER**

| | | | | Laboratory Duplicate (DUP) Report | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Laboratory sample ID* | *Sample ID* | *Method: Compound* | *CAS Number* | *LOR* | *Unit* | *Original Result* | *Duplicate Result* | *RPD (%)* | *Acceptable RPD (%)* |
| **EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 5876873) - continued** | | | | | | | | | |
| EB2420133-035 | Rinsate | EG094A-T: Zinc | 7440-66-6 | 1 | µg/L | <1 | 2 | 65.5 | No Limit |
| | | EG094A-T: Aluminium | 7429-90-5 | 5 | µg/L | <5 | 10 | 62.6 | No Limit |
| **EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 5876874)** | | | | | | | | | |
| EB2420133-035 | Rinsate | EG094B-T: Iron | 7439-89-6 | 2 | µg/L | <2 | 11 | 141 | No Limit |
| **EP090: Organotin Compounds (Soluble) (QC Lot: 5858765)** | | | | | | | | | |
| EP2408050-075 | Anonymous | EP090S: Tributyltin | 56573-85-4 | 2 | ngSn/L | <2 | <2 | 0.0 | No Limit |
| EP2408050-076 | Anonymous | EP090S: Tributyltin | 56573-85-4 | 2 | ngSn/L | <2 | <2 | 0.0 | No Limit |

## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

| | | | | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | Low | High |
| **EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 5858124)** | | | | | | | | |
| EA025H: Suspended Solids (SS) | ---- | 5 | mg/L | <5 | 150 mg/L | 107 | 88.0 | 112 |
| | | | | <5 | 1000 mg/L | 93.2 | 88.0 | 112 |
| | | | | <5 | 875 mg/L | 110 | 85.0 | 115 |
| **EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 5858125)** | | | | | | | | |
| EA025H: Suspended Solids (SS) | ---- | 5 | mg/L | <5 | 150 mg/L | 104 | 88.0 | 112 |
| | | | | <5 | 1000 mg/L | 96.3 | 88.0 | 112 |
| | | | | <5 | 875 mg/L | 110 | 85.0 | 115 |
| **EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 5858126)** | | | | | | | | |
| EA025H: Suspended Solids (SS) | ---- | 5 | mg/L | <5 | 150 mg/L | 107 | 88.0 | 112 |
| | | | | <5 | 1000 mg/L | 93.6 | 88.0 | 112 |
| | | | | <5 | 875 mg/L | 107 | 85.0 | 115 |
| **EG035F: Dissolved Mercury by FIMS (QCLot: 5860939)** | | | | | | | | |
| EG035F-LL: Mercury | 7439-97-6 | 0.00004 | mg/L | <0.00004 | 0.002 mg/L | 96.0 | 85.0 | 118 |
| **EG035F: Dissolved Mercury by FIMS (QCLot: 5860940)** | | | | | | | | |
| EG035F-LL: Mercury | 7439-97-6 | 0.00004 | mg/L | <0.00004 | 0.002 mg/L | 90.6 | 85.0 | 118 |
| **EG035F: Dissolved Mercury by FIMS (QCLot: 5860945)** | | | | | | | | |
| EG035F-LL: Mercury | 7439-97-6 | 0.00004 | mg/L | <0.00004 | 0.002 mg/L | 94.4 | 85.0 | 118 |
| **EG035T: Total Mercury by FIMS (QCLot: 5857475)** | | | | | | | | |
| EG035T-LL: Mercury | 7439-97-6 | 0.00004 | mg/L | <0.00004 | 0.002 mg/L | 90.2 | 84.0 | 114 |
| **EG035T: Total Mercury by FIMS (QCLot: 5857476)** | | | | | | | | |
| EG035T-LL: Mercury | 7439-97-6 | 0.00004 | mg/L | <0.00004 | 0.002 mg/L | 93.5 | 84.0 | 114 |
| **EG035T: Total Mercury by FIMS (QCLot: 5857478)** | | | | | | | | |
| EG035T-LL: Mercury | 7439-97-6 | 0.00004 | mg/L | <0.00004 | 0.002 mg/L | 91.6 | 84.0 | 114 |
| **EG035T: Total Mercury by FIMS (QCLot: 5857479)** | | | | | | | | |
| EG035T-LL: Mercury | 7439-97-6 | 0.00004 | mg/L | <0.00004 | 0.002 mg/L | 92.6 | 84.0 | 114 |
| **EG093F: Dissolved Metals in Saline Water by ORC-ICPMS (QCLot: 5857237)** | | | | | | | | |
| EG093A-F: Aluminium | 7429-90-5 | 5 | µg/L | <5 | 50 µg/L | 93.4 | 85.0 | 118 |
| EG093A-F: Antimony | 7440-36-0 | 0.5 | µg/L | <0.5 | 10 µg/L | 94.6 | 87.0 | 115 |
| EG093A-F: Arsenic | 7440-38-2 | 0.5 | µg/L | <0.5 | 10 µg/L | 89.9 | 87.0 | 116 |
| EG093A-F: Barium | 7440-39-3 | 1 | µg/L | <1 | 10 µg/L | 90.1 | 87.0 | 114 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report: Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%): LCS | Acceptable Limits (%): Low | Acceptable Limits (%): High |
|---|---|---|---|---|---|---|---|---|
| **EG093F: Dissolved Metals in Saline Water by ORC-ICPMS (QCLot: 5857237) - continued** | | | | | | | | |
| EG093A-F: Cadmium | 7440-43-9 | 0.2 | µg/L | <0.2 | 10 µg/L | 89.3 | 88.0 | 114 |
| EG093A-F: Chromium | 7440-47-3 | 0.5 | µg/L | <0.5 | 10 µg/L | 95.6 | 83.0 | 115 |
| EG093A-F: Copper | 7440-50-8 | 1 | µg/L | <1 | 10 µg/L | 92.3 | 81.0 | 117 |
| EG093A-F: Lead | 7439-92-1 | 0.2 | µg/L | <0.2 | 10 µg/L | 94.2 | 80.0 | 117 |
| EG093A-F: Nickel | 7440-02-0 | 0.5 | µg/L | <0.5 | 10 µg/L | 92.2 | 87.0 | 117 |
| EG093A-F: Zinc | 7440-66-6 | 5 | µg/L | <5 | 10 µg/L | 86.9 | 81.0 | 120 |
| **EG093F: Dissolved Metals in Saline Water by ORC-ICPMS (QCLot: 5857238)** | | | | | | | | |
| EG093B-F: Iron | 7439-89-6 | 5 | µg/L | <5 | 50 µg/L | 97.2 | 78.0 | 123 |
| **EG093F: Dissolved Metals in Saline Water by ORC-ICPMS (QCLot: 5857240)** | | | | | | | | |
| EG093B-F: Iron | 7439-89-6 | 5 | µg/L | <5 | 50 µg/L | 95.9 | 78.0 | 123 |
| **EG093F: Dissolved Metals in Saline Water by ORC-ICPMS (QCLot: 5857241)** | | | | | | | | |
| EG093A-F: Aluminium | 7429-90-5 | 5 | µg/L | <5 | 50 µg/L | 93.2 | 85.0 | 118 |
| EG093A-F: Antimony | 7440-36-0 | 0.5 | µg/L | <0.5 | 10 µg/L | 95.1 | 87.0 | 115 |
| EG093A-F: Arsenic | 7440-38-2 | 0.5 | µg/L | <0.5 | 10 µg/L | 94.4 | 87.0 | 116 |
| EG093A-F: Barium | 7440-39-3 | 1 | µg/L | <1 | 10 µg/L | 93.0 | 87.0 | 114 |
| EG093A-F: Cadmium | 7440-43-9 | 0.2 | µg/L | <0.2 | 10 µg/L | 96.5 | 88.0 | 114 |
| EG093A-F: Chromium | 7440-47-3 | 0.5 | µg/L | <0.5 | 10 µg/L | 86.3 | 83.0 | 115 |
| EG093A-F: Copper | 7440-50-8 | 1 | µg/L | <1 | 10 µg/L | 95.2 | 81.0 | 117 |
| EG093A-F: Lead | 7439-92-1 | 0.2 | µg/L | <0.2 | 10 µg/L | 92.2 | 80.0 | 117 |
| EG093A-F: Nickel | 7440-02-0 | 0.5 | µg/L | <0.5 | 10 µg/L | 94.0 | 87.0 | 117 |
| EG093A-F: Zinc | 7440-66-6 | 5 | µg/L | <5 | 10 µg/L | 95.4 | 81.0 | 120 |
| **EG093F: Dissolved Metals in Saline Water by ORC-ICPMS (QCLot: 5857246)** | | | | | | | | |
| EG093B-F: Iron | 7439-89-6 | 5 | µg/L | <5 | 50 µg/L | 100 | 78.0 | 123 |
| **EG093F: Dissolved Metals in Saline Water by ORC-ICPMS (QCLot: 5857247)** | | | | | | | | |
| EG093A-F: Aluminium | 7429-90-5 | 5 | µg/L | <5 | 50 µg/L | 91.7 | 85.0 | 118 |
| EG093A-F: Antimony | 7440-36-0 | 0.5 | µg/L | <0.5 | 10 µg/L | 97.1 | 87.0 | 115 |
| EG093A-F: Arsenic | 7440-38-2 | 0.5 | µg/L | <0.5 | 10 µg/L | 92.1 | 87.0 | 116 |
| EG093A-F: Barium | 7440-39-3 | 1 | µg/L | <1 | 10 µg/L | 91.8 | 87.0 | 114 |
| EG093A-F: Cadmium | 7440-43-9 | 0.2 | µg/L | <0.2 | 10 µg/L | 94.4 | 88.0 | 114 |
| EG093A-F: Chromium | 7440-47-3 | 0.5 | µg/L | <0.5 | 10 µg/L | 89.9 | 83.0 | 115 |
| EG093A-F: Copper | 7440-50-8 | 1 | µg/L | <1 | 10 µg/L | 94.1 | 81.0 | 117 |
| EG093A-F: Lead | 7439-92-1 | 0.2 | µg/L | <0.2 | 10 µg/L | 92.0 | 80.0 | 117 |
| EG093A-F: Nickel | 7440-02-0 | 0.5 | µg/L | <0.5 | 10 µg/L | 90.0 | 87.0 | 117 |
| EG093A-F: Zinc | 7440-66-6 | 5 | µg/L | <5 | 10 µg/L | 90.4 | 81.0 | 120 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | |
|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) |
| | | | | Result | Concentration | LCS | Low | High |
| **EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 5857398)** | | | | | | | | |
| EG093A-T: Aluminium | 7429-90-5 | 5 | µg/L | <5 | 50 µg/L | 110 | 85.0 | 120 |
| EG093A-T: Antimony | 7440-36-0 | 0.5 | µg/L | # 0.6 | 10 µg/L | 107 | 83.0 | 116 |
| EG093A-T: Arsenic | 7440-38-2 | 0.5 | µg/L | <0.5 | 10 µg/L | 106 | 86.0 | 117 |
| EG093A-T: Barium | 7440-39-3 | 1 | µg/L | <1 | 10 µg/L | 102 | 84.0 | 118 |
| EG093A-T: Cadmium | 7440-43-9 | 0.2 | µg/L | <0.2 | 10 µg/L | 108 | 84.0 | 115 |
| EG093A-T: Chromium | 7440-47-3 | 0.5 | µg/L | <0.5 | 10 µg/L | 106 | 84.0 | 120 |
| EG093A-T: Copper | 7440-50-8 | 1 | µg/L | <1 | 10 µg/L | 99.4 | 84.0 | 119 |
| EG093A-T: Lead | 7439-92-1 | 0.2 | µg/L | <0.2 | 10 µg/L | 104 | 84.0 | 120 |
| EG093A-T: Nickel | 7440-02-0 | 0.5 | µg/L | <0.5 | 10 µg/L | 110 | 80.0 | 120 |
| EG093A-T: Zinc | 7440-66-6 | 5 | µg/L | <5 | 10 µg/L | 106 | 81.0 | 124 |
| **EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 5857399)** | | | | | | | | |
| EG093B-T: Iron | 7439-89-6 | 5 | µg/L | <5 | 50 µg/L | 105 | 80.0 | 128 |
| **EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 5857402)** | | | | | | | | |
| EG093B-T: Iron | 7439-89-6 | 5 | µg/L | <5 | 50 µg/L | 126 | 80.0 | 128 |
| **EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 5857403)** | | | | | | | | |
| EG093A-T: Aluminium | 7429-90-5 | 5 | µg/L | <5 | 50 µg/L | 101 | 85.0 | 120 |
| EG093A-T: Antimony | 7440-36-0 | 0.5 | µg/L | <0.5 | 10 µg/L | 99.3 | 83.0 | 116 |
| EG093A-T: Arsenic | 7440-38-2 | 0.5 | µg/L | <0.5 | 10 µg/L | 100 | 86.0 | 117 |
| EG093A-T: Barium | 7440-39-3 | 1 | µg/L | <1 | 10 µg/L | 100 | 84.0 | 118 |
| EG093A-T: Cadmium | 7440-43-9 | 0.2 | µg/L | <0.2 | 10 µg/L | 103 | 84.0 | 115 |
| EG093A-T: Chromium | 7440-47-3 | 0.5 | µg/L | <0.5 | 10 µg/L | 99.1 | 84.0 | 120 |
| EG093A-T: Copper | 7440-50-8 | 1 | µg/L | <1 | 10 µg/L | 99.1 | 84.0 | 119 |
| EG093A-T: Lead | 7439-92-1 | 0.2 | µg/L | <0.2 | 10 µg/L | 98.2 | 84.0 | 120 |
| EG093A-T: Nickel | 7440-02-0 | 0.5 | µg/L | <0.5 | 10 µg/L | 97.2 | 80.0 | 120 |
| EG093A-T: Zinc | 7440-66-6 | 5 | µg/L | <5 | 10 µg/L | 96.1 | 81.0 | 124 |
| **EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 5857404)** | | | | | | | | |
| EG093B-T: Iron | 7439-89-6 | 5 | µg/L | <5 | 50 µg/L | 94.7 | 80.0 | 128 |
| **EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 5857405)** | | | | | | | | |
| EG093A-T: Aluminium | 7429-90-5 | 5 | µg/L | <5 | 50 µg/L | 98.0 | 85.0 | 120 |
| EG093A-T: Antimony | 7440-36-0 | 0.5 | µg/L | <0.5 | 10 µg/L | 99.7 | 83.0 | 116 |
| EG093A-T: Arsenic | 7440-38-2 | 0.5 | µg/L | <0.5 | 10 µg/L | 99.5 | 86.0 | 117 |
| EG093A-T: Barium | 7440-39-3 | 1 | µg/L | <1 | 10 µg/L | 101 | 84.0 | 118 |
| EG093A-T: Cadmium | 7440-43-9 | 0.2 | µg/L | <0.2 | 10 µg/L | 101 | 84.0 | 115 |
| EG093A-T: Chromium | 7440-47-3 | 0.5 | µg/L | <0.5 | 10 µg/L | 97.2 | 84.0 | 120 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report: Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%): LCS | Acceptable Limits (%): Low | Acceptable Limits (%): High |
|---|---|---|---|---|---|---|---|---|
| **EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 5857405) - continued** | | | | | | | | |
| EG093A-T: Copper | 7440-50-8 | 1 | µg/L | <1 | 10 µg/L | 110 | 84.0 | 119 |
| EG093A-T: Lead | 7439-92-1 | 0.2 | µg/L | <0.2 | 10 µg/L | 100 | 84.0 | 120 |
| EG093A-T: Nickel | 7440-02-0 | 0.5 | µg/L | <0.5 | 10 µg/L | 97.9 | 80.0 | 120 |
| EG093A-T: Zinc | 7440-66-6 | 5 | µg/L | <5 | 10 µg/L | 103 | 81.0 | 124 |
| **EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 5876875)** | | | | | | | | |
| EG094A-F: Aluminium | 7429-90-5 | 5 | µg/L | <5 | 50 µg/L | 103 | 80.0 | 120 |
| EG094A-F: Antimony | 7440-36-0 | 0.2 | µg/L | <0.2 | 10 µg/L | 88.2 | 80.0 | 120 |
| EG094A-F: Arsenic | 7440-38-2 | 0.2 | µg/L | <0.2 | 10 µg/L | 98.8 | 80.0 | 120 |
| EG094A-F: Barium | 7440-39-3 | 0.5 | µg/L | <0.5 | 10 µg/L | 93.8 | 80.0 | 120 |
| EG094A-F: Cadmium | 7440-43-9 | 0.05 | µg/L | <0.05 | 10 µg/L | 98.2 | 80.0 | 120 |
| EG094A-F: Chromium | 7440-47-3 | 0.2 | µg/L | <0.2 | 10 µg/L | 94.4 | 80.0 | 120 |
| EG094A-F: Copper | 7440-50-8 | 0.5 | µg/L | <0.5 | 10 µg/L | 95.2 | 80.0 | 120 |
| EG094A-F: Lead | 7439-92-1 | 0.1 | µg/L | <0.1 | 10 µg/L | 91.5 | 80.0 | 120 |
| EG094A-F: Nickel | 7440-02-0 | 0.5 | µg/L | <0.5 | 10 µg/L | 96.1 | 80.0 | 120 |
| EG094A-F: Zinc | 7440-66-6 | 1 | µg/L | <1 | 10 µg/L | 101 | 80.0 | 120 |
| **EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 5876876)** | | | | | | | | |
| EG094B-F: Iron | 7439-89-6 | 2 | µg/L | <2 | 50 µg/L | 99.7 | 80.0 | 120 |
| **EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 5876873)** | | | | | | | | |
| EG094A-T: Aluminium | 7429-90-5 | 5 | µg/L | <5 | 50 µg/L | 106 | 80.0 | 120 |
| EG094A-T: Antimony | 7440-36-0 | 0.2 | µg/L | <0.2 | 10 µg/L | 93.1 | 80.0 | 120 |
| EG094A-T: Arsenic | 7440-38-2 | 0.2 | µg/L | <0.2 | 10 µg/L | 97.1 | 80.0 | 120 |
| EG094A-T: Barium | 7440-39-3 | 0.5 | µg/L | <0.5 | 10 µg/L | 96.9 | 80.0 | 120 |
| EG094A-T: Cadmium | 7440-43-9 | 0.05 | µg/L | <0.05 | 10 µg/L | 97.2 | 80.0 | 120 |
| EG094A-T: Chromium | 7440-47-3 | 0.2 | µg/L | <0.2 | 10 µg/L | 91.6 | 80.0 | 120 |
| EG094A-T: Copper | 7440-50-8 | 0.5 | µg/L | <0.5 | 10 µg/L | 97.0 | 80.0 | 120 |
| EG094A-T: Lead | 7439-92-1 | 0.1 | µg/L | <0.1 | 10 µg/L | 92.1 | 80.0 | 120 |
| EG094A-T: Nickel | 7440-02-0 | 0.5 | µg/L | <0.5 | 10 µg/L | 97.0 | 80.0 | 120 |
| EG094A-T: Zinc | 7440-66-6 | 1 | µg/L | <1 | 10 µg/L | 104 | 80.0 | 120 |
| **EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 5876874)** | | | | | | | | |
| EG094B-T: Iron | 7439-89-6 | 2 | µg/L | <2 | 50 µg/L | 95.4 | 80.0 | 120 |
| **EP090: Organotin Compounds (Soluble) (QCLot: 5858765)** | | | | | | | | |
| EP090S: Tributyltin | 56573-85-4 | 2 | ngSn/L | <2 | 147 ngSn/L | 66.9 | 30.7 | 134 |
| **EP090: Organotin Compounds (Soluble) (QCLot: 5860734)** | | | | | | | | |
| EP090S: Tributyltin | 56573-85-4 | 2 | ngSn/L | <2 | 147 ngSn/L | 94.3 | 30.7 | 134 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report: Result | Laboratory Control Spike (LCS) Report: Spike Concentration | Spike Recovery (%): LCS | Acceptable Limits (%): Low | Acceptable Limits (%): High |
|---|---|---|---|---|---|---|---|---|
| **EP090: Organotin Compounds (Soluble) (QCLot: 5860735)** | | | | | | | | |
| EP090S: Tributyltin | 56573-85-4 | 2 | ngSn/L | <2 | 147 ngSn/L | 83.6 | 30.7 | 134 |

## Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report: Spike Concentration | SpikeRecovery(%): MS | Acceptable Limits (%): Low | Acceptable Limits (%): High |
|---|---|---|---|---|---|---|---|
| **EG035F: Dissolved Mercury by FIMS (QCLot: 5860939)** | | | | | | | |
| EB2420133-002 | C4-WQ-0624 | EG035F-LL: Mercury | 7439-97-6 | 0.002 mg/L | 79.4 | 70.0 | 130 |
| **EG035F: Dissolved Mercury by FIMS (QCLot: 5860940)** | | | | | | | |
| EB2420133-025 | I1-WQ-0624 | EG035F-LL: Mercury | 7439-97-6 | 0.002 mg/L | 81.3 | 70.0 | 130 |
| **EG035F: Dissolved Mercury by FIMS (QCLot: 5860945)** | | | | | | | |
| EB2420133-042 | B5-WQ-0624 | EG035F-LL: Mercury | 7439-97-6 | 0.002 mg/L | 81.8 | 70.0 | 130 |
| **EG035T: Total Mercury by FIMS (QCLot: 5857475)** | | | | | | | |
| EB2420133-002 | C4-WQ-0624 | EG035T-LL: Mercury | 7439-97-6 | 0.002 mg/L | 83.0 | 70.0 | 130 |
| **EG035T: Total Mercury by FIMS (QCLot: 5857476)** | | | | | | | |
| EB2420133-025 | I1-WQ-0624 | EG035T-LL: Mercury | 7439-97-6 | 0.002 mg/L | 81.6 | 70.0 | 130 |
| **EG035T: Total Mercury by FIMS (QCLot: 5857478)** | | | | | | | |
| EB2420133-030 | H1-WQ-0624 | EG035T-LL: Mercury | 7439-97-6 | 0.002 mg/L | 95.0 | 70.0 | 130 |
| **EG035T: Total Mercury by FIMS (QCLot: 5857479)** | | | | | | | |
| EB2420133-051 | E5-WQ-0624 | EG035T-LL: Mercury | 7439-97-6 | 0.002 mg/L | 97.6 | 70.0 | 130 |
| **EG093F: Dissolved Metals in Saline Water by ORC-ICPMS (QCLot: 5857237)** | | | | | | | |
| EB2420133-002 | C4-WQ-0624 | EG093A-F: Arsenic | 7440-38-2 | 500 µg/L | 79.4 | 70.0 | 130 |
| | | EG093A-F: Barium | 7440-39-3 | 500 µg/L | 86.4 | 70.0 | 130 |
| | | EG093A-F: Cadmium | 7440-43-9 | 125 µg/L | 81.4 | 70.0 | 130 |
| | | EG093A-F: Chromium | 7440-47-3 | 500 µg/L | 99.9 | 70.0 | 130 |
| | | EG093A-F: Copper | 7440-50-8 | 500 µg/L | 78.5 | 70.0 | 130 |
| | | EG093A-F: Lead | 7439-92-1 | 500 µg/L | 89.4 | 70.0 | 130 |
| | | EG093A-F: Nickel | 7440-02-0 | 500 µg/L | 80.2 | 70.0 | 130 |
| | | EG093A-F: Zinc | 7440-66-6 | 500 µg/L | 74.0 | 70.0 | 130 |
| **EG093F: Dissolved Metals in Saline Water by ORC-ICPMS (QCLot: 5857241)** | | | | | | | |
| EB2420133-025 | I1-WQ-0624 | EG093A-F: Arsenic | 7440-38-2 | 500 µg/L | 91.0 | 70.0 | 130 |
| | | EG093A-F: Barium | 7440-39-3 | 500 µg/L | 88.1 | 70.0 | 130 |
| | | EG093A-F: Cadmium | 7440-43-9 | 125 µg/L | 88.1 | 70.0 | 130 |

Sub-Matrix: **WATER**

| | | | | Matrix Spike (MS) Report | | | |
|---|---|---|---|---|---|---|---|
| | | | | Spike | SpikeRecovery(%) | Acceptable Limits (%) | |
| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Concentration | MS | Low | High |
| **EG093F: Dissolved Metals in Saline Water by ORC-ICPMS (QCLot: 5857241) - continued** | | | | | | | |
| EB2420133-025 | I1-WQ-0624 | EG093A-F: Chromium | 7440-47-3 | 500 µg/L | 90.8 | 70.0 | 130 |
| | | EG093A-F: Copper | 7440-50-8 | 500 µg/L | 88.5 | 70.0 | 130 |
| | | EG093A-F: Lead | 7439-92-1 | 500 µg/L | 90.9 | 70.0 | 130 |
| | | EG093A-F: Nickel | 7440-02-0 | 500 µg/L | 89.4 | 70.0 | 130 |
| | | EG093A-F: Zinc | 7440-66-6 | 500 µg/L | 86.9 | 70.0 | 130 |
| **EG093F: Dissolved Metals in Saline Water by ORC-ICPMS (QCLot: 5857247)** | | | | | | | |
| EB2420133-046 | A2-WQ-0624 | EG093A-F: Arsenic | 7440-38-2 | 500 µg/L | 94.6 | 70.0 | 130 |
| | | EG093A-F: Barium | 7440-39-3 | 500 µg/L | 91.8 | 70.0 | 130 |
| | | EG093A-F: Cadmium | 7440-43-9 | 125 µg/L | 91.8 | 70.0 | 130 |
| | | EG093A-F: Chromium | 7440-47-3 | 500 µg/L | 93.6 | 70.0 | 130 |
| | | EG093A-F: Copper | 7440-50-8 | 500 µg/L | 92.0 | 70.0 | 130 |
| | | EG093A-F: Lead | 7439-92-1 | 500 µg/L | 92.8 | 70.0 | 130 |
| | | EG093A-F: Nickel | 7440-02-0 | 500 µg/L | 93.2 | 70.0 | 130 |
| | | EG093A-F: Zinc | 7440-66-6 | 500 µg/L | 90.7 | 70.0 | 130 |
| **EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 5857398)** | | | | | | | |
| EB2420133-002 | C4-WQ-0624 | EG093A-T: Arsenic | 7440-38-2 | 500 µg/L | 102 | 70.0 | 130 |
| | | EG093A-T: Barium | 7440-39-3 | 500 µg/L | 101 | 70.0 | 130 |
| | | EG093A-T: Cadmium | 7440-43-9 | 125 µg/L | 101 | 70.0 | 130 |
| | | EG093A-T: Chromium | 7440-47-3 | 500 µg/L | 103 | 70.0 | 130 |
| | | EG093A-T: Copper | 7440-50-8 | 500 µg/L | 99.1 | 70.0 | 130 |
| | | EG093A-T: Lead | 7439-92-1 | 500 µg/L | 97.5 | 70.0 | 130 |
| | | EG093A-T: Nickel | 7440-02-0 | 500 µg/L | 99.3 | 70.0 | 130 |
| | | EG093A-T: Zinc | 7440-66-6 | 500 µg/L | 100 | 70.0 | 130 |
| **EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 5857403)** | | | | | | | |
| EB2420133-025 | I1-WQ-0624 | EG093A-T: Arsenic | 7440-38-2 | 500 µg/L | 101 | 70.0 | 130 |
| | | EG093A-T: Barium | 7440-39-3 | 500 µg/L | 101 | 70.0 | 130 |
| | | EG093A-T: Cadmium | 7440-43-9 | 125 µg/L | 99.0 | 70.0 | 130 |
| | | EG093A-T: Chromium | 7440-47-3 | 500 µg/L | 99.1 | 70.0 | 130 |
| | | EG093A-T: Copper | 7440-50-8 | 500 µg/L | 98.4 | 70.0 | 130 |
| | | EG093A-T: Lead | 7439-92-1 | 500 µg/L | 97.8 | 70.0 | 130 |
| | | EG093A-T: Nickel | 7440-02-0 | 500 µg/L | 97.5 | 70.0 | 130 |
| | | EG093A-T: Zinc | 7440-66-6 | 500 µg/L | 95.6 | 70.0 | 130 |
| **EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 5857405)** | | | | | | | |
| EB2420133-046 | A2-WQ-0624 | EG093A-T: Arsenic | 7440-38-2 | 500 µg/L | 98.9 | 70.0 | 130 |
| | | EG093A-T: Barium | 7440-39-3 | 500 µg/L | 96.8 | 70.0 | 130 |
| | | EG093A-T: Cadmium | 7440-43-9 | 125 µg/L | 94.9 | 70.0 | 130 |
| | | EG093A-T: Chromium | 7440-47-3 | 500 µg/L | 94.3 | 70.0 | 130 |
| | | EG093A-T: Copper | 7440-50-8 | 500 µg/L | 95.9 | 70.0 | 130 |

Sub-Matrix: **WATER**

| | | | | Matrix Spike (MS) Report | | | |
|---|---|---|---|---|---|---|---|
| | | | | Spike | SpikeRecovery(%) | Acceptable Limits (%) | |
| *Laboratory sample ID* | *Sample ID* | *Method: Compound* | *CAS Number* | *Concentration* | *MS* | *Low* | *High* |
| **EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 5857405) - continued** | | | | | | | |
| EB2420133-046 | A2-WQ-0624 | EG093A-T: Lead | 7439-92-1 | 500 µg/L | 95.5 | 70.0 | 130 |
| | | EG093A-T: Nickel | 7440-02-0 | 500 µg/L | 95.6 | 70.0 | 130 |
| | | EG093A-T: Zinc | 7440-66-6 | 500 µg/L | 92.4 | 70.0 | 130 |
| **EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 5876875)** | | | | | | | |
| EB2420133-036 | Trip Blank | EG094A-F: Arsenic | 7440-38-2 | 500 µg/L | 97.4 | 70.0 | 130 |
| | | EG094A-F: Barium | 7440-39-3 | 500 µg/L | 101 | 70.0 | 130 |
| | | EG094A-F: Cadmium | 7440-43-9 | 125 µg/L | 99.6 | 70.0 | 130 |
| | | EG094A-F: Chromium | 7440-47-3 | 500 µg/L | 98.1 | 70.0 | 130 |
| | | EG094A-F: Copper | 7440-50-8 | 500 µg/L | 102 | 70.0 | 130 |
| | | EG094A-F: Lead | 7439-92-1 | 500 µg/L | 96.9 | 70.0 | 130 |
| | | EG094A-F: Nickel | 7440-02-0 | 500 µg/L | 97.2 | 70.0 | 130 |
| | | EG094A-F: Zinc | 7440-66-6 | 500 µg/L | 97.0 | 70.0 | 130 |
| **EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 5876873)** | | | | | | | |
| EB2420133-036 | Trip Blank | EG094A-T: Arsenic | 7440-38-2 | 500 µg/L | 99.2 | 70.0 | 130 |
| | | EG094A-T: Barium | 7440-39-3 | 500 µg/L | 104 | 70.0 | 130 |
| | | EG094A-T: Cadmium | 7440-43-9 | 125 µg/L | 100 | 70.0 | 130 |
| | | EG094A-T: Chromium | 7440-47-3 | 500 µg/L | 102 | 70.0 | 130 |
| | | EG094A-T: Copper | 7440-50-8 | 500 µg/L | 104 | 70.0 | 130 |
| | | EG094A-T: Lead | 7439-92-1 | 500 µg/L | 101 | 70.0 | 130 |
| | | EG094A-T: Nickel | 7440-02-0 | 500 µg/L | 98.8 | 70.0 | 130 |
| | | EG094A-T: Zinc | 7440-66-6 | 500 µg/L | 92.8 | 70.0 | 130 |
| **EP090: Organotin Compounds (Soluble) (QCLot: 5858765)** | | | | | | | |
| EP2408050-076 | Anonymous | EP090S: Tributyltin | 56573-85-4 | 147 ngSn/L | 48.9 | 20.0 | 130 |

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **EB2420133** | Page | : 1 of 12 |
| Client | : **BMT COMMERCIAL AUSTRALIA PTY LTD** | Laboratory | : Environmental Division Brisbane |
| Contact | : MR CONOR JONES | Telephone | : +61-7-3243 7222 |
| Project | : B23282 Douglas Shoal | Date Samples Received | : 13-Jun-2024 |
| Site | : ---- | Issue Date | : 24-Jun-2024 |
| Sampler | : CONOR JONES | No. of samples received | : 51 |
| Order number | : 214 | No. of samples analysed | : 51 |

**This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.**

Brief method summaries and references are also provided to assist in traceability.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **Method Blank value outliers exist - please see following pages for full details.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

### *Outliers : Analysis Holding Time Compliance*

- **NO Analysis Holding Time Outliers exist.**

### *Outliers : Frequency of Quality Control Samples*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

## Outliers : Quality Control Samples

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **WATER**

| Compound Group Name | Laboratory Sample ID | Client Sample ID | Analyte | CAS Number | Data | Limits | Comment |
|---|---|---|---|---|---|---|---|
| **Method Blank (MB) Values** | | | | | | | |
| EG093T: Total Metals in Saline Water by ORC-ICPMS | QC-MRG2-58573980 | ---- | **Antimony** | 7440-36-0 | 0.6 µg/L | 0.5 µg/L | **Blank result exceeds permitted value** |

## Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

| Quality Control Sample Type | | Count | | Rate (%) | | Quality Control Specification |
|---|---|---|---|---|---|---|
| Analytical Methods | Method | QC | Regular | Actual | Expected | |
| Laboratory Duplicates (DUP) | | | | | | |
| Organotin Compounds (Soluble) | EP090S | 2 | 58 | 3.45 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | |
| Organotin Compounds (Soluble) | EP090S | 1 | 58 | 1.72 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

# Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| ***Method*** | ***Sample Date*** | *Extraction / Preparation* | | | *Analysis* | | |
|---|---|---|---|---|---|---|---|
| ***Container*** / *Client Sample ID(s)* | | ***Date extracted*** | *Due for extraction* | *Evaluation* | ***Date analysed*** | *Due for analysis* | *Evaluation* |
| **EA025: Total Suspended Solids dried at 104 ± 2°C** | | | | | | | |
| **Clear Plastic Bottle - Natural (EA025H)** | | | | | | | |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EA025: Total Suspended Solids dried at 104 ± 2°C - Continued** | | | | | | | |
| C3-WQ-0624, C4-WQ-0624, C5-WQ-0624, C3-WQ-0624A, G1-WQ-0624, G2-WQ-0624, G3-WQ-0624, G4-WQ-0624, G5-WQ-0624, E1-WQ-0624, E2-WQ-0624, A5-WQ-0624, A3-WQ-0624A, D1-WQ-0624, D2-WQ-0624, D3-WQ-0624, D4-WQ-0624, D5-WQ-0624, D3-WQ-0624A, C1-WQ-0624, Rinsate, C2-WQ-0624, I1-WQ-0624, I2-WQ-0624, I3-WQ-0624, I4-WQ-0624, I5-WQ-0624, H1-WQ-0624, H2-WQ-0624, H3-WQ-0624, H4-WQ-0624, H5-WQ-0624, Trip Blank, Field Blank, B1-WQ-0624, B2-WQ-0624, B3-WQ-0624, B4-WQ-0624, B5-WQ-0624, B3-WQ-0624A, A1-WQ-0624, A2-WQ-0624, A3-WQ-0624, A4-WQ-0624, E3-WQ-0624, E4-WQ-0624, E5-WQ-0624 | **11-Jun-2024** | **----** | ---- | **----** | **14-Jun-2024** | 18-Jun-2024 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | |
| **Clear Plastic Bottle - Nitric Acid; Filtered (EG035F-LL)** | | | | | | | |
| C3-WQ-0624, C4-WQ-0624, C5-WQ-0624, C3-WQ-0624A, G1-WQ-0624, G2-WQ-0624, G3-WQ-0624, G4-WQ-0624, G5-WQ-0624, E1-WQ-0624, E2-WQ-0624, A5-WQ-0624, A3-WQ-0624A, D1-WQ-0624, D2-WQ-0624, D3-WQ-0624, D4-WQ-0624, D5-WQ-0624, D3-WQ-0624A, C1-WQ-0624, Rinsate, C2-WQ-0624, I1-WQ-0624, I2-WQ-0624, I3-WQ-0624, I4-WQ-0624, I5-WQ-0624, H1-WQ-0624, H2-WQ-0624, H3-WQ-0624, H4-WQ-0624, H5-WQ-0624, Trip Blank, Field Blank, B1-WQ-0624, B2-WQ-0624, B3-WQ-0624, B4-WQ-0624, B5-WQ-0624, B3-WQ-0624A, A1-WQ-0624, A2-WQ-0624, A3-WQ-0624, A4-WQ-0624, E3-WQ-0624, E4-WQ-0624, E5-WQ-0624 | **11-Jun-2024** | **----** | ---- | **----** | **17-Jun-2024** | 09-Jul-2024 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EG035T: Total Mercury by FIMS** | | | | | | | |
| **Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T-LL)** | | | | | | | |
| C3-WQ-0624, C4-WQ-0624, C5-WQ-0624, C3-WQ-0624A, G1-WQ-0624, G2-WQ-0624, G3-WQ-0624, G4-WQ-0624, G5-WQ-0624, E1-WQ-0624, E2-WQ-0624, A5-WQ-0624, A3-WQ-0624A, D1-WQ-0624, D2-WQ-0624, D3-WQ-0624, D4-WQ-0624, D5-WQ-0624, D3-WQ-0624A, C1-WQ-0624, Rinsate, C2-WQ-0624, I1-WQ-0624, I2-WQ-0624, I3-WQ-0624, I4-WQ-0624, I5-WQ-0624, H1-WQ-0624, H2-WQ-0624, H3-WQ-0624, H4-WQ-0624, H5-WQ-0624, Trip Blank, Field Blank, B1-WQ-0624, B2-WQ-0624, B3-WQ-0624, B4-WQ-0624, B5-WQ-0624, B3-WQ-0624A, A1-WQ-0624, A2-WQ-0624, A3-WQ-0624, A4-WQ-0624, E3-WQ-0624, E4-WQ-0624, E5-WQ-0624 | **11-Jun-2024** | **----** | ---- | **----** | **20-Jun-2024** | 09-Jul-2024 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EG093F: Dissolved Metals in Saline Water by ORC-ICPMS** | | | | | | | |
| **Clear Plastic Bottle - Nitric Acid; Filtered (EG093A-F)** | | | | | | | |
| C3-WQ-0624, C4-WQ-0624, C5-WQ-0624, C3-WQ-0624A, G1-WQ-0624, G2-WQ-0624, G3-WQ-0624, G4-WQ-0624, G5-WQ-0624, E1-WQ-0624, E2-WQ-0624, A5-WQ-0624, A3-WQ-0624A, D1-WQ-0624, D2-WQ-0624, D3-WQ-0624, D4-WQ-0624, D5-WQ-0624, D3-WQ-0624A, C1-WQ-0624, C2-WQ-0624, I1-WQ-0624, I2-WQ-0624, I3-WQ-0624, I4-WQ-0624, I5-WQ-0624, H1-WQ-0624, H2-WQ-0624, H3-WQ-0624, H4-WQ-0624, H5-WQ-0624, B1-WQ-0624, B2-WQ-0624, B3-WQ-0624, B4-WQ-0624, B5-WQ-0624, B3-WQ-0624A, A1-WQ-0624, A2-WQ-0624, A3-WQ-0624, A4-WQ-0624, E3-WQ-0624, E4-WQ-0624, E5-WQ-0624 | **11-Jun-2024** | **----** | ---- | **----** | **19-Jun-2024** | 08-Dec-2024 | ✓ |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EG093T: Total Metals in Saline Water by ORC-ICPMS** | | | | | | | | |
| **Clear Plastic Bottle - Nitric Acid; Unfiltered (EG093A-T)** | | | | | | | | |
| C3-WQ-0624, | C4-WQ-0624, | **11-Jun-2024** | **19-Jun-2024** | 08-Dec-2024 | ✓ | **20-Jun-2024** | 08-Dec-2024 | ✓ |
| C5-WQ-0624, | C3-WQ-0624A, | | | | | | | |
| G1-WQ-0624, | G2-WQ-0624, | | | | | | | |
| G3-WQ-0624, | G4-WQ-0624, | | | | | | | |
| G5-WQ-0624, | E1-WQ-0624, | | | | | | | |
| E2-WQ-0624, | A5-WQ-0624, | | | | | | | |
| A3-WQ-0624A, | D1-WQ-0624, | | | | | | | |
| D2-WQ-0624, | D3-WQ-0624, | | | | | | | |
| D4-WQ-0624, | D5-WQ-0624, | | | | | | | |
| D3-WQ-0624A, | C1-WQ-0624, | | | | | | | |
| C2-WQ-0624, | I1-WQ-0624, | | | | | | | |
| I2-WQ-0624, | I3-WQ-0624, | | | | | | | |
| I4-WQ-0624, | I5-WQ-0624, | | | | | | | |
| H1-WQ-0624, | H2-WQ-0624, | | | | | | | |
| H3-WQ-0624, | H4-WQ-0624, | | | | | | | |
| H5-WQ-0624, | B1-WQ-0624, | | | | | | | |
| B2-WQ-0624, | B3-WQ-0624, | | | | | | | |
| B4-WQ-0624, | B5-WQ-0624, | | | | | | | |
| B3-WQ-0624A, | A1-WQ-0624, | | | | | | | |
| A2-WQ-0624, | A3-WQ-0624, | | | | | | | |
| A4-WQ-0624, | E3-WQ-0624, | | | | | | | |
| E4-WQ-0624, | E5-WQ-0624 | | | | | | | |
| **EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS** | | | | | | | | |
| **Clear Plastic Bottle - Nitric Acid; Filtered (EG094A-F)** | | | | | | | | |
| Rinsate, | Trip Blank, | **11-Jun-2024** | **----** | ---- | ---- | **24-Jun-2024** | 08-Dec-2024 | ✓ |
| Field Blank | | | | | | | | |
| **EG094T: Total metals in Fresh water by ORC-ICPMS** | | | | | | | | |
| **Clear Plastic Bottle - Nitric Acid; Unfiltered (EG094A-T)** | | | | | | | | |
| Rinsate, | Trip Blank, | **11-Jun-2024** | **24-Jun-2024** | 08-Dec-2024 | ✓ | **24-Jun-2024** | 08-Dec-2024 | ✓ |
| Field Blank | | | | | | | | |

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

| Method / Container / Client Sample ID(s) | Sample Date | Extraction / Preparation | | | Analysis | | |
|---|---|---|---|---|---|---|---|
| | | Date extracted | Due for extraction | Evaluation | Date analysed | Due for analysis | Evaluation |
| **EP090: Organotin Compounds (Soluble)** | | | | | | | |
| **Amber Glass Bottle - Unpreserved (EP090S)** | | | | | | | |
| I1-WQ-0624, I2-WQ-0624, I3-WQ-0624, I4-WQ-0624, I5-WQ-0624, H1-WQ-0624, H2-WQ-0624, H3-WQ-0624, H4-WQ-0624, H5-WQ-0624, Rinsate, Trip Blank, Field Blank, B1-WQ-0624, B2-WQ-0624, B3-WQ-0624, B4-WQ-0624, B5-WQ-0624 | **11-Jun-2024** | **14-Jun-2024** | 18-Jun-2024 | ✓ | **15-Jun-2024** | 24-Jul-2024 | ✓ |
| **Amber Glass Bottle - Unpreserved (EP090S)** | | | | | | | |
| AMB-02A, B3-WQ-0624A | **11-Jun-2024** | **17-Jun-2024** | 18-Jun-2024 | ✓ | **17-Jun-2024** | 27-Jul-2024 | ✓ |
| **Amber Glass Bottle - Unpreserved (EP090S)** | | | | | | | |
| C4-WQ-0624, C5-WQ-0624, C3-WQ-0624A, AMB03A, G1-WQ-0624, D4-WQ-0624, D5-WQ-0624, D3-WQ-0624A, AMB05A, C1-WQ-0624, C2-WQ-0624, A1-WQ-0624, A2-WQ-0624, A3-WQ-0624, A4-WQ-0624, E3-WQ-0624, E4-WQ-0624, E5-WQ-0624 | **11-Jun-2024** | **17-Jun-2024** | 18-Jun-2024 | ✓ | **18-Jun-2024** | 27-Jul-2024 | ✓ |
| **Amber Glass Bottle - Unpreserved (EP090S)** | | | | | | | |
| C3-WQ-0624, G2-WQ-0624, G3-WQ-0624, G4-WQ-0624, G5-WQ-0624, E1-WQ-0624, E2-WQ-0624, A5-WQ-0624, AMB01A, A3-WQ-0624A, D1-WQ-0624, D2-WQ-0624, D3-WQ-0624 | **11-Jun-2024** | **17-Jun-2024** | 18-Jun-2024 | ✓ | **19-Jun-2024** | 27-Jul-2024 | ✓ |

# Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Laboratory Duplicates (DUP) | | | | | | | |
| Dissolved Mercury by FIMS - Low Level | EG035F-LL | 5 | 50 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS | EG094A-F | 1 | 3 | **33.33** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS | EG094B-F | 1 | 3 | **33.33** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Metals in Saline Water -Suite A by ORC-ICPMS | EG093A-F | 5 | 44 | **11.36** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Metals in Saline Water -Suite B by ORC-ICPMS | EG093B-F | 5 | 44 | **11.36** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Organotin Compounds (Soluble) | EP090S | 2 | 58 | **3.45** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Suspended Solids (High Level) | EA025H | 5 | 47 | **10.64** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Mercury by FIMS - Low Level | EG035T-LL | 6 | 47 | **12.77** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals in Fresh Water -Suite A by ORC-ICPMS | EG094A-T | 1 | 3 | **33.33** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals in Fresh Water -Suite B by ORC-ICPMS | EG094B-T | 1 | 3 | **33.33** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals in Saline Water Suite A by ORC-ICPMS | EG093A-T | 5 | 44 | **11.36** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals in Saline Water -Suite B by ORC-ICPMS | EG093B-T | 5 | 44 | **11.36** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Laboratory Control Samples (LCS) | | | | | | | |
| Dissolved Mercury by FIMS - Low Level | EG035F-LL | 3 | 50 | **6.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS | EG094A-F | 1 | 3 | **33.33** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS | EG094B-F | 1 | 3 | **33.33** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Metals in Saline Water -Suite A by ORC-ICPMS | EG093A-F | 3 | 44 | **6.82** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Metals in Saline Water -Suite B by ORC-ICPMS | EG093B-F | 3 | 44 | **6.82** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Organotin Compounds (Soluble) | EP090S | 3 | 58 | **5.17** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Suspended Solids (High Level) | EA025H | 9 | 47 | **19.15** | **15.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Mercury by FIMS - Low Level | EG035T-LL | 4 | 47 | **8.51** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals in Fresh Water -Suite A by ORC-ICPMS | EG094A-T | 1 | 3 | **33.33** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals in Fresh Water -Suite B by ORC-ICPMS | EG094B-T | 1 | 3 | **33.33** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals in Saline Water Suite A by ORC-ICPMS | EG093A-T | 3 | 44 | **6.82** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals in Saline Water -Suite B by ORC-ICPMS | EG093B-T | 3 | 44 | **6.82** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Dissolved Mercury by FIMS - Low Level | EG035F-LL | 3 | 50 | **6.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS | EG094A-F | 1 | 3 | **33.33** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS | EG094B-F | 1 | 3 | **33.33** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Metals in Saline Water -Suite A by ORC-ICPMS | EG093A-F | 3 | 44 | **6.82** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Metals in Saline Water -Suite B by ORC-ICPMS | EG093B-F | 3 | 44 | **6.82** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Organotin Compounds (Soluble) | EP090S | 3 | 58 | **5.17** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Suspended Solids (High Level) | EA025H | 3 | 47 | **6.38** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Mercury by FIMS - Low Level | EG035T-LL | 4 | 47 | **8.51** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals in Fresh Water -Suite A by ORC-ICPMS | EG094A-T | 1 | 3 | **33.33** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals in Fresh Water -Suite B by ORC-ICPMS | EG094B-T | 1 | 3 | **33.33** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

| Quality Control Sample Type | | Count | | Rate (%) | | | Quality Control Specification |
|---|---|---|---|---|---|---|---|
| *Analytical Methods* | *Method* | *QC* | *Regular* | ***Actual*** | ***Expected*** | *Evaluation* | |
| Method Blanks (MB) - Continued | | | | | | | |
| Total Metals in Saline Water Suite A by ORC-ICPMS | EG093A-T | 3 | 44 | **6.82** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals in Saline Water -Suite B by ORC-ICPMS | EG093B-T | 3 | 44 | **6.82** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Dissolved Mercury by FIMS - Low Level | EG035F-LL | 3 | 50 | **6.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS | EG094A-F | 1 | 3 | **33.33** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Metals in Saline Water -Suite A by ORC-ICPMS | EG093A-F | 3 | 44 | **6.82** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Organotin Compounds (Soluble) | EP090S | 1 | 58 | **1.72** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |
| Total Mercury by FIMS - Low Level | EG035T-LL | 4 | 47 | **8.51** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals in Fresh Water -Suite A by ORC-ICPMS | EG094A-T | 1 | 3 | **33.33** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals in Saline Water Suite A by ORC-ICPMS | EG093A-T | 3 | 44 | **6.82** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Suspended Solids (High Level) | EA025H | WATER | In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3) |
| Dissolved Mercury by FIMS - Low Level | EG035F-LL | WATER | In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3). |
| Total Mercury by FIMS - Low Level | EG035T-LL | WATER | In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3). |
| Dissolved Metals in Saline Water -Suite A by ORC-ICPMS | EG093A-F | WATER | In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM Schedule B(3). |
| Total Metals in Saline Water Suite A by ORC-ICPMS | EG093A-T | WATER | In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM Schedule B(3). |
| Dissolved Metals in Saline Water -Suite B by ORC-ICPMS | EG093B-F | WATER | In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM Schedule B(3). |
| Total Metals in Saline Water -Suite B by ORC-ICPMS | EG093B-T | WATER | In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM Schedule B(3). |

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS | EG094A-F | WATER | In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM Schedule B(3). |
| Total Metals in Fresh Water -Suite A by ORC-ICPMS | EG094A-T | WATER | In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM Schedule B(3). |
| Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS | EG094B-F | WATER | In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM Schedule B(3). |
| Total Metals in Fresh Water -Suite B by ORC-ICPMS | EG094B-T | WATER | In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM Schedule B(3). |
| Organotin Compounds (Soluble) | EP090S | WATER | In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by GC/MS coupled with high volume injection and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3) |

| Preparation Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| Digestion for Total Recoverable Metals - ORC | EN25-ORC | WATER | In house: Referenced to USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM Schedule B(3) |
| Organotin Sample Preparation | ORG34 | WATER | In house. A specified volume of sample is spiked with surrogate, acidified and vacuum filtered. Reagents and solvent are added and the mixture tumbled. The butyltin compounds is derivitisated, extracted and the subtitution reaction completed. The extract is transferred to a separatory funnel and further extracted two times with petroleum ether. The resultant extracts are combined and concentrated for analysis. |

# Annex E Tabulated BRUV Data

© BMT 2024

| Event | Treatment | Location | Replicate | Filename | Frame | Time (mins) | Remed Period |
|---|---|---|---|---|---|---|---|
| E5_11/2023 | Remediation | mA | 1 | A1_1_Left.MP4 | 2518 | 1.6787 | Post |
| E5_11/2023 | Remediation | mA | 1 | A1_1_Left.MP4 | 5058 | 3.372 | Post |
| E5_11/2023 | Remediation | mA | 1 | A1_1_Left.MP4 | 10111 | 6.7407 | Post |
| E5_11/2023 | Remediation | mA | 1 | A1_1_Left.MP4 | 10959 | 7.306 | Post |
| E5_11/2023 | Remediation | mA | 1 | A1_1_Left.MP4 | 6601 | 4.4007 | Post |
| E5_11/2023 | Remediation | mA | 1 | A1_2_Left.MP4 | 5135 | 21.1207 | Post |
| E5_11/2023 | Remediation | mA | 1 | A1_1_Left.MP4 | 13066 | 8.7107 | Post |
| E5_11/2023 | Remediation | mA | 1 | A1_1_Left.MP4 | 12558 | 8.372 | Post |
| E5_11/2023 | Remediation | mA | 1 | A1_1_Left.MP4 | 3950 | 2.6333 | Post |
| E5_11/2023 | Remediation | mA | 1 | A1_1_Left.MP4 | 6057 | 4.038 | Post |
| E5_11/2023 | Remediation | mA | 1 | A1_1_Left.MP4 | 3816 | 2.544 | Post |
| E5_11/2023 | Remediation | mA | 1 | A1_2_Left.MP4 | 7058 | 22.4027 | Post |
| E5_11/2023 | Remediation | mA | 1 | A1_1_Left.MP4 | 3527 | 2.3513 | Post |
| E5_11/2023 | Remediation | mA | 1 | A1_1_Left.MP4 | 3779 | 2.5193 | Post |
| E5_11/2023 | Remediation | mA | 1 | A1_2_Left.MP4 | 2466 | 19.3413 | Post |
| E5_11/2023 | Remediation | mA | 1 | A1_1_Left.MP4 | 22155 | 14.77 | Post |
| E5_11/2023 | Remediation | mA | 1 | A1_1_Left.MP4 | 9248 | 6.1653 | Post |
| E5_11/2023 | Remediation | mA | 1 | A1_1_Left.MP4 | 2568 | 1.712 | Post |
| E5_11/2023 | Remediation | mA | 1 | A1_1_Left.MP4 | 23348 | 15.5653 | Post |
| E5_11/2023 | Remediation | mA | 1 | A1_2_Left.MP4 | 14025 | 27.0473 | Post |
| E5_11/2023 | Remediation | mA | 1 | A1_1_Left.MP4 | 1624 | 1.0827 | Post |
| E5_11/2023 | Remediation | mA | 1 | A1_1_Left.MP4 | 17557 | 11.7047 | Post |
| E5_11/2023 | Remediation | mA | 2 | GOPR0260.MP4 | 13628 | 9.0853 | Post |
| E5_11/2023 | Remediation | mA | 2 | GOPR0260.MP4 | 2786 | 1.8573 | Post |
| E5_11/2023 | Remediation | mA | 2 | GOPR0260.MP4 | 16519 | 11.0127 | Post |
| E5_11/2023 | Remediation | mA | 2 | GOPR0260.MP4 | 10168 | 6.7787 | Post |
| E5_11/2023 | Remediation | mA | 2 | GOPR0260.MP4 | 2274 | 1.516 | Post |
| E5_11/2023 | Remediation | mA | 2 | GOPR0260.MP4 | 18861 | 12.574 | Post |
| E5_11/2023 | Remediation | mA | 2 | GOPR0260.MP4 | 3355 | 2.2367 | Post |
| E5_11/2023 | Remediation | mA | 2 | GOPR0260.MP4 | 2158 | 1.4387 | Post |
| E5_11/2023 | Remediation | mA | 2 | GOPR0260.MP4 | 8264 | 5.5093 | Post |
| E5_11/2023 | Remediation | mA | 2 | GOPR0260.MP4 | 4028 | 2.6853 | Post |
| E5_11/2023 | Remediation | mA | 2 | GOPR0260.MP4 | 14556 | 9.704 | Post |
| E5_11/2023 | Remediation | mA | 2 | GOPR0260.MP4 | 8575 | 5.7167 | Post |
| E5_11/2023 | Remediation | mA | 2 | GP010260.MP4 | 16300 | 28.564 | Post |
| E5_11/2023 | Remediation | mA | 2 | GOPR0260.MP4 | 2250 | 1.5 | Post |
| E5_11/2023 | Remediation | mA | 2 | GOPR0260.MP4 | 2642 | 1.7613 | Post |
| E5_11/2023 | Remediation | mA | 2 | GOPR0260.MP4 | 1809 | 1.206 | Post |
| E5_11/2023 | Remediation | mA | 2 | GOPR0260.MP4 | 14190 | 9.46 | Post |
| E5_11/2023 | Remediation | mA | 2 | GOPR0260.MP4 | 14556 | 9.704 | Post |
| E5_11/2023 | Remediation | mA | 3 | A3_1_Left.MP4 | 3658 | 2.4387 | Post |
| E5_11/2023 | Remediation | mA | 3 | A3_1_Left.MP4 | 26270 | 17.5133 | Post |
| E5_11/2023 | Remediation | mA | 3 | A3_1_Left.MP4 | 3658 | 2.4387 | Post |
| E5_11/2023 | Remediation | mA | 3 | A3_2_Left.MP4 | 3843 | 20.2593 | Post |
| E5_11/2023 | Remediation | mA | 3 | A3_2_Left.MP4 | 9243 | 23.8593 | Post |

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|---|---|---|---|---|---|---|---|
| E5_11/2023 | Remediation | mA | 3 | A3_1_Left.MP4 | 23028 | 15.352 | Post |
| E5_11/2023 | Remediation | mA | 3 | A3_1_Left.MP4 | 4427 | 2.9513 | Post |
| E5_11/2023 | Remediation | mA | 3 | A3_2_Left.MP4 | 9302 | 23.8987 | Post |
| E5_11/2023 | Remediation | mA | 3 | A3_1_Left.MP4 | 5252 | 3.5013 | Post |
| E5_11/2023 | Remediation | mA | 3 | A3_2_Left.MP4 | 3952 | 20.332 | Post |
| E5_11/2023 | Remediation | mA | 3 | A3_1_Left.MP4 | 23028 | 15.352 | Post |
| E5_11/2023 | Remediation | mA | 3 | A3_2_Left.MP4 | 214 | 17.84 | Post |
| E5_11/2023 | Remediation | mA | 3 | A3_2_Left.MP4 | 7793 | 22.8927 | Post |
| E5_11/2023 | Remediation | mA | 3 | A3_2_Left.MP4 | 2382 | 19.2853 | Post |
| E5_11/2023 | Remediation | mA | 3 | A3_2_Left.MP4 | 7669 | 22.81 | Post |
| E5_11/2023 | Remediation | mA | 3 | A3_2_Left.MP4 | 9064 | 23.74 | Post |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 9023 | 6.0153 | Post |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 5530 | 3.6867 | Post |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 4348 | 2.8987 | Post |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 4369 | 2.9127 | Post |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 25345 | 16.8967 | Post |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 5090 | 3.3933 | Post |
| E5_11/2023 | NearField | mB | 1 | B1_2_Left_Redo.M | 6795 | 22.2273 | Post |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 11147 | 7.4313 | Post |
| E5_11/2023 | NearField | mB | 1 | B1_2_Left_Redo.M | 5464 | 21.34 | Post |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 11234 | 7.4893 | Post |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 12142 | 8.0947 | Post |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 3046 | 2.0307 | Post |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 3837 | 2.558 | Post |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 10114 | 6.7427 | Post |
| E5_11/2023 | NearField | mB | 1 | B1_2_Left_Redo.M | 1294 | 18.56 | Post |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 4521 | 3.014 | Post |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 22000 | 14.6667 | Post |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 25561 | 17.0407 | Post |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 11178 | 7.452 | Post |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 3787 | 2.5247 | Post |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 3390 | 2.26 | Post |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 14984 | 9.9893 | Post |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 9669 | 6.446 | Post |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 16208 | 10.8053 | Post |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 12854 | 8.5693 | Post |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 3839 | 2.5593 | Post |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 2289 | 1.526 | Post |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 7266 | 4.844 | Post |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 5923 | 3.9487 | Post |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 10947 | 7.298 | Post |
| E5_11/2023 | NearField | mB | 2 | B2_2_Left.MP4 | 625 | 18.114 | Post |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 6832 | 4.5547 | Post |
| E5_11/2023 | NearField | mB | 2 | B2_2_Left.MP4 | 14627 | 27.4487 | Post |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 6767 | 4.5113 | Post |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 10227 | 6.818 | Post |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 24950 | 16.6333 | Post |

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|---|---|---|---|---|---|---|---|
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 24950 | 16.6333 | Post |
| E5_11/2023 | NearField | mB | 2 | B2_2_Left.MP4 | 8471 | 23.3447 | Post |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 19505 | 13.0033 | Post |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 6378 | 4.252 | Post |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 5906 | 3.9373 | Post |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 22097 | 14.7313 | Post |
| E5_11/2023 | NearField | mB | 2 | B2_2_Left.MP4 | 19803 | 30.8993 | Post |
| E5_11/2023 | NearField | mB | 2 | B2_2_Left.MP4 | 15001 | 27.698 | Post |
| E5_11/2023 | NearField | mB | 2 | B2_2_Left.MP4 | 17458 | 29.336 | Post |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 22674 | 15.116 | Post |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 19924 | 13.2827 | Post |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 14991 | 9.994 | Post |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 3860 | 2.5733 | Post |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 19507 | 30.702 | Post |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 16071 | 10.714 | Post |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 15225 | 10.15 | Post |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 22942 | 15.2947 | Post |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 5773 | 3.8487 | Post |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 3487 | 2.3247 | Post |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 5773 | 3.8487 | Post |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 17948 | 29.6627 | Post |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 10076 | 24.4147 | Post |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 11210 | 25.1707 | Post |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 11571 | 7.714 | Post |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 6262 | 4.1747 | Post |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 14796 | 9.864 | Post |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 8904 | 5.936 | Post |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 16997 | 29.0287 | Post |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 11949 | 7.966 | Post |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 3237 | 2.158 | Post |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 12369 | 8.246 | Post |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 886 | 18.288 | Post |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 4880 | 20.9507 | Post |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 22804 | 15.2027 | Post |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 11313 | 7.542 | Post |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 2808 | 1.872 | Post |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 7902 | 5.268 | Post |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 23855 | 15.9033 | Post |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 8372 | 5.5813 | Post |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 12125 | 25.7807 | Post |
| E5_11/2023 | Remediation | mC | 1 | C1_1_Left.MP4 | 16704 | 11.136 | Post |
| E5_11/2023 | Remediation | mC | 1 | C1_1_Left.MP4 | 21769 | 14.5127 | Post |
| E5_11/2023 | Remediation | mC | 1 | C1_1_Left.MP4 | 6281 | 4.1873 | Post |
| E5_11/2023 | Remediation | mC | 1 | C1_1_Left.MP4 | 7052 | 4.7013 | Post |
| E5_11/2023 | Remediation | mC | 1 | C1_1_Left.MP4 | 10766 | 7.1773 | Post |
| E5_11/2023 | Remediation | mC | 1 | C1_1_Left.MP4 | 2394 | 1.596 | Post |
| E5_11/2023 | Remediation | mC | 1 | C1_1_Left.MP4 | 6081 | 4.054 | Post |

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|---|---|---|---|---|---|---|---|
| E5_11/2023 | Remediation | mC | 1 | C1_1_Left.MP4 | 13542 | 9.028 | Post |
| E5_11/2023 | Remediation | mC | 1 | C1_1_Left.MP4 | 8225 | 5.4833 | Post |
| E5_11/2023 | Remediation | mC | 1 | C1_2_Left.MP4 | 12409 | 25.97 | Post |
| E5_11/2023 | Remediation | mC | 1 | C1_1_Left.MP4 | 10270 | 6.8467 | Post |
| E5_11/2023 | Remediation | mC | 1 | C1_1_Left.MP4 | 5514 | 3.676 | Post |
| E5_11/2023 | Remediation | mC | 1 | C1_1_Left.MP4 | 8257 | 5.5047 | Post |
| E5_11/2023 | Remediation | mC | 1 | C1_1_Left.MP4 | 11583 | 7.722 | Post |
| E5_11/2023 | Remediation | mC | 1 | C1_1_Left.MP4 | 16328 | 10.8853 | Post |
| E5_11/2023 | Remediation | mC | 1 | C1_1_Left.MP4 | 26127 | 17.418 | Post |
| E5_11/2023 | Remediation | mC | 2 | C2_1_Left.MP4 | 6631 | 4.4207 | Post |
| E5_11/2023 | Remediation | mC | 2 | C2_1_Left.MP4 | 5576 | 3.7173 | Post |
| E5_11/2023 | Remediation | mC | 2 | C2_1_Left.MP4 | 3776 | 2.5173 | Post |
| E5_11/2023 | Remediation | mC | 2 | C2_2_Left.MP4 | 3408 | 19.9693 | Post |
| E5_11/2023 | Remediation | mC | 2 | C2_1_Left.MP4 | 3428 | 2.2853 | Post |
| E5_11/2023 | Remediation | mC | 2 | C2_1_Left.MP4 | 3325 | 2.2167 | Post |
| E5_11/2023 | Remediation | mC | 2 | C2_1_Left.MP4 | 19498 | 12.9987 | Post |
| E5_11/2023 | Remediation | mC | 2 | C2_1_Left.MP4 | 25781 | 17.1873 | Post |
| E5_11/2023 | Remediation | mC | 2 | C2_2_Left.MP4 | 14844 | 27.5933 | Post |
| E5_11/2023 | Remediation | mC | 2 | C2_1_Left.MP4 | 2514 | 1.676 | Post |
| E5_11/2023 | Remediation | mC | 2 | C2_1_Left.MP4 | 3246 | 2.164 | Post |
| E5_11/2023 | Remediation | mC | 2 | C2_1_Left.MP4 | 3344 | 2.2293 | Post |
| E5_11/2023 | Remediation | mC | 2 | C2_2_Left.MP4 | 19134 | 30.4533 | Post |
| E5_11/2023 | Remediation | mC | 2 | C2_1_Left.MP4 | 19829 | 13.2193 | Post |
| E5_11/2023 | Remediation | mC | 2 | C2_1_Left.MP4 | 4989 | 3.326 | Post |
| E5_11/2023 | Remediation | mC | 2 | C2_1_Left.MP4 | 17348 | 11.5653 | Post |
| E5_11/2023 | Remediation | mC | 2 | C2_1_Left.MP4 | 18521 | 12.3473 | Post |
| E5_11/2023 | Remediation | mC | 2 | C2_1_Left.MP4 | 22471 | 14.9807 | Post |
| E5_11/2023 | Remediation | mC | 2 | C2_2_Left.MP4 | 17608 | 29.436 | Post |
| E5_11/2023 | Remediation | mC | 2 | C2_1_Left.MP4 | 5789 | 3.8593 | Post |
| E5_11/2023 | Remediation | mC | 2 | C2_1_Left.MP4 | 2894 | 1.9293 | Post |
| E5_11/2023 | Remediation | mC | 2 | C2_1_Left.MP4 | 9949 | 6.6327 | Post |
| E5_11/2023 | Remediation | mC | 2 | C2_1_Left.MP4 | 6730 | 4.4867 | Post |
| E5_11/2023 | Remediation | mC | 2 | C2_2_Left.MP4 | 1697 | 18.8287 | Post |
| E5_11/2023 | Remediation | mC | 2 | C2_2_Left.MP4 | 3359 | 19.9367 | Post |
| E5_11/2023 | Remediation | mC | 3 | C3_1_Left.MP4 | 3005 | 2.0033 | Post |
| E5_11/2023 | Remediation | mC | 3 | C3_2_Left.MP4 | 2436 | 19.3213 | Post |
| E5_11/2023 | Remediation | mC | 3 | C3_1_Left.MP4 | 2193 | 1.462 | Post |
| E5_11/2023 | Remediation | mC | 3 | C3_1_Left.MP4 | 3727 | 2.4847 | Post |
| E5_11/2023 | Remediation | mC | 3 | C3_1_Left.MP4 | 4714 | 3.1427 | Post |
| E5_11/2023 | Remediation | mC | 3 | C3_1_Left.MP4 | 4293 | 2.862 | Post |
| E5_11/2023 | Remediation | mC | 3 | C3_1_Left.MP4 | 10255 | 6.8367 | Post |
| E5_11/2023 | Remediation | mC | 3 | C3_1_Left.MP4 | 2940 | 1.96 | Post |
| E5_11/2023 | Remediation | mC | 3 | C3_1_Left.MP4 | 3186 | 2.124 | Post |
| E5_11/2023 | Remediation | mC | 3 | C3_1_Left.MP4 | 5523 | 3.682 | Post |
| E5_11/2023 | Remediation | mC | 3 | C3_1_Left.MP4 | 2945 | 1.9633 | Post |
| E5_11/2023 | Remediation | mC | 3 | C3_1_Left.MP4 | 2876 | 1.9173 | Post |
| E5_11/2023 | Remediation | mC | 3 | C3_2_Left.MP4 | 1493 | 18.6927 | Post |

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|---|---|---|---|---|---|---|---|
| E5_11/2023 | Remediation | mC | 3 | C3_1_Left.MP4 | 2816 | 1.8773 | Post |
| E5_11/2023 | Remediation | mC | 3 | C3_1_Left.MP4 | 3913 | 2.6087 | Post |
| E5_11/2023 | Remediation | mC | 3 | C3_1_Left.MP4 | 3913 | 2.6087 | Post |
| E5_11/2023 | Remediation | mC | 3 | C3_1_Left.MP4 | 15454 | 10.3027 | Post |
| E5_11/2023 | NearField | mD | 1 | D1_1_Left.MP4 | 17723 | 11.8153 | Post |
| E5_11/2023 | NearField | mD | 1 | D1_1_Left.MP4 | 24698 | 16.4653 | Post |
| E5_11/2023 | NearField | mD | 1 | D1_2_Left.MP4 | 4619 | 20.7767 | Post |
| E5_11/2023 | NearField | mD | 1 | D1_1_Left.MP4 | 19808 | 13.2053 | Post |
| E5_11/2023 | NearField | mD | 1 | D1_2_Left.MP4 | 43 | 17.726 | Post |
| E5_11/2023 | NearField | mD | 1 | D1_1_Left.MP4 | 6257 | 4.1713 | Post |
| E5_11/2023 | NearField | mD | 1 | D1_1_Left.MP4 | 6957 | 4.638 | Post |
| E5_11/2023 | NearField | mD | 1 | D1_1_Left.MP4 | 26226 | 17.484 | Post |
| E5_11/2023 | NearField | mD | 1 | D1_1_Left.MP4 | 3708 | 2.472 | Post |
| E5_11/2023 | NearField | mD | 1 | D1_1_Left.MP4 | 7123 | 4.7487 | Post |
| E5_11/2023 | NearField | mD | 1 | D1_1_Left.MP4 | 7038 | 4.692 | Post |
| E5_11/2023 | NearField | mD | 1 | D1_2_Left.MP4 | 20530 | 31.384 | Post |
| E5_11/2023 | NearField | mD | 1 | D1_1_Left.MP4 | 7038 | 4.692 | Post |
| E5_11/2023 | NearField | mD | 1 | D1_2_Left.MP4 | 8917 | 23.642 | Post |
| E5_11/2023 | NearField | mD | 1 | D1_2_Left.MP4 | 11877 | 25.6153 | Post |
| E5_11/2023 | NearField | mD | 1 | D1_1_Left.MP4 | 11307 | 7.538 | Post |
| E5_11/2023 | NearField | mD | 1 | D1_1_Left.MP4 | 4793 | 3.1953 | Post |
| E5_11/2023 | NearField | mD | 1 | D1_1_Left.MP4 | 4911 | 3.274 | Post |
| E5_11/2023 | NearField | mD | 1 | D1_1_Left.MP4 | 8741 | 5.8273 | Post |
| E5_11/2023 | NearField | mD | 1 | D1_2_Left.MP4 | 9307 | 23.902 | Post |
| E5_11/2023 | NearField | mD | 2 | D2_1_Left.MP4 | 3109 | 2.0727 | Post |
| E5_11/2023 | NearField | mD | 2 | D2_1_Left.MP4 | 2864 | 1.9093 | Post |
| E5_11/2023 | NearField | mD | 2 | D2_1_Left.MP4 | 4907 | 3.2713 | Post |
| E5_11/2023 | NearField | mD | 2 | D2_2_Left.MP4 | 15138 | 27.7893 | Post |
| E5_11/2023 | NearField | mD | 2 | D2_2_Left.MP4 | 10163 | 24.4727 | Post |
| E5_11/2023 | NearField | mD | 2 | D2_1_Left.MP4 | 7965 | 5.31 | Post |
| E5_11/2023 | NearField | mD | 2 | D2_1_Left.MP4 | 7151 | 4.7673 | Post |
| E5_11/2023 | NearField | mD | 2 | D2_1_Left.MP4 | 2773 | 1.8487 | Post |
| E5_11/2023 | NearField | mD | 2 | D2_1_Left.MP4 | 3245 | 2.1633 | Post |
| E5_11/2023 | NearField | mD | 2 | D2_1_Left.MP4 | 19534 | 13.0227 | Post |
| E5_11/2023 | NearField | mD | 2 | D2_1_Left.MP4 | 5594 | 3.7293 | Post |
| E5_11/2023 | NearField | mD | 2 | D2_2_Left.MP4 | 7067 | 22.4087 | Post |
| E5_11/2023 | NearField | mD | 2 | D2_2_Left.MP4 | 13212 | 26.5053 | Post |
| E5_11/2023 | NearField | mD | 2 | D2_1_Left.MP4 | 6352 | 4.2347 | Post |
| E5_11/2023 | NearField | mD | 2 | D2_1_Left.MP4 | 14206 | 9.4707 | Post |
| E5_11/2023 | NearField | mD | 2 | D2_1_Left.MP4 | 3164 | 2.1093 | Post |
| E5_11/2023 | NearField | mD | 2 | D2_1_Left.MP4 | 6236 | 4.1573 | Post |
| E5_11/2023 | NearField | mD | 2 | D2_2_Left.MP4 | 7067 | 22.4087 | Post |
| E5_11/2023 | NearField | mD | 2 | D2_2_Left.MP4 | 9049 | 23.73 | Post |
| E5_11/2023 | NearField | mD | 3 | D3_1_Left.MP4 | 11984 | 7.9893 | Post |
| E5_11/2023 | NearField | mD | 3 | D3_2_Left.MP4 | 20048 | 31.0627 | Post |
| E5_11/2023 | NearField | mD | 3 | D3_2_Left.MP4 | 8424 | 23.3133 | Post |
| E5_11/2023 | NearField | mD | 3 | D3_2_Left.MP4 | 4252 | 20.532 | Post |

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|---|---|---|---|---|---|---|---|
| E5_11/2023 | NearField | mD | 3 | D3_1_Left.MP4 | 22485 | 14.99 | Post |
| E5_11/2023 | NearField | mD | 3 | D3_2_Left.MP4 | 751 | 18.198 | Post |
| E5_11/2023 | NearField | mD | 3 | D3_1_Left.MP4 | 2244 | 1.496 | Post |
| E5_11/2023 | NearField | mD | 3 | D3_1_Left.MP4 | 18711 | 12.474 | Post |
| E5_11/2023 | NearField | mD | 3 | D3_1_Left.MP4 | 10064 | 6.7093 | Post |
| E5_11/2023 | NearField | mD | 3 | D3_1_Left.MP4 | 2835 | 1.89 | Post |
| E5_11/2023 | NearField | mD | 3 | D3_1_Left.MP4 | 10004 | 6.6693 | Post |
| E5_11/2023 | NearField | mD | 3 | D3_2_Left.MP4 | 15006 | 27.7013 | Post |
| E5_11/2023 | NearField | mD | 3 | D3_2_Left.MP4 | 7874 | 22.9467 | Post |
| E5_11/2023 | NearField | mD | 3 | D3_2_Left.MP4 | 6528 | 22.0493 | Post |
| E5_11/2023 | NearField | mD | 3 | D3_2_Left.MP4 | 15025 | 27.714 | Post |
| E5_11/2023 | NearField | mD | 3 | D3_2_Left.MP4 | 16682 | 28.8187 | Post |
| E5_11/2023 | NearField | mD | 3 | D3_2_Left.MP4 | 5812 | 21.572 | Post |
| E5_11/2023 | NearField | mD | 3 | D3_1_Left.MP4 | 5015 | 3.3433 | Post |
| E5_11/2023 | NearField | mD | 3 | D3_2_Left.MP4 | 20149 | 31.13 | Post |
| E5_11/2023 | NearField | mD | 3 | D3_2_Left.MP4 | 16673 | 28.8127 | Post |
| E5_11/2023 | NearField | mD | 3 | D3_1_Left.MP4 | 11321 | 7.5473 | Post |
| E5_11/2023 | Remediation | mE | 1 | E1_1_Left.MP4 | 4313 | 2.8753 | Post |
| E5_11/2023 | Remediation | mE | 1 | E1_1_Left.MP4 | 2188 | 1.4587 | Post |
| E5_11/2023 | Remediation | mE | 1 | E1_1_Left.MP4 | 1907 | 1.2713 | Post |
| E5_11/2023 | Remediation | mE | 1 | E1_1_Left.MP4 | 16369 | 10.9127 | Post |
| E5_11/2023 | Remediation | mE | 1 | E1_2_Left.MP4 | 6230 | 21.8507 | Post |
| E5_11/2023 | Remediation | mE | 1 | E1_1_Left.MP4 | 2194 | 1.4627 | Post |
| E5_11/2023 | Remediation | mE | 1 | E1_1_Left.MP4 | 1832 | 1.2213 | Post |
| E5_11/2023 | Remediation | mE | 1 | E1_1_Left.MP4 | 5000 | 3.3333 | Post |
| E5_11/2023 | Remediation | mE | 1 | E1_1_Left.MP4 | 5096 | 3.3973 | Post |
| E5_11/2023 | Remediation | mE | 1 | E1_1_Left.MP4 | 2622 | 1.748 | Post |
| E5_11/2023 | Remediation | mE | 1 | E1_1_Left.MP4 | 3252 | 2.168 | Post |
| E5_11/2023 | Remediation | mE | 1 | E1_1_Left.MP4 | 5000 | 3.3333 | Post |
| E5_11/2023 | Remediation | mE | 1 | E1_1_Left.MP4 | 9429 | 6.286 | Post |
| E5_11/2023 | Remediation | mE | 1 | E1_1_Left.MP4 | 2043 | 1.362 | Post |
| E5_11/2023 | Remediation | mE | 1 | E1_2_Left.MP4 | 7776 | 22.8813 | Post |
| E5_11/2023 | Remediation | mE | 1 | E1_1_Left.MP4 | 4735 | 3.1567 | Post |
| E5_11/2023 | Remediation | mE | 1 | E1_1_Left.MP4 | 4193 | 2.7953 | Post |
| E5_11/2023 | Remediation | mE | 1 | E1_1_Left.MP4 | 11580 | 7.72 | Post |
| E5_11/2023 | Remediation | mE | 1 | E1_1_Left.MP4 | 20849 | 13.8993 | Post |
| E5_11/2023 | Remediation | mE | 1 | E1_1_Left.MP4 | 12763 | 8.5087 | Post |
| E5_11/2023 | Remediation | mE | 1 | E1_1_Left.MP4 | 8165 | 5.4433 | Post |
| E5_11/2023 | Remediation | mE | 1 | E1_1_Left.MP4 | 5497 | 3.6647 | Post |
| E5_11/2023 | Remediation | mE | 1 | E1_1_Left.MP4 | 4504 | 3.0027 | Post |
| E5_11/2023 | Remediation | mE | 1 | E1_1_Left.MP4 | 3147 | 2.098 | Post |
| E5_11/2023 | Remediation | mE | 1 | E1_2_Left.MP4 | 20611 | 31.438 | Post |
| E5_11/2023 | Remediation | mE | 1 | E1_2_Left.MP4 | 2389 | 19.29 | Post |
| E5_11/2023 | Remediation | mE | 1 | E1_1_Left.MP4 | 5242 | 3.4947 | Post |
| E5_11/2023 | Remediation | mE | 2 | E2_2_Left.MP4 | 4879 | 20.95 | Post |
| E5_11/2023 | Remediation | mE | 2 | E2_1_Left.MP4 | 17973 | 11.982 | Post |
| E5_11/2023 | Remediation | mE | 2 | E2_1_Left.MP4 | 20407 | 13.6047 | Post |

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|---|---|---|---|---|---|---|---|
| E5_11/2023 | Remediation | mE | 2 | E2_1_Left.MP4 | 24090 | 16.06 | Post |
| E5_11/2023 | Remediation | mE | 2 | E2_2_Left.MP4 | 12744 | 26.1933 | Post |
| E5_11/2023 | Remediation | mE | 2 | E2_1_Left.MP4 | 5310 | 3.54 | Post |
| E5_11/2023 | Remediation | mE | 2 | E2_1_Left.MP4 | 21226 | 14.1507 | Post |
| E5_11/2023 | Remediation | mE | 2 | E2_1_Left.MP4 | 4541 | 3.0273 | Post |
| E5_11/2023 | Remediation | mE | 2 | E2_1_Left.MP4 | 16734 | 11.156 | Post |
| E5_11/2023 | Remediation | mE | 2 | E2_1_Left.MP4 | 5588 | 3.7253 | Post |
| E5_11/2023 | Remediation | mE | 2 | E2_1_Left.MP4 | 10059 | 6.706 | Post |
| E5_11/2023 | Remediation | mE | 2 | E2_2_Left.MP4 | 17780 | 29.5507 | Post |
| E5_11/2023 | Remediation | mE | 2 | E2_1_Left.MP4 | 8338 | 5.5587 | Post |
| E5_11/2023 | Remediation | mE | 2 | E2_1_Left.MP4 | 14867 | 9.9113 | Post |
| E5_11/2023 | Remediation | mE | 2 | E2_1_Left.MP4 | 5338 | 3.5587 | Post |
| E5_11/2023 | Remediation | mE | 2 | E2_1_Left.MP4 | 11674 | 7.7827 | Post |
| E5_11/2023 | Remediation | mE | 2 | E2_1_Left.MP4 | 10009 | 6.6727 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 6197 | 4.1313 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 5847 | 3.898 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_2_Left.MP4 | 21055 | 31.734 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 5757 | 3.838 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 6049 | 4.0327 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 5899 | 3.9327 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 7948 | 5.2987 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 4747 | 3.1647 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 4944 | 3.296 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 11154 | 7.436 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 5158 | 3.4387 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_2_Left.MP4 | 11892 | 25.6253 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_2_Left.MP4 | 20932 | 31.652 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 5641 | 3.7607 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 4838 | 3.2253 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 6472 | 4.3147 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_2_Left.MP4 | 11114 | 25.1067 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 5334 | 3.556 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 5939 | 3.9593 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 5342 | 3.5613 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_2_Left.MP4 | 15464 | 28.0067 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 24043 | 16.0287 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 7397 | 4.9313 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 6628 | 4.4187 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 6628 | 4.4187 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 23199 | 15.466 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 7815 | 5.21 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 6543 | 4.362 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 5641 | 3.7607 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 5641 | 3.7607 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 8498 | 5.6653 | Post |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 6859 | 4.5727 | Post |
| E5_11/2023 | NearField | mG | 1 | G1_1_Left.MP4 | 7669 | 5.1127 | Post |

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|---|---|---|---|---|---|---|---|
| E5_11/2023 | NearField | mG | 1 | G1_1_Left.MP4 | 26192 | 17.4613 | Post |
| E5_11/2023 | NearField | mG | 1 | G1_1_Left.MP4 | 5864 | 3.9093 | Post |
| E5_11/2023 | NearField | mG | 1 | G1_2_Left.MP4 | 20981 | 31.6847 | Post |
| E5_11/2023 | NearField | mG | 1 | G1_2_Left.MP4 | 10543 | 24.726 | Post |
| E5_11/2023 | NearField | mG | 1 | G1_2_Left.MP4 | 19434 | 30.6533 | Post |
| E5_11/2023 | NearField | mG | 1 | G1_1_Left.MP4 | 5081 | 3.3873 | Post |
| E5_11/2023 | NearField | mG | 1 | G1_1_Left.MP4 | 14933 | 9.9553 | Post |
| E5_11/2023 | NearField | mG | 1 | G1_1_Left.MP4 | 6329 | 4.2193 | Post |
| E5_11/2023 | NearField | mG | 1 | G1_1_Left.MP4 | 7195 | 4.7967 | Post |
| E5_11/2023 | NearField | mG | 1 | G1_1_Left.MP4 | 5682 | 3.788 | Post |
| E5_11/2023 | NearField | mG | 1 | G1_1_Left.MP4 | 9403 | 6.2687 | Post |
| E5_11/2023 | NearField | mG | 1 | G1_1_Left.MP4 | 8401 | 5.6007 | Post |
| E5_11/2023 | NearField | mG | 1 | G1_1_Left.MP4 | 5786 | 3.8573 | Post |
| E5_11/2023 | NearField | mG | 1 | G1_1_Left.MP4 | 9001 | 6.0007 | Post |
| E5_11/2023 | NearField | mG | 1 | G1_1_Left.MP4 | 5398 | 3.5987 | Post |
| E5_11/2023 | NearField | mG | 1 | G1_1_Left.MP4 | 7364 | 4.9093 | Post |
| E5_11/2023 | NearField | mG | 1 | G1_2_Left.MP4 | 7267 | 22.542 | Post |
| E5_11/2023 | NearField | mG | 1 | G1_1_Left.MP4 | 6239 | 4.1593 | Post |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 5291 | 3.5273 | Post |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 20106 | 13.404 | Post |
| E5_11/2023 | NearField | mG | 2 | G2_2_Left.MP4 | 17167 | 29.142 | Post |
| E5_11/2023 | NearField | mG | 2 | G2_2_Left.MP4 | 9309 | 23.9033 | Post |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 11666 | 7.7773 | Post |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 9636 | 6.424 | Post |
| E5_11/2023 | NearField | mG | 2 | G2_2_Left.MP4 | 1782 | 18.8853 | Post |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 11268 | 7.512 | Post |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 20110 | 13.4067 | Post |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 8142 | 5.428 | Post |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 3669 | 2.446 | Post |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 4470 | 2.98 | Post |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 11602 | 7.7347 | Post |
| E5_11/2023 | NearField | mG | 2 | G2_2_Left.MP4 | 4089 | 20.4233 | Post |
| E5_11/2023 | NearField | mG | 2 | G2_2_Left.MP4 | 3524 | 20.0467 | Post |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 4124 | 2.7493 | Post |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 24921 | 16.614 | Post |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 6216 | 4.144 | Post |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 26202 | 17.468 | Post |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 26409 | 17.606 | Post |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 2909 | 1.9393 | Post |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 14023 | 9.3487 | Post |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 3766 | 2.5107 | Post |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 2681 | 1.7873 | Post |
| E5_11/2023 | NearField | mG | 2 | G2_2_Left.MP4 | 14646 | 27.4613 | Post |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 6129 | 4.086 | Post |
| E5_11/2023 | NearField | mG | 2 | G2_2_Left.MP4 | 8458 | 23.336 | Post |
| E5_11/2023 | NearField | mG | 3 | G3_1_Left.MP4 | 11171 | 7.4473 | Post |
| E5_11/2023 | NearField | mG | 3 | G3_1_Left.MP4 | 2095 | 1.3967 | Post |

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|---|---|---|---|---|---|---|---|
| E5_11/2023 | NearField | mG | 3 | G3_1_Left.MP4 | 16503 | 11.002 | Post |
| E5_11/2023 | NearField | mG | 3 | G3_1_Left.MP4 | 3424 | 2.2827 | Post |
| E5_11/2023 | NearField | mG | 3 | G3_2_Left.MP4 | 2617 | 19.442 | Post |
| E5_11/2023 | NearField | mG | 3 | G3_1_Left.MP4 | 2379 | 1.586 | Post |
| E5_11/2023 | NearField | mG | 3 | G3_1_Left.MP4 | 7837 | 5.2247 | Post |
| E5_11/2023 | NearField | mG | 3 | G3_1_Left.MP4 | 3423 | 2.282 | Post |
| E5_11/2023 | NearField | mG | 3 | G3_1_Left.MP4 | 2325 | 1.55 | Post |
| E5_11/2023 | NearField | mG | 3 | G3_1_Left.MP4 | 3206 | 2.1373 | Post |
| E5_11/2023 | NearField | mG | 3 | G3_1_Left.MP4 | 2872 | 1.9147 | Post |
| E5_11/2023 | NearField | mG | 3 | G3_1_Left.MP4 | 8401 | 5.6007 | Post |
| E5_11/2023 | NearField | mG | 3 | G3_1_Left.MP4 | 17717 | 11.8113 | Post |
| E5_11/2023 | NearField | mG | 3 | G3_1_Left.MP4 | 8486 | 5.6573 | Post |
| E5_11/2023 | NearField | mG | 3 | G3_1_Left.MP4 | 2292 | 1.528 | Post |
| E5_11/2023 | NearField | mG | 3 | G3_1_Left.MP4 | 6431 | 4.2873 | Post |
| E5_11/2023 | NearField | mG | 3 | G3_2_Left.MP4 | 7245 | 22.5273 | Post |
| E5_11/2023 | NearField | mG | 3 | G3_2_Left.MP4 | 8952 | 23.6653 | Post |
| E5_11/2023 | NearField | mG | 3 | G3_1_Left.MP4 | 25969 | 17.3127 | Post |
| E5_11/2023 | NearField | mG | 3 | G3_1_Left.MP4 | 3231 | 2.154 | Post |
| E5_11/2023 | NearField | mG | 3 | G3_2_Left.MP4 | 7837 | 22.922 | Post |
| E5_11/2023 | NearField | mG | 3 | G3_2_Left.MP4 | 17776 | 29.548 | Post |
| E5_11/2023 | NearField | mG | 3 | G3_1_Left.MP4 | 2079 | 1.386 | Post |
| E5_11/2023 | Control | mH | 1 | H1_1_Left.MP4 | 2932 | 1.9547 | Post |
| E5_11/2023 | Control | mH | 1 | H1_1_Left.MP4 | 2954 | 1.9693 | Post |
| E5_11/2023 | Control | mH | 1 | H1_1_Left.MP4 | 20973 | 13.982 | Post |
| E5_11/2023 | Control | mH | 1 | H1_1_Left.MP4 | 5561 | 3.7073 | Post |
| E5_11/2023 | Control | mH | 1 | H1_1_Left.MP4 | 7220 | 4.8133 | Post |
| E5_11/2023 | Control | mH | 1 | H1_1_Left.MP4 | 17206 | 11.4707 | Post |
| E5_11/2023 | Control | mH | 1 | H1_1_Left.MP4 | 20000 | 13.3333 | Post |
| E5_11/2023 | Control | mH | 1 | H1_1_Left.MP4 | 12193 | 8.1287 | Post |
| E5_11/2023 | Control | mH | 1 | H1_1_Left.MP4 | 24647 | 16.4313 | Post |
| E5_11/2023 | Control | mH | 1 | H1_1_Left.MP4 | 19354 | 12.9027 | Post |
| E5_11/2023 | Control | mH | 1 | H1_1_Left.MP4 | 18183 | 12.122 | Post |
| E5_11/2023 | Control | mH | 1 | H1_1_Left.MP4 | 3469 | 2.3127 | Post |
| E5_11/2023 | Control | mH | 1 | H1_1_Left.MP4 | 2947 | 1.9647 | Post |
| E5_11/2023 | Control | mH | 1 | H1_1_Left.MP4 | 25581 | 17.054 | Post |
| E5_11/2023 | Control | mH | 1 | H1_1_Left.MP4 | 22612 | 15.0747 | Post |
| E5_11/2023 | Control | mH | 1 | H1_2_Left.MP4 | 1913 | 18.9727 | Post |
| E5_11/2023 | Control | mH | 1 | H1_2_Left.MP4 | 8171 | 23.1447 | Post |
| E5_11/2023 | Control | mH | 1 | H1_1_Left.MP4 | 3184 | 2.1227 | Post |
| E5_11/2023 | Control | mH | 1 | H1_1_Left.MP4 | 17101 | 11.4007 | Post |
| E5_11/2023 | Control | mH | 1 | H1_1_Left.MP4 | 3715 | 2.4767 | Post |
| E5_11/2023 | Control | mH | 1 | H1_1_Left.MP4 | 3823 | 2.5487 | Post |
| E5_11/2023 | Control | mH | 1 | H1_1_Left.MP4 | 22189 | 14.7927 | Post |
| E5_11/2023 | Control | mH | 1 | H1_2_Left.MP4 | 12670 | 26.144 | Post |
| E5_11/2023 | Control | mH | 1 | H1_2_Left.MP4 | 6540 | 22.0573 | Post |
| E5_11/2023 | Control | mH | 1 | H1_2_Left.MP4 | 6035 | 21.7207 | Post |
| E5_11/2023 | Control | mH | 1 | H1_1_Left.MP4 | 3940 | 2.6267 | Post |

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|---|---|---|---|---|---|---|---|
| E5_11/2023 | Control | mH | 1 | H1_2_Left.MP4 | 5863 | 21.606 | Post |
| E5_11/2023 | Control | mH | 1 | H1_1_Left.MP4 | 19995 | 13.33 | Post |
| E5_11/2023 | Control | mH | 1 | H1_2_Left.MP4 | 3383 | 19.9527 | Post |
| E5_11/2023 | Control | mH | 1 | H1_1_Left.MP4 | 2968 | 1.9787 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 6676 | 4.4507 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 11025 | 7.35 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 7165 | 4.7767 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 11078 | 7.3853 | Post |
| E5_11/2023 | Control | mH | 2 | H2_2_Left.MP4 | 9777 | 24.2153 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 10968 | 7.312 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 2642 | 1.7613 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 12559 | 8.3727 | Post |
| E5_11/2023 | Control | mH | 2 | H2_2_Left.MP4 | 3615 | 20.1073 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 4958 | 3.3053 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 8267 | 5.5113 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 11140 | 7.4267 | Post |
| E5_11/2023 | Control | mH | 2 | H2_2_Left.MP4 | 4157 | 20.4687 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 3460 | 2.3067 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 3663 | 2.442 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 6312 | 4.208 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 23268 | 15.512 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 3640 | 2.4267 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 3420 | 2.28 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 10180 | 6.7867 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 6944 | 4.6293 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 4253 | 2.8353 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 7054 | 4.7027 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 7979 | 5.3193 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 14710 | 9.8067 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 4934 | 3.2893 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 5997 | 3.998 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 4732 | 3.1547 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 10182 | 6.788 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 8106 | 5.404 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 4481 | 2.9873 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 2643 | 1.762 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 3674 | 2.4493 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 3674 | 2.4493 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 5261 | 3.5073 | Post |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 9384 | 6.256 | Post |
| E5_11/2023 | Control | mH | 3 | H3_1_Left.MP4 | 8224 | 5.4827 | Post |
| E5_11/2023 | Control | mH | 3 | H3_1_Left.MP4 | 3825 | 2.55 | Post |
| E5_11/2023 | Control | mH | 3 | H3_1_Left.MP4 | 2486 | 1.6573 | Post |
| E5_11/2023 | Control | mH | 3 | H3_1_Left.MP4 | 10638 | 7.092 | Post |
| E5_11/2023 | Control | mH | 3 | H3_1_Left.MP4 | 8443 | 5.6287 | Post |
| E5_11/2023 | Control | mH | 3 | H3_1_Left.MP4 | 2772 | 1.848 | Post |
| E5_11/2023 | Control | mH | 3 | H3_1_Left.MP4 | 9752 | 6.5013 | Post |

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|---|---|---|---|---|---|---|---|
| E5_11/2023 | Control | mH | 3 | H3_1_Left.MP4 | 2408 | 1.6053 | Post |
| E5_11/2023 | Control | mH | 3 | H3_2_Left.MP4 | 17474 | 29.3467 | Post |
| E5_11/2023 | Control | mH | 3 | H3_1_Left.MP4 | 3850 | 2.5667 | Post |
| E5_11/2023 | Control | mH | 3 | H3_2_Left.MP4 | 20504 | 31.3667 | Post |
| E5_11/2023 | Control | mH | 3 | H3_1_Left.MP4 | 6222 | 4.148 | Post |
| E5_11/2023 | Control | mH | 3 | H3_1_Left.MP4 | 8741 | 5.8273 | Post |
| E5_11/2023 | Control | mH | 3 | H3_1_Left.MP4 | 9007 | 6.0047 | Post |
| E5_11/2023 | Control | mH | 3 | H3_2_Left.MP4 | 11223 | 25.1793 | Post |
| E5_11/2023 | Control | mH | 3 | H3_1_Left.MP4 | 5348 | 3.5653 | Post |
| E5_11/2023 | Control | mH | 3 | H3_1_Left.MP4 | 23441 | 15.6273 | Post |
| E5_11/2023 | Control | mH | 3 | H3_2_Left.MP4 | 5841 | 21.5913 | Post |
| E5_11/2023 | Control | mH | 3 | H3_1_Left.MP4 | 3244 | 2.1627 | Post |
| E5_11/2023 | Control | mH | 3 | H3_1_Left.MP4 | 2359 | 1.5727 | Post |
| E5_11/2023 | Control | mH | 3 | H3_1_Left.MP4 | 23339 | 15.5593 | Post |
| E5_11/2023 | Control | mH | 3 | H3_1_Left.MP4 | 2772 | 1.848 | Post |
| E5_11/2023 | Control | mH | 3 | H3_2_Left.MP4 | 19435 | 30.654 | Post |
| E5_11/2023 | Control | mH | 3 | H3_1_Left.MP4 | 24539 | 16.3593 | Post |
| E5_11/2023 | Control | mH | 3 | H3_2_Left.MP4 | 14780 | 27.5507 | Post |
| E5_11/2023 | Control | mH | 3 | I1_1_Left.MP4 | 4705 | 3.1367 | Post |
| E5_11/2023 | Control | mH | 1 | I1_2_Left.MP4 | 8434 | 23.32 | Post |
| E5_11/2023 | Control | mH | 1 | I1_1_Left.MP4 | 4437 | 2.958 | Post |
| E5_11/2023 | Control | mH | 1 | I1_1_Left.MP4 | 5975 | 3.9833 | Post |
| E5_11/2023 | Control | mH | 1 | I1_1_Left.MP4 | 10678 | 7.1187 | Post |
| E5_11/2023 | Control | mH | 1 | I1_1_Left.MP4 | 5432 | 3.6213 | Post |
| E5_11/2023 | Control | mH | 1 | I1_1_Left.MP4 | 5712 | 3.808 | Post |
| E5_11/2023 | Control | mH | 1 | I1_1_Left.MP4 | 5876 | 3.9173 | Post |
| E5_11/2023 | Control | mH | 1 | I1_1_Left.MP4 | 19629 | 13.086 | Post |
| E5_11/2023 | Control | mH | 1 | I1_2_Left.MP4 | 21523 | 32.046 | Post |
| E5_11/2023 | Control | mH | 1 | I1_1_Left.MP4 | 6290 | 4.1933 | Post |
| E5_11/2023 | Control | mH | 1 | I1_1_Left.MP4 | 4957 | 3.3047 | Post |
| E5_11/2023 | Control | mH | 1 | I1_1_Left.MP4 | 4817 | 3.2113 | Post |
| E5_11/2023 | Control | mH | 1 | I1_1_Left.MP4 | 22726 | 15.1507 | Post |
| E5_11/2023 | Control | mH | 1 | I1_1_Left.MP4 | 10886 | 7.2573 | Post |
| E5_11/2023 | Control | mH | 1 | I1_1_Left.MP4 | 8837 | 5.8913 | Post |
| E5_11/2023 | Control | mH | 1 | I1_1_Left.MP4 | 8451 | 5.634 | Post |
| E5_11/2023 | Control | mI | 2 | I2_1_Left.MP4 | 3880 | 2.5867 | Post |
| E5_11/2023 | Control | mI | 2 | I2_1_Left.MP4 | 8791 | 5.8607 | Post |
| E5_11/2023 | Control | mI | 2 | I2_1_Left.MP4 | 2996 | 1.9973 | Post |
| E5_11/2023 | Control | mI | 2 | I2_1_Left.MP4 | 4762 | 3.1747 | Post |
| E5_11/2023 | Control | mI | 2 | I2_1_Left.MP4 | 20988 | 13.992 | Post |
| E5_11/2023 | Control | mI | 2 | I2_1_Left.MP4 | 23139 | 15.426 | Post |
| E5_11/2023 | Control | mI | 2 | I2_1_Left.MP4 | 17709 | 11.806 | Post |
| E5_11/2023 | Control | mI | 2 | I2_1_Left.MP4 | 3016 | 2.0107 | Post |
| E5_11/2023 | Control | mI | 2 | I2_2_Left.MP4 | 4893 | 20.9593 | Post |
| E5_11/2023 | Control | mI | 2 | I2_1_Left.MP4 | 7067 | 4.7113 | Post |
| E5_11/2023 | Control | mI | 2 | I2_2_Left.MP4 | 10823 | 24.9127 | Post |
| E5_11/2023 | Control | mI | 2 | I2_1_Left.MP4 | 15650 | 10.4333 | Post |

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|---|---|---|---|---|---|---|---|
| E5_11/2023 | Control | ml | 2 | I2_1_Left.MP4 | 15512 | 10.3413 | Post |
| E5_11/2023 | Control | ml | 2 | I2_1_Left.MP4 | 23376 | 15.584 | Post |
| E5_11/2023 | Control | ml | 2 | I2_1_Left.MP4 | 19251 | 12.834 | Post |
| E5_11/2023 | Control | ml | 2 | I2_1_Left.MP4 | 19058 | 12.7053 | Post |
| E5_11/2023 | Control | ml | 2 | I2_1_Left.MP4 | 23397 | 15.598 | Post |
| E5_11/2023 | Control | ml | 2 | I2_1_Left.MP4 | 15477 | 10.318 | Post |
| E5_11/2023 | Control | ml | 2 | I2_1_Left.MP4 | 4355 | 2.9033 | Post |
| E5_11/2023 | Control | ml | 2 | I2_1_Left.MP4 | 20443 | 13.6287 | Post |
| E5_11/2023 | Control | ml | 2 | I2_1_Left.MP4 | 3880 | 2.5867 | Post |
| E5_11/2023 | Control | ml | 3 | I3_2_Left.MP4 | 10575 | 24.7473 | Post |
| E5_11/2023 | Control | ml | 3 | I3_1_Left.MP4 | 16040 | 10.6933 | Post |
| E5_11/2023 | Control | ml | 3 | I3_1_Left.MP4 | 5114 | 3.4093 | Post |
| E5_11/2023 | Control | ml | 3 | I3_1_Left.MP4 | 4604 | 3.0693 | Post |
| E5_11/2023 | Control | ml | 3 | I3_1_Left.MP4 | 3355 | 2.2367 | Post |
| E5_11/2023 | Control | ml | 3 | I3_1_Left.MP4 | 7409 | 4.9393 | Post |
| E5_11/2023 | Control | ml | 3 | I3_1_Left.MP4 | 3384 | 2.256 | Post |
| E5_11/2023 | Control | ml | 3 | I3_1_Left.MP4 | 19971 | 13.314 | Post |
| E5_11/2023 | Control | ml | 3 | I3_1_Left.MP4 | 3519 | 2.346 | Post |
| E5_11/2023 | Control | ml | 3 | I3_1_Left.MP4 | 3796 | 2.5307 | Post |
| E5_11/2023 | Control | ml | 3 | I3_1_Left.MP4 | 12781 | 8.5207 | Post |
| E5_11/2023 | Control | ml | 3 | I3_1_Left.MP4 | 5555 | 3.7033 | Post |
| E5_11/2023 | Control | ml | 3 | I3_1_Left.MP4 | 20800 | 13.8667 | Post |
| E5_11/2023 | Control | ml | 3 | I3_2_Left.MP4 | 19178 | 30.4827 | Post |
| E5_11/2023 | Control | ml | 3 | I3_1_Left.MP4 | 18581 | 12.3873 | Post |
| E5_11/2023 | Control | ml | 3 | I3_2_Left.MP4 | 5194 | 21.16 | Post |
| E5_11/2023 | Control | ml | 3 | I3_2_Left.MP4 | 19759 | 30.87 | Post |
| E5_11/2023 | Control | ml | 3 | I3_2_Left.MP4 | 4477 | 20.682 | Post |
| E5_11/2023 | Control | ml | 3 | I3_1_Left.MP4 | 16995 | 11.33 | Post |
| E5_11/2023 | Control | ml | 3 | I3_1_Left.MP4 | 12389 | 8.2593 | Post |
| E5_11/2023 | Control | ml | 3 | I3_1_Left.MP4 | 7923 | 5.282 | Post |
| E5_11/2023 | Control | ml | 3 | I3_1_Left.MP4 | 3248 | 2.1653 | Post |
| E5_11/2023 | Control | ml | 3 | I3_1_Left.MP4 | 6164 | 4.1093 | Post |
| E5_11/2023 | Control | ml | 3 | I3_2_Left.MP4 | 14763 | 27.5393 | Post |
| E5_11/2023 | Control | ml | 3 | I3_1_Left.MP4 | 21850 | 14.5667 | Post |
| E5_11/2023 | Control | ml | 3 | I3_2_Left.MP4 | 14970 | 27.6773 | Post |
| E5_11/2023 | Control | ml | 3 | I3_1_Left.MP4 | 5447 | 3.6313 | Post |
| E5_11/2023 | Control | ml | 3 | I3_1_Left.MP4 | 4327 | 2.8847 | Post |
| E5_11/2023 | Control | ml | 3 | I3_1_Left.MP4 | 2367 | 1.578 | Post |
| E5_11/2023 | Control | ml | 3 | I3_1_Left.MP4 | 5982 | 3.988 | Post |
| E5_11/2023 | Control | ml | 3 | I3_1_Left.MP4 | 3939 | 2.626 | Post |

| Family | Genus | Species | Code | MaxN |
|---|---|---|---|---|
| Acanthuridae | Acanthurus | nigricans | 37 437012 | 7 |
| Acanthuridae | Naso | fageni | 37 437027 | 1 |
| Acanthuridae | Naso | tonganus | 37 437047 | 4 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 2 |
| Caesionidae | Pterocaesio | Chrysozona | 37 346926 | 20 |
| Echeneidae | Echeneis | naucrates | 37 336001 | 1 |
| Gobidae | Ptereleotris | microlepis | 37 435019 | 40 |
| Labridae | Choerodon | venustus | 37 384042 | 2 |
| Labridae | Coris | pictoides | 37 384096 | 2 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 3 |
| Labridae | Labroides | dimidiatus | 37 384028 | 2 |
| Labridae | Leptojulis | cyanopleura | 37 384027 | 10 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 3 |
| Labridae | Thalassoma | lunare | 37 384167 | 5 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 4 |
| Lethrinidae | Lethrinus | miniatus | 37 351009 | 1 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 1 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 6 |
| Pomacanthidae | Pomacanthus | semicirculatus | 37 365080 | 1 |
| Pomacentridae | Chromis | nitida | 37 372049 | 32 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 9 |
| Serranidae | Cephalopholis | boenak | 37 311008 | 1 |
| Acanthuridae | Acanthurus | xanthopterus | 37 437020 | 1 |
| Apogonidae | Apogon | spp |  | 1 |
| Caesionidae | Pterocaesio | Chrysozona | 37 346926 | 126 |
| Gobidae | Ptereleotris | microlepis | 37 435019 | 10 |
| Labridae | Choerodon | venustus | 37 384042 | 2 |
| Labridae | Coris | pictoides | 37 384096 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 1 |
| Labridae | Labroides | dimidiatus | 37 384028 | 1 |
| Labridae | Leptojulis | cyanopleura | 37 384027 | 2 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 11 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 3 |
| Lethrinidae | Lethrinus | miniatus | 37 351009 | 5 |
| Ostraciidae | Ostracion | cubicus | 37 466013 | 1 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 1 |
| Pomacentridae | Chromis | nitida | 37 372049 | 31 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 11 |
| Pseudochromidae | Pseudochromis | fuscus | 37 313006 | 2 |
| Siganidae | Siganus | canaliculatus | 37 438004 | 2 |
| Acanthuridae | Acanthurus | spp |  | 1 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 1 |
| Gobidae | Ptereleotris | microlepis | 37 435019 | 3 |
| Haemulidae | Plectorhinchus | flavomaculatus | 37 350007 | 1 |
| Labridae | Anampses | neoguinaicus | 37 384050 | 3 |

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|---|---|---|---|---|
| Labridae | Choerodon | venustus | 37 384042 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 2 |
| Labridae | Labroides | dimidiatus | 37 384028 | 1 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 3 |
| Labridae | Thalassoma | lunare | 37 384167 | 1 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 3 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 1 |
| Pomacentridae | Chromis | nitida | 37 372049 | 9 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 53 |
| Pseudochromidae | Pseudochromis | fuscus | 37 313006 | 1 |
| Pseudochromidae | Pseudochromis | wilsoni | 37 313018 | 2 |
| Acanthuridae | | | | 1 |
| Acanthuridae | Acanthurus | xanthopterus | 37 437020 | 1 |
| Acanthuridae | Naso | annulatus | 37 437024 | 13 |
| Acanthuridae | Naso | unicornis | 37 437031 | 2 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 1 |
| Balistidae | Sufflamen | fraenatum | 37 465014 | 1 |
| Chaetodontidae | Chaetodon | rainfordi | 37 365053 | 3 |
| Chaetodontidae | Coradion | chrysozonus | 37 365004 | 1 |
| Echeneidae | Echeneis | naucrates | 37 336001 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 1 |
| Labridae | Coris | pictoides | 37 384096 | 2 |
| Labridae | Labroides | dimidiatus | 37 384028 | 1 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 2 |
| Labridae | Scarus | schlegeli | 37 386029 | 2 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 11 |
| Nemipteridae | Scolopsis | monogramma | 37 347006 | 1 |
| Ostraciidae | Ostracion | cubicus | 37 466013 | 1 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 1 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 1 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 7 |
| Serranidae | Cephalopholis | boenak | 37 311008 | 1 |
| Serranidae | Cephalopholis | spp | | 1 |
| Serranidae | Plectropomus | spp | | 2 |
| Siganidae | Siganus | canaliculatus | 37 438004 | 3 |
| Siganidae | Siganus | punctatus | 37 438003 | 2 |
| Acanthuridae | Acanthurus | spp | | 1 |
| Acanthuridae | Acanthurus | xanthopterus | 37 437020 | 1 |
| Acanthuridae | Naso | annulatus | 37 437024 | 4 |
| Acanthuridae | Naso | tonganus | 37 437047 | 10 |
| Balistidae | Odonus | niger | 37 465061 | 1 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 1 |
| Chaetodontidae | Chaetodon | lineolatus | 37 365041 | 2 |
| Gobidae | Ptereleotris | microlepis | 37 435019 | 8 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 2 |
| Labridae | Coris | pictoides | 37 384096 | 1 |

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|---|---|---|---|---|
| Labridae | Halichoeres | nebulosus | 37 384118 | 3 |
| Labridae | Scarus | dimidiatus | 37 386013 | 1 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 8 |
| Lutjanidae | Lutjanus | adetii | 37 346033 | 1 |
| Nemipteridae | Scolopsis | monogramma | 37 347006 | 1 |
| Pomacanthidae | Pomacanthus | spp | | 1 |
| Pomacentridae | Chromis | nitida | 37 372049 | 14 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 10 |
| Pomacentridae | Pomacentrus | coelestis | 37 372111 | 13 |
| Pseudochromidae | Pseudochromis | fuscus | 37 313006 | 1 |
| Serranidae | Cromileptes | altivelis | 37 311044 | 1 |
| Serranidae | Plectropomus | spp | | 1 |
| Siganidae | Siganus | punctatus | 37 438003 | 1 |
| Acanthuridae | Acanthurus | blochii | 37 437007 | 5 |
| Acanthuridae | Acanthurus | xanthopterus | 37 437020 | 1 |
| Acanthuridae | Naso | annulatus | 37 437024 | 2 |
| Acanthuridae | Naso | tonganus | 37 437047 | 7 |
| Acanthuridae | Naso | unicornis | 37 437031 | 4 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 1 |
| Balistidae | Sufflamen | fraenatum | 37 465014 | 1 |
| Blennidae | Aspidontus | dussumieri | 37 408007 | 1 |
| Carangidae | Gnathanodon | speciosus | 37 337012 | 17 |
| Chaetodontidae | Chaetodon | spp | | 2 |
| Chaetodontidae | Coradion | altivelis | 37 365018 | 1 |
| Gobidae | Ptereleotris | microlepis | 37 435019 | 4 |
| Haemulidae | Plectorhinchus | albovittatus | 37 350021 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 4 |
| Labridae | Labroides | dimidiatus | 37 384028 | 3 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 1 |
| Labridae | Thalassoma | lunare | 37 384167 | 2 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 7 |
| Lutjanidae | Lutjanus | adetii | 37 346033 | 28 |
| Lutjanidae | Lutjanus | fulviflamma | 37 346034 | 1 |
| Nemipteridae | Scolopsis | monogramma | 37 347006 | 1 |
| Ostraciidae | Ostracion | cubicus | 37 466013 | 1 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 1 |
| Pomacanthidae | Pomacanthus | semicirculatus | 37 365080 | 2 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 12 |
| Serranidae | Plectropomus | leopardus | 37 311078 | 5 |
| Apogonidae | Apogon | spp | | 1 |
| Gobidae | Ptereleotris | microlepis | 37 435019 | 97 |
| Labridae | Anampses | neoguinaicus | 37 384050 | 1 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 2 |
| Labridae | Labroides | dimidiatus | 37 384028 | 1 |

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|---|---|---|---|---|
| Labridae | Leptojulis | cyanopleura | 37 384027 | 2 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 2 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 2 |
| Lethrinidae | Lethrinus | miniatus | 37 351009 | 1 |
| Nemipteridae | Pentapodus | nagasakiensis | 37 347012 | 1 |
| Nemipteridae | Scolopsis | monogramma | 37 347006 | 1 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 2 |
| Pomacentridae | Chromis | nitida | 37 372049 | 6 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 51 |
| Apogonidae | Apogon | spp | | 1 |
| Caesionidae | Pterocaesio | Chrysozona | 37 346926 | 29 |
| Gobidae | Ptereleotris | microlepis | 37 435019 | 8 |
| Labridae | Choerodon | jordani | 37 384077 | 1 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 4 |
| Labridae | Choerodon | venustus | 37 384042 | 1 |
| Labridae | Cirrhilabrus | temminckii | 37 384085 | 1 |
| Labridae | Coris | pictoides | 37 384096 | 1 |
| Labridae | Halichoeres | margaritaceus | 37 384113 | 2 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 4 |
| Labridae | Labroides | dimidiatus | 37 384028 | 1 |
| Labridae | Leptojulis | cyanopleura | 37 384027 | 9 |
| Labridae | Pseudojuloides | cerasinus | 37 384939 | 1 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 5 |
| Labridae | Thalassoma | lunare | 37 384167 | 1 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 2 |
| Lethrinidae | Lethrinus | miniatus | 37 351009 | 2 |
| Lutjanidae | Symphorus | nametophorus | 37 346017 | 1 |
| Monacanthidae | Brachaluteres | Jacksonianus | 37 465025 | 1 |
| Mullidae | Parupeneus | barberinoides | 37 355021 | 3 |
| Nemipteridae | Pentapodus | nagasakiensis | 37 347012 | 1 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 4 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 1 |
| Pomacentridae | Chromis | nitida | 37 372049 | 6 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 6 |
| Apogonidae | Apogon | spp | | 1 |
| Caesionidae | Pterocaesio | Chrysozona | 37 346926 | 34 |
| Gobidae | Ptereleotris | microlepis | 37 435019 | 100 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 1 |
| Labridae | Coris | pictoides | 37 384096 | 2 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 3 |
| Labridae | Labroides | dimidiatus | 37 384028 | 2 |
| Labridae | Leptojulis | cyanopleura | 37 384027 | 11 |
| Labridae | Macropharyngodon | choati | 37 384134 | 1 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 7 |
| Labridae | Thalassoma | lunare | 37 384167 | 1 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 1 |

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|---|---|---|---|---|
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 1 |
| Pomacentridae | Chromis | nitida | 37 372049 | 45 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 17 |
| Pseudochromidae | Pseudochromis | fuscus | 37 313006 | 1 |
| Acanthuridae | Naso | tonganus | 37 437047 | 2 |
| Apogonidae | Apogon | spp | | 1 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 1 |
| Caesionidae | Pterocaesio | Chrysozona | 37 346926 | 45 |
| Gobidae | Ptereleotris | microlepis | 37 435019 | 58 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 2 |
| Labridae | Choerodon | venustus | 37 384042 | 3 |
| Labridae | Cirrhilabrus | temminckii | 37 384085 | 1 |
| Labridae | Coris | pictoides | 37 384096 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 4 |
| Labridae | Labroides | dimidiatus | 37 384028 | 2 |
| Labridae | Leptojulis | cyanopleura | 37 384027 | 4 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 9 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 5 |
| Nemipteridae | Scolopsis | monogramma | 37 347006 | 2 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 3 |
| Pomacentridae | Chromis | nitida | 37 372049 | 32 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 20 |
| Pseudochromidae | Pseudochromis | fuscus | 37 313006 | 1 |
| Siganidae | Siganus | canaliculatus | 37 438004 | 4 |
| Apogonidae | Apogon | spp | | 2 |
| Caesionidae | Pterocaesio | Chrysozona | 37 346926 | 52 |
| Gobidae | Ptereleotris | microlepis | 37 435019 | 74 |
| Hemiscylliidae | Chiloscyllium | punctatum | 37 013008 | 1 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 2 |
| Labridae | Choerodon | venustus | 37 384042 | 1 |
| Labridae | Cirrhilabrus | temminckii | 37 384085 | 2 |
| Labridae | Coris | pictoides | 37 384096 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 3 |
| Labridae | Labroides | dimidiatus | 37 384028 | 2 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 12 |
| Labridae | Stethojulis | interrupta | 37 384155 | 1 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 2 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 3 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 1 |
| Pomacentridae | Chromis | nitida | 37 372049 | 11 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 10 |
| Pseudochromidae | Pseudochromis | fuscus | 37 313006 | 3 |
| Siganidae | Siganus | canaliculatus | 37 438004 | 2 |
| Apogonidae | Apogon | spp | | 4 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 2 |
| Blennidae | Ecsenius | bicolor | 37 408022 | 1 |
| Blennidae | Ecsenius | spp | | 1 |

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|---|---|---|---|---|
| Gobidae | Ptereleotris | microlepis | 37 435019 | 68 |
| Hemiscylliidae | Chiloscyllium | punctatum | 37 013008 | 1 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 2 |
| Labridae | Coris | pictoides | 37 384096 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 7 |
| Labridae | Labroides | dimidiatus | 37 384028 | 2 |
| Labridae | Leptojulis | cyanopleura | 37 384027 | 1 |
| Labridae | Macropharyngodon | choati | 37 384134 | 2 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 10 |
| Labridae | Thalassoma | lunare | 37 384167 | 2 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 3 |
| Lutjanidae | Lutjanus | sebae | 37 346004 | 1 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 3 |
| Pomacentridae | Chromis | nitida | 37 372049 | 17 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 23 |
| Pseudochromidae | Pseudochromis | fuscus | 37 313006 | 2 |
| Acanthuridae | Naso | annulatus | 37 437024 | 1 |
| Apogonidae | Apogon | spp | | 4 |
| Caesionidae | Pterocaesio | Chrysozona | 37 346926 | 40 |
| Gobidae | Ptereleotris | microlepis | 37 435019 | 28 |
| Hemiscylliidae | Chiloscyllium | punctatum | 37 013008 | 1 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 1 |
| Labridae | Cirrhilabrus | temminckii | 37 384085 | 2 |
| Labridae | Coris | pictoides | 37 384096 | 2 |
| Labridae | Halichoeres | chloropterus | 37 384109 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 2 |
| Labridae | Labroides | dimidiatus | 37 384028 | 1 |
| Labridae | Leptojulis | cyanopleura | 37 384027 | 13 |
| Labridae | Macropharyngodon | meleagris | 37 384136 | 1 |
| Labridae | Macropharyngodon | negrosensis | 37 384137 | 1 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 13 |
| Labridae | Thalassoma | hardwicke | 37 384165 | 1 |
| Labridae | Thalassoma | lunare | 37 384167 | 4 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 1 |
| Mullidae | Parupeneus | barberinoides | 37 355021 | 1 |
| Mullidae | Parupeneus | multifasciatus | 37 355026 | 1 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 2 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 2 |
| Pomacentridae | Chromis | nitida | 37 372049 | 37 |
| Pomacentridae | Dascyllus | reticulatus | 37 372074 | 2 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 23 |
| Pseudochromidae | Pseudochromis | fuscus | 37 313006 | 2 |
| Apogonidae | Apogon | spp | | 1 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 5 |
| Gobidae | Ptereleotris | microlepis | 37 435019 | 76 |

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|---|---|---|---|---|
| Labridae | Choerodon | schoenleinii | 37 384010 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 1 |
| Labridae | Cirrhilabrus | spp | | 1 |
| Labridae | Coris | pictoides | 37 384096 | 2 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 5 |
| Labridae | Labroides | dimidiatus | 37 384028 | 2 |
| Labridae | Leptojulis | cyanopleura | 37 384027 | 16 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 4 |
| Labridae | Stethojulis | bandanensis | 37 384154 | 1 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 2 |
| Nemipteridae | Scolopsis | monogramma | 37 347006 | 1 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 1 |
| Pomacentridae | Chromis | nitida | 37 372049 | 61 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 10 |
| Apogonidae | Apogon | spp | | 11 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 1 |
| Caesionidae | Pterocaesio | Chrysozona | 37 346926 | 1 |
| Labridae | Choerodon | jordani | 37 384077 | 1 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 2 |
| Labridae | Choerodon | venustus | 37 384042 | 1 |
| Labridae | Cirrhilabrus | temminckii | 37 384085 | 2 |
| Labridae | Coris | batuensis | 37 384098 | 2 |
| Labridae | Coris | pictoides | 37 384096 | 2 |
| Labridae | Halichoeres | biocellatus | 37 384107 | 1 |
| Labridae | Halichoeres | chloropterus | 37 384109 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 2 |
| Labridae | Hologymnosus | annulatus | 37 384126 | 1 |
| Labridae | Labroides | dimidiatus | 37 384028 | 2 |
| Labridae | Leptojulis | cyanopleura | 37 384027 | 2 |
| Labridae | Macropharyngodon | negrosensis | 37 384137 | 2 |
| Labridae | Pseudojuloides | cerasinus | 37 384939 | 1 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 10 |
| Labridae | Stethojulis | interrupta | 37 384155 | 1 |
| Labridae | Thalassoma | lunare | 37 384167 | 3 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 2 |
| Lethrinidae | Lethrinus | miniatus | 37 351009 | 4 |
| Lethrinidae | Lethrinus | Obsoletus | 37 351015 | 1 |
| Mullidae | Parupeneus | barberinoides | 37 355021 | 4 |
| Mullidae | Parupeneus | spilurus | 37 355015 | 2 |
| Nemipteridae | Pentapodus | nagasakiensis | 37 347012 | 1 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 2 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 3 |
| Pomacentridae | Chromis | nitida | 37 372049 | 17 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 27 |
| Pseudochromidae | Pseudochromis | fuscus | 37 313006 | 1 |
| Siganidae | Siganus | canaliculatus | 37 438004 | 8 |
| Acanthuridae | Naso | tonganus | 37 437047 | 6 |

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|---|---|---|---|---|
| Apogonidae | Apogon | spp | | 2 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 1 |
| Carangidae | Caranx | ignobilis | 37 337027 | 1 |
| Echeneidae | Echeneis | naucrates | 37 336001 | 1 |
| Ginglymostomatidae | Nebrius | ferrugineus | 37 013010 | 1 |
| Gobidae | Ptereleotris | microlepis | 37 435019 | 194 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 1 |
| Labridae | Coris | pictoides | 37 384096 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 3 |
| Labridae | Labroides | dimidiatus | 37 384028 | 2 |
| Labridae | Leptojulis | cyanopleura | 37 384027 | 15 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 4 |
| Labridae | Thalassoma | lunare | 37 384167 | 1 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 2 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 1 |
| Pomacentridae | Chromis | nitida | 37 372049 | 12 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 11 |
| Pseudochromidae | Pseudochromis | fuscus | 37 313006 | 1 |
| Acanthuridae | Naso | tonganus | 37 437047 | 11 |
| Apogonidae | Apogon | spp | | 2 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 2 |
| Caesionidae | Pterocaesio | Chrysozona | 37 346926 | 9 |
| Gobidae | Ptereleotris | microlepis | 37 435019 | 81 |
| Haemulidae | Diagramma | pictum | 37 350003 | 1 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 2 |
| Labridae | Choerodon | venustus | 37 384042 | 1 |
| Labridae | Cirrhilabrus | temminckii | 37 384085 | 2 |
| Labridae | Coris | pictoides | 37 384096 | 1 |
| Labridae | Halichoeres | chloropterus | 37 384109 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 3 |
| Labridae | Labroides | dimidiatus | 37 384028 | 5 |
| Labridae | Leptojulis | cyanopleura | 37 384027 | 11 |
| Labridae | Macropharyngodon | negrosensis | 37 384137 | 1 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 15 |
| Labridae | Stethojulis | interrupta | 37 384155 | 1 |
| Labridae | Thalassoma | lunare | 37 384167 | 2 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 2 |
| Lethrinidae | Lethrinus | miniatus | 37 351009 | 1 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 1 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 1 |
| Pomacentridae | Chromis | nitida | 37 372049 | 99 |
| Pomacentridae | Dascyllus | reticulatus | 37 372074 | 3 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 40 |
| Pseudochromidae | Pseudochromis | fuscus | 37 313006 | 2 |
| Serranidae | Epinephelus | coioides | 37 311007 | 1 |
| Acanthuridae | Naso | annulatus | 37 437024 | 2 |
| Acanthuridae | Naso | fageni | 37 437027 | 1 |

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|---|---|---|---|---|
| Apogonidae | Apogon | spp | | 3 |
| Caesionidae | Pterocaesio | Chrysozona | 37 346926 | 103 |
| Gobidae | Ptereleotris | microlepis | 37 435019 | 48 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 1 |
| Labridae | Coris | pictoides | 37 384096 | 2 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 4 |
| Labridae | Labroides | dimidiatus | 37 384028 | 1 |
| Labridae | Leptojulis | cyanopleura | 37 384027 | 8 |
| Labridae | Macropharyngodon | choati | 37 384134 | 1 |
| Labridae | Macropharyngodon | negrosensis | 37 384137 | 1 |
| Labridae | Pseudojuloides | cerasinus | 37 384939 | 1 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 10 |
| Labridae | Thalassoma | lunare | 37 384167 | 1 |
| Monacanthidae | Aluterus | scriptus | 37 465045 | 1 |
| Monacanthidae | Paraluteres | prionurus | 37 465063 | 3 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 2 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 3 |
| Pomacentridae | Chromis | nitida | 37 372049 | 50 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 18 |
| Pseudochromidae | Pseudochromis | fuscus | 37 313006 | 1 |
| Acanthuridae | Acanthurus | blochii | 37 437007 | 2 |
| Acanthuridae | Naso | annulatus | 37 437024 | 2 |
| Acanthuridae | Naso | fageni | 37 437027 | 2 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 2 |
| Chaetodontidae | Chaetodon | kleinii | 37 365040 | 2 |
| Chaetodontidae | Coradion | altivelis | 37 365018 | 1 |
| Chaetodontidae | Coradion | chrysozonus | 37 365004 | 1 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 2 |
| Labridae | Coris | pictoides | 37 384096 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 3 |
| Labridae | Labroides | dimidiatus | 37 384028 | 1 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 3 |
| Labridae | Thalassoma | lunare | 37 384167 | 1 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 1 |
| Lethrinidae | Lethrinus | atkinsoni | 37 351013 | 1 |
| Lethrinidae | Lethrinus | miniatus | 37 351009 | 4 |
| Lutjanidae | Lutjanus | adetii | 37 346033 | 2 |
| Lutjanidae | Symphorus | nametophorus | 37 346017 | 1 |
| Mullidae | Parupeneus | barberinoides | 37 355021 | 9 |
| Mullidae | Parupeneus | multifasciatus | 37 355026 | 2 |
| Mullidae | Parupeneus | spilurus | 37 355015 | 1 |
| Nemipteridae | Pentapodus | nagasakiensis | 37 347012 | 4 |
| Nemipteridae | Pentapodus | paradiseus | 37 347028 | 5 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 2 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 4 |

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|---|---|---|---|---|
| Pomacentridae | Pomacentrus | australis | 37 372107 | 6 |
| Serranidae | Epinephelus | tukula | 37 311068 | 1 |
| Siganidae | Siganus | canaliculatus | 37 438004 | 13 |
| Zanclidae | Zanclus | cornutus | 37 437001 | 1 |
| Acanthuridae | Acanthurus | blochii | 37 437007 | 4 |
| Acanthuridae | Naso | annulatus | 37 437024 | 5 |
| Acanthuridae | Naso | fageni | 37 437027 | 3 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 1 |
| Balistidae | Sufflamen | fraenatum | 37 465014 | 1 |
| Chaetodontidae | Chaetodon | flavirostris | 37 365038 | 1 |
| Chaetodontidae | Chaetodon | kleinii | 37 365040 | 2 |
| Chaetodontidae | Coradion | chrysozonus | 37 365004 | 1 |
| Dasyatidae | Dasyatus | spp | | 1 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 1 |
| Labridae | Cirrhilabrus | temminckii | 37 384085 | 1 |
| Labridae | Coris | caudimaculata | 37 384092 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 1 |
| Labridae | Labroides | dimidiatus | 37 384028 | 2 |
| Labridae | Macropharyngodon | choati | 37 384134 | 1 |
| Labridae | Pseudojuloides | cerasinus | 37 384939 | 1 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 4 |
| Labridae | Thalassoma | lunare | 37 384167 | 2 |
| Lethrinidae | Lethrinus | miniatus | 37 351009 | 16 |
| Lutjanidae | Lutjanus | fulvus | 37 346043 | 2 |
| Lutjanidae | Symphorus | nametophorus | 37 346017 | 1 |
| Mullidae | Parupeneus | barberinoides | 37 355021 | 2 |
| Mullidae | Parupeneus | spilurus | 37 355015 | 1 |
| Nemipteridae | Pentapodus | Aureofasciatus | 37 347029 | 2 |
| Nemipteridae | Scolopsis | monogramma | 37 347006 | 1 |
| Ostraciidae | Ostracion | spp | | 2 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 1 |
| Pomacanthidae | Centropyge | bicolor | 37 365022 | 2 |
| Pomacanthidae | Centropyge | tibicen | 37365031 | 2 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 3 |
| Pomacentridae | Chromis | nitida | 37 372049 | 25 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 24 |
| Pomacentridae | Pomacentrus | coelestis | 37 372111 | 13 |
| Serranidae | Cephalopholis | boenak | 37 311008 | 1 |
| Siganidae | Siganus | canaliculatus | 37 438004 | 5 |
| Acanthuridae | Naso | annulatus | 37 437024 | 8 |
| Acanthuridae | Naso | fageni | 37 437027 | 1 |
| Apogonidae | Apogon | spp | | 13 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 2 |
| Chaetodontidae | Chaetodon | kleinii | 37 365040 | 2 |
| Labridae | Choerodon | venustus | 37 384042 | 2 |
| Labridae | Coris | pictoides | 37 384096 | 2 |

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|---|---|---|---|---|
| Labridae | Labroides | dimidiatus | 37 384028 | 2 |
| Labridae | Macropharyngodon | negrosensis | 37 384137 | 1 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 8 |
| Labridae | Stethojulis | interrupta | 37 384155 | 1 |
| Labridae | Thalassoma | lunare | 37 384167 | 4 |
| Lethrinidae | Lethrinus | miniatus | 37 351009 | 1 |
| Monacanthidae | Pervagor | melanocephalus | 37 465069 | 1 |
| Mullidae | Parupeneus | barberinoides | 37 355021 | 1 |
| Mullidae | Parupeneus | multifasciatus | 37 355026 | 1 |
| Nemipteridae | Pentapodus | Aureofasciatus | 37 347029 | 1 |
| Nemipteridae | Pentapodus | nagasakiensis | 37 347012 | 1 |
| Nemipteridae | Pentapodus | paradiseus | 37 347028 | 2 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 2 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 4 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 7 |
| Pomacentridae | Pomacentrus | coelestis | 37 372111 | 2 |
| Pseudochromidae | Pseudochromis | fuscus | 37 313006 | 2 |
| Siganidae | Siganus | canaliculatus | 37 438004 | 8 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 2 |
| Cirrhitidae | Amblycirrhitus | bimacula | 37 374002 | 1 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 3 |
| Labridae | Choerodon | venustus | 37 384042 | 1 |
| Labridae | Coris | spp | | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 2 |
| Labridae | Labroides | dimidiatus | 37 384028 | 1 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 4 |
| Labridae | Thalassoma | lunare | 37 384167 | 3 |
| Lethrinidae | Lethrinus | miniatus | 37 351009 | 4 |
| Mullidae | Parupeneus | barberinoides | 37 355021 | 13 |
| Mullidae | Parupeneus | spilurus | 37 355015 | 2 |
| Nemipteridae | Pentapodus | nagasakiensis | 37 347012 | 1 |
| Nemipteridae | Pentapodus | paradiseus | 37 347028 | 2 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 1 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 2 |
| Siganidae | Siganus | canaliculatus | 37 438004 | 14 |
| Acanthuridae | Naso | fageni | 37 437027 | 1 |
| Balistidae | Rhinecanthus | rectangulus | 37 465073 | 3 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 1 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 2 |
| Labridae | Coris | pictoides | 37 384096 | 1 |
| Labridae | Halichoeres | chloropterus | 37 384109 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 2 |
| Labridae | Labroides | dimidiatus | 37 384028 | 2 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 9 |
| Labridae | Thalassoma | lunare | 37 384167 | 2 |
| Lethrinidae | Lethrinus | miniatus | 37 351009 | 8 |

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|---|---|---|---|---|
| Lethrinidae | Lethrinus | Obsoletus | 37 351015 | 1 |
| Mullidae | Parupeneus | barberinoides | 37 355021 | 3 |
| Mullidae | Parupeneus | spilurus | 37 355015 | 1 |
| Nemipteridae | Pentapodus | nagasakiensis | 37 347012 | 5 |
| Nemipteridae | Pentapodus | paradiseus | 37 347028 | 4 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 2 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 1 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 2 |
| Siganidae | Siganus | canaliculatus | 37 438004 | 28 |
| Acanthuridae | Naso | annulatus | 37 437024 | 2 |
| Acanthuridae | Naso | fageni | 37 437027 | 2 |
| Apogonidae | Apogon | spp | | 2 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 1 |
| Carcharhinidae | Galeocerdo | cuvier | 37 018022 | 1 |
| Chaetodontidae | Chaetodon | rainfordi | 37 365053 | 1 |
| Echeneidae | Echeneis | naucrates | 37 336001 | 2 |
| Hemiscylliidae | Chiloscyllium | punctatum | 37 013008 | 1 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 4 |
| Labridae | Coris | pictoides | 37 384096 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 2 |
| Labridae | Labroides | dimidiatus | 37 384028 | 3 |
| Labridae | Macropharyngodon | negrosensis | 37 384137 | 1 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 7 |
| Labridae | Stethojulis | interrupta | 37 384155 | 1 |
| Labridae | Thalassoma | lunare | 37 384167 | 6 |
| Lethrinidae | Lethrinus | miniatus | 37 351009 | 5 |
| Lethrinidae | Lethrinus | Obsoletus | 37 351015 | 1 |
| Lutjanidae | Lutjanus | adetii | 37 346033 | 1 |
| Mullidae | Parupeneus | barberinoides | 37 355021 | 2 |
| Mullidae | Parupeneus | multifasciatus | 37 355026 | 1 |
| Mullidae | Parupeneus | spilurus | 37 355015 | 1 |
| Nemipteridae | Pentapodus | Aureofasciatus | 37 347029 | 1 |
| Nemipteridae | Pentapodus | nagasakiensis | 37 347012 | 3 |
| Nemipteridae | Pentapodus | paradiseus | 37 347028 | 6 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 2 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 4 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 6 |
| Pomacentridae | Pomacentrus | nagasakiensis | 37 372119 | 1 |
| Siganidae | Siganus | canaliculatus | 37 438004 | 45 |

| Event | Treatment | Location | Replicate | Filename | Frame | Time (mins) | Remed Period | Length (mm) | Precision (mm) | RMS (mm) | Range (mm) | Type | Family | Genus | Species | Code | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E5_11/2023 | Remediation | mA | 1 | A1_1_Left.MP4 | 10099 | 6.7327 | Post | 345.722 | 41.229 | 11.506 | 4944.944 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 1100.4947 |
| E5_11/2023 | Remediation | mA | 1 | A1_1_Left.MP4 | 10099 | 6.7327 | Post | 268.065 | 18.651 | 2.746 | 4335.621 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 511.7082 |
| E5_11/2023 | Remediation | mA | 1 | A1_1_Left.MP4 | 10099 | 6.7327 | Post | 280.137 | 8.737 | 5.536 | 3363.893 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 584.25812 |
| E5_11/2023 | Remediation | mA | 1 | A1_1_Left.MP4 | 12558 | 8.372 | Post | 347.305 | 4.977 | 1.534 | 1991.28 | Fish | Labridae | Choerodon | venustus | 37 384042 | 1262.089 |
| E5_11/2023 | Remediation | mA | 1 | A1_1_Left.MP4 | 12558 | 8.372 | Post | 220.614 | 5.59 | 5.786 | 3983.16 | Fish | Labridae | Choerodon | venustus | 37 384042 | 305.64785 |
| E5_11/2023 | Remediation | mA | 1 | A1_1_Left.MP4 | 22155 | 14.77 | Post | 623.37 | 31.956 | 7.467 | 4789.371 | Fish | Lethrinidae | Lethrinus | miniatus | 37 351009 | 3739.6988 |
| E5_11/2023 | Remediation | mA | 1 | A1_2_Left.MP4 | 2466 | 19.3413 | Post | 269.906 | 1.354 | 1.708 | 1342.58 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 435.61372 |
| E5_11/2023 | Remediation | mA | 1 | A1_2_Left.MP4 | 2466 | 19.3413 | Post | 247.059 | 6.801 | 4.64 | 2973.721 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 336.13706 |
| E5_11/2023 | Remediation | mA | 1 | A1_2_Left.MP4 | 2466 | 19.3413 | Post | 217.738 | 18.681 | 7.457 | 3533.499 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 232.1148 |
| E5_11/2023 | Remediation | mA | 1 | A1_2_Left.MP4 | 5135 | 21.1207 | Post | 365.846 | 3.379 | 3.375 | 2037.23 | Fish | Echeneidae | Echeneis | naucrates | 37 336001 | 276.59964 |
| E5_11/2023 | Remediation | mA | 2 | GOPR0260.MP4 | 2274 | 1.516 | Post | 321.406 | 5.018 | 6.966 | 2201.881 | Fish | Labridae | Choerodon | venustus | 37 384042 | 990.63049 |
| E5_11/2023 | Remediation | mA | 2 | GOPR0260.MP4 | 2274 | 1.516 | Post | 441.21 | 5.866 | 29.158 | 2297.19 | Fish | Labridae | Choerodon | venustus | 37 384042 | 2666.1508 |
| E5_11/2023 | Remediation | mA | 2 | GOPR0260.MP4 | 8575 | 5.7167 | Post | 219.057 | 6.434 | 2.244 | 2826.613 | Fish | Lethrinidae | Lethrinus | miniatus | 37 351009 | 176.62803 |
| E5_11/2023 | Remediation | mA | 2 | GOPR0260.MP4 | 8575 | 5.7167 | Post | 213.981 | 11.452 | 11.32 | 2924.129 | Fish | Lethrinidae | Lethrinus | miniatus | 37 351009 | 164.94479 |
| E5_11/2023 | Remediation | mA | 2 | GOPR0260.MP4 | 8575 | 5.7167 | Post | 308.216 | 56.505 | 10.551 | 6149.182 | Fish | Lethrinidae | Lethrinus | miniatus | 37 351009 | 478.56575 |
| E5_11/2023 | Remediation | mA | 2 | GOPR0260.MP4 | 8575 | 5.7167 | Post | 200.137 | 17.449 | 5.035 | 4639.51 | Fish | Lethrinidae | Lethrinus | miniatus | 37 351009 | 135.69004 |
| E5_11/2023 | Remediation | mA | 2 | GOPR0260.MP4 | 14556 | 9.704 | Post | 242.033 | 1.802 | 3.006 | 1719.103 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 316.48564 |
| E5_11/2023 | Remediation | mA | 2 | GOPR0260.MP4 | 14556 | 9.704 | Post | 352.439 | 7.481 | 4.515 | 2726.847 | Fish | Siganidae | Siganus | canaliculatus | 37 438004 | 560.80621 |
| E5_11/2023 | Remediation | mA | 2 | GOPR0260.MP4 | 14556 | 9.704 | Post | 247.738 | 4.992 | 6.075 | 2269.889 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 338.85195 |
| E5_11/2023 | Remediation | mA | 2 | GOPR0260.MP4 | 14556 | 9.704 | Post | 206.411 | 17.252 | 10.911 | 4210.897 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 198.47214 |
| E5_11/2023 | Remediation | mA | 2 | GOPR0260.MP4 | 14556 | 9.704 | Post | 210.517 | 6.191 | 3.364 | 2866.008 | Fish | Siganidae | Siganus | canaliculatus | 37 438004 | 118.83946 |
| E5_11/2023 | Remediation | mA | 2 | GP010260.MP4 | 16300 | 28.564 | Post | 282.079 | 11.432 | 7.593 | 3219.574 | Fish | Ostraciidae | Ostracion | cubicus | 37 466013 | 311.16989 |
| E5_11/2023 | Remediation | mA | 3 | A3_1_Left.MP4 | 3658 | 2.4387 | Post | 277.534 | 3.228 | 9.556 | 3931.671 | Fish | Acanthuridae | Acanthurus | spp | | 61.28987 |
| E5_11/2023 | Remediation | mA | 3 | A3_1_Left.MP4 | 23012 | 15.3413 | Post | 300.052 | 0.788 | 4.06 | 1002.585 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 594.12882 |
| E5_11/2023 | Remediation | mA | 3 | A3_1_Left.MP4 | 23028 | 15.352 | Post | 360.871 | 0.902 | 5.957 | 940.541 | Fish | Labridae | Choerodon | venustus | 37 384042 | 1422.6332 |
| E5_11/2023 | Remediation | mA | 3 | A3_1_Left.MP4 | 26270 | 17.5133 | Post | 213.066 | 1.793 | 7.042 | 1873.816 | Fish | Balistidae | Sufflamen | chrysopterum | 37 465079 | 146.47721 |
| E5_11/2023 | Remediation | mA | 3 | A3_2_Left.MP4 | 3834 | 20.2533 | Post | 500.226 | 1.63 | 10.244 | 1502.604 | Fish | Haemulidae | Plectorhinchus | flavomaculatus | 37 350007 | 2368.2209 |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 4324 | 2.8827 | Post | 254.931 | 12.062 | 6.068 | 4527.561 | Fish | Acanthuridae | Naso | unicornis | 37 437031 | 344.14689 |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 4348 | 2.8987 | Post | 277.873 | 28.456 | 3.223 | 5011.816 | Fish | Acanthuridae | Naso | annulatus | 37 437024 | 405.76796 |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 4348 | 2.8987 | Post | 405.638 | 50.54 | 1.224 | 5597.909 | Fish | Acanthuridae | Naso | annulatus | 37 437024 | 1248.0323 |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 4348 | 2.8987 | Post | 242.398 | 41.011 | 11.486 | 5762.342 | Fish | Acanthuridae | Naso | annulatus | 37 437024 | 270.46142 |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 4348 | 2.8987 | Post | 446.944 | 75.982 | 11.166 | 6533.03 | Fish | Acanthuridae | Naso | annulatus | 37 437024 | 1664.5845 |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 4348 | 2.8987 | Post | 282.971 | 54.094 | 11.437 | 6033.796 | Fish | Acanthuridae | Naso | annulatus | 37 437024 | 428.27983 |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 4348 | 2.8987 | Post | 358.574 | 38.483 | 6.624 | 5151.528 | Fish | Acanthuridae | Naso | annulatus | 37 437024 | 865.27293 |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 4348 | 2.8987 | Post | 289.496 | 37.891 | 11.103 | 5415.598 | Fish | Acanthuridae | Naso | annulatus | 37 437024 | 458.2817 |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 4348 | 2.8987 | Post | 276.359 | 9.525 | 91.188 | 2576.265 | Fish | Acanthuridae | Naso | annulatus | 37 437024 | 399.23694 |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 4348 | 2.8987 | Post | 325.63 | 9.931 | 60.061 | 3229.639 | Fish | Acanthuridae | Naso | annulatus | 37 437024 | 649.89858 |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 4348 | 2.8987 | Post | 319.972 | 31.605 | 10.136 | 4965.421 | Fish | Acanthuridae | Naso | annulatus | 37 437024 | 616.9311 |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 4348 | 2.8987 | Post | 456.892 | 54.115 | 13.267 | 5798.781 | Fish | Acanthuridae | Naso | annulatus | 37 437024 | 1777.0529 |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 4534 | 3.0227 | Post | 283.571 | 13.629 | 6.22 | 3006.449 | Fish | Nemipteridae | Scolopsis | monogramma | 37 347006 | 77.467659 |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 5090 | 3.3933 | Post | 231.773 | 1.65 | 1.752 | 1340.659 | Fish | Balistidae | Sufflamen | fraenatum | 37 465014 | 326.51884 |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 5530 | 3.6867 | Post | 311.121 | 11.032 | 4.545 | 3228.104 | Fish | Acanthuridae | Acanthurus | xanthopterus | 37 437020 | 425.52996 |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 9704 | 6.4693 | Post | 300.894 | 14.541 | 1.35 | 5752.737 | Fish | Serranidae | Plectropomus | spp | | 416.78513 |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 10114 | 6.7427 | Post | 283.353 | 18.987 | 2.967 | 3820.967 | Fish | Labridae | Scarus | schlegeli | 37 386029 | 447.36434 |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 11240 | 7.4933 | Post | 312.143 | 4.581 | 2.076 | 2176.661 | Fish | Labridae | Choerodon | venustus | 37 384042 | 904.1136 |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 12854 | 8.5693 | Post | 270.734 | 24.237 | 3.284 | 4131.073 | Fish | Siganidae | Siganus | punctatus | 37 438003 | 592141.75 |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 12854 | 8.5693 | Post | 265.522 | 20.641 | 3.216 | 4243.105 | Fish | Siganidae | Siganus | punctatus | 37 438003 | 556970.86 |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 16208 | 10.8053 | Post | 272.619 | 9.458 | 21.687 | 2386.428 | Fish | Siganidae | Siganus | canaliculatus | 37 438004 | 258.82277 |
| E5_11/2023 | NearField | mB | 1 | B1_1_Left_Redo.M | 16237 | 10.8247 | Post | 259.362 | 17.46 | 3.598 | 3369.338 | Fish | Siganidae | Siganus | canaliculatus | 37 438004 | 222.74862 |
| E5_11/2023 | NearField | mB | 1 | B1_2_Left_Redo.M | 1310 | 18.5707 | Post | 296.746 | 1.102 | 1.207 | 1301.195 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 575.14542 |
| E5_11/2023 | NearField | mB | 1 | B1_2_Left_Redo.M | 1310 | 18.5707 | Post | 303.419 | 1.037 | 1.569 | 1178.746 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 613.8821 |
| E5_11/2023 | NearField | mB | 1 | B1_2_Left_Redo.M | 1310 | 18.5707 | Post | 289.17 | 1.083 | 14.504 | 1215.564 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 533.16021 |
| E5_11/2023 | NearField | mB | 1 | B1_2_Left_Redo.M | 1310 | 18.5707 | Post | 274.949 | 1.347 | 14.352 | 1051.195 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 459.90236 |
| E5_11/2023 | NearField | mB | 1 | B1_2_Left_Redo.M | 5464 | 21.34 | Post | 655.547 | 9.88 | 2.627 | 3129.039 | Fish | Echeneidae | Echeneis | naucrates | 37 336001 | 1884.633 |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 3860 | 2.5733 | Post | 334.093 | 38.787 | 40.157 | 5281.063 | Fish | Siganidae | Siganus | punctatus | 37 438003 | 1148413 |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 5923 | 3.9487 | Post | 414.313 | 27.287 | 29.85 | 4270.595 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 1897.4861 |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 5923 | 3.9487 | Post | 511.137 | 30.096 | 29.355 | 4132.222 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 3570.4008 |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 5923 | 3.9487 | Post | 224.359 | 16.759 | 37.226 | 5173.737 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 299.4743 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 5923 | 3.9487 | Post | 295.731 | 10.695 | 9.64 | 4301.88 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 687.73188 |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 5923 | 3.9487 | Post | 327.864 | 26.159 | 8.486 | 4531.935 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 938.11865 |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 5923 | 3.9487 | Post | 351.902 | 17.262 | 24.926 | 5454.992 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 1160.7777 |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 5923 | 3.9487 | Post | 270.922 | 13.893 | 27.993 | 4967.935 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 528.30035 |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 6378 | 4.252 | Post | 284.412 | 11.912 | 12.984 | 3896.389 | Fish | Lutjanidae | Lutjanus | adetii | 37 346033 | 367.30377 |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 6767 | 4.5113 | Post | 510.759 | 30.001 | 39.19 | 4811.877 | Fish | Labridae | Choerodon | schoenleinii | 37 384010 | 2717.1638 |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 7266 | 4.844 | Post | 4179.521 | 84.23 | 37.666 | 5816.106 | Fish | Acanthuridae | Naso | annulatus | 37 437024 | 1272916.3 |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 7266 | 4.844 | Post | 384.521 | 53.522 | 42.61 | 6046.668 | Fish | Acanthuridae | Naso | annulatus | 37 437024 | 1064.7967 |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 7266 | 4.844 | Post | 332.93 | 44.865 | 31.266 | 5704.429 | Fish | Acanthuridae | Naso | annulatus | 37 437024 | 694.13237 |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 10214 | 6.8093 | Post | 359.618 | 3.521 | 11.485 | 1554.497 | Fish | Labridae | Choerodon | venustus | 37 384042 | 1407.2538 |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 10227 | 6.818 | Post | 290.941 | 6.352 | 6.281 | 2278.049 | Fish | Labridae | Choerodon | venustus | 37 384042 | 725.70213 |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 19505 | 13.0033 | Post | 298.678 | 1.476 | 5.723 | 1471.249 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 586.18983 |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 19505 | 13.0033 | Post | 238.648 | 1.723 | 9.361 | 1045.816 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 303.68666 |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 19505 | 13.0033 | Post | 309.846 | 6.068 | 9.806 | 2348.724 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 652.77906 |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 19505 | 13.0033 | Post | 266.458 | 9.249 | 24.857 | 2503.815 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 419.50342 |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 19550 | 13.0333 | Post | 275.801 | 1.758 | 11.226 | 1273.64 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 464.09191 |
| E5_11/2023 | NearField | mB | 2 | B2_1_Left.MP4 | 19609 | 13.0727 | Post | 250.663 | 0.83 | 6.62 | 986.837 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 350.71236 |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 3487 | 2.3247 | Post | 219.073 | 20.962 | 15.97 | 4068.078 | Fish | Balistidae | Sufflamen | chrysopterum | 37 465079 | 158.95335 |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 5773 | 3.8487 | Post | 419.074 | 34.536 | 41.419 | 6388.56 | Fish | Acanthuridae | Naso | unicornis | 37 437031 | 1519.6992 |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 5773 | 3.8487 | Post | 332.372 | 26.348 | 33.407 | 5396.705 | Fish | Acanthuridae | Naso | unicornis | 37 437031 | 760.26811 |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 5773 | 3.8487 | Post | 403.772 | 39.576 | 31.879 | 5641.309 | Fish | Acanthuridae | Naso | unicornis | 37 437031 | 1359.8404 |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 5843 | 3.8953 | Post | 366.775 | 17.659 | 43.427 | 7310.142 | Fish | Acanthuridae | Naso | unicornis | 37 437031 | 1020.4209 |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 6645 | 4.43 | Post | 296.433 | 1.296 | 6.76 | 1248.935 | Fish | Balistidae | Sufflamen | fraenatum | 37 465014 | 674.27271 |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 8904 | 5.936 | Post | 344.224 | 3.996 | 23.172 | 3646.096 | Fish | Labridae | Choerodon | venustus | 37 384042 | 1227.4296 |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 11157 | 7.438 | Post | 224.186 | 3.036 | 10.774 | 2005.213 | Fish | Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 190.44122 |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 11313 | 7.542 | Post | 564.179 | 33.713 | 29.915 | 4850.135 | Fish | Nemipteridae | Scolopsis | monogramma | 37 347006 | 426.61202 |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 14796 | 9.864 | Post | 569.276 | 6.012 | 18.367 | 3401.769 | Fish | Serranidae | Plectropomus | laevis | 37 311079 | 2876.3467 |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 15225 | 10.15 | Post | 811.847 | 47.989 | 44.878 | 5746.36 | Fish | Acanthuridae | Naso | annulatus | 37 437024 | 9799.241 |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 15225 | 10.15 | Post | 469.335 | 70.25 | 36.94 | 6954.933 | Fish | Acanthuridae | Naso | annulatus | 37 437024 | 1924.6796 |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 22804 | 15.2027 | Post | 358.332 | 2.673 | 12.498 | 2260.258 | Fish | Lutjanidae | Lutjanus | fulviflamma | 37 346034 | 713.09111 |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 22942 | 15.2947 | Post | 559.025 | 40.261 | 30.429 | 5012.15 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 4675.0648 |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 22942 | 15.2947 | Post | 890.396 | 59.364 | 38.88 | 5991.528 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 18978.639 |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 22942 | 15.2947 | Post | 864.127 | 58.927 | 38.762 | 5944.915 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 17342.757 |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 22942 | 15.2947 | Post | 677.967 | 57.698 | 41.042 | 6859.347 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 8355.2103 |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 22942 | 15.2947 | Post | 804.356 | 79.662 | 43.504 | 7008.045 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 13977.163 |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 22942 | 15.2947 | Post | 759.475 | 59.828 | 44.406 | 7844.644 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 11758.86 |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 23855 | 15.9033 | Post | 500.878 | 36.316 | 31.69 | 5403.019 | Fish | Pomacanthidae | Pomacanthus | semicirculatus | 37 365080 | 1973.2732 |
| E5_11/2023 | NearField | mB | 3 | B3_1_Left .MP4 | 23871 | 15.914 | Post | 409.101 | 16.638 | 20.931 | 3362.032 | Fish | Pomacanthidae | Pomacanthus | semicirculatus | 37 365080 | 1101.6183 |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 886 | 18.288 | Post | 315.436 | 1.008 | 6.062 | 997.526 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 687.90188 |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 886 | 18.288 | Post | 353.744 | 5.495 | 15.765 | 2623.638 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 962.55444 |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 886 | 18.288 | Post | 272.236 | 8.673 | 20.533 | 3632.063 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 446.72784 |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 886 | 18.288 | Post | 291.73 | 2.353 | 8.24 | 1265.952 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 547.11318 |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 886 | 18.288 | Post | 289.881 | 2.156 | 13.099 | 1229.451 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 537.01163 |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 4864 | 20.94 | Post | 341.966 | 0.994 | 1.967 | 939.896 | Fish | Lutjanidae | Lutjanus | adetii | 37 346033 | 623.51358 |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 4880 | 20.9507 | Post | 357.495 | 4.992 | 14.266 | 2677.113 | Fish | Lutjanidae | Lutjanus | adetii | 37 346033 | 708.31863 |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 4880 | 20.9507 | Post | 369.075 | 9.002 | 12.197 | 2522.321 | Fish | Lutjanidae | Lutjanus | adetii | 37 346033 | 776.2178 |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 4880 | 20.9507 | Post | 357.322 | 9.271 | 14.164 | 2610.161 | Fish | Lutjanidae | Lutjanus | adetii | 37 346033 | 707.33481 |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 4880 | 20.9507 | Post | 365.718 | 8.546 | 15.925 | 2854.827 | Fish | Lutjanidae | Lutjanus | adetii | 37 346033 | 756.11638 |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 4880 | 20.9507 | Post | 370.884 | 7.103 | 13.438 | 2621.894 | Fish | Lutjanidae | Lutjanus | adetii | 37 346033 | 787.19285 |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 4880 | 20.9507 | Post | 290.908 | 5.261 | 14.529 | 2454.506 | Fish | Lutjanidae | Lutjanus | adetii | 37 346033 | 391.91179 |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 4880 | 20.9507 | Post | 353.197 | 8.786 | 28.886 | 2477.91 | Fish | Lutjanidae | Lutjanus | adetii | 37 346033 | 684.13967 |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 4880 | 20.9507 | Post | 316.221 | 9.676 | 18.197 | 2989.999 | Fish | Lutjanidae | Lutjanus | adetii | 37 346033 | 498.00908 |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 4880 | 20.9507 | Post | 385.79 | 11.288 | 18.542 | 2885.683 | Fish | Lutjanidae | Lutjanus | adetii | 37 346033 | 881.4968 |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 4880 | 20.9507 | Post | 361.641 | 5.98 | 12.289 | 2429.523 | Fish | Lutjanidae | Lutjanus | adetii | 37 346033 | 732.16379 |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 4880 | 20.9507 | Post | 363.978 | 5.095 | 14.268 | 2570.351 | Fish | Lutjanidae | Lutjanus | adetii | 37 346033 | 745.8323 |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 10076 | 24.4147 | Post | 324.133 | 5.412 | 13.145 | 2201.269 | Fish | Carangidae | Carangoides | fulvoguttatus | 37 337037 | 295.90264 |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 10076 | 24.4147 | Post | 313.358 | 11.662 | 14.338 | 2637.819 | Fish | Carangidae | Carangoides | fulvoguttatus | 37 337037 | 268.26851 |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 10076 | 24.4147 | Post | 345.331 | 9.019 | 14.152 | 2532.892 | Fish | Carangidae | Carangoides | fulvoguttatus | 37 337037 | 355.57774 |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 10076 | 24.4147 | Post | 353.39 | 22.587 | 20.717 | 3883.579 | Fish | Carangidae | Carangoides | fulvoguttatus | 37 337037 | 380.17956 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 10076 | 24.4147 | Post | 340.046 | 21.659 | 18.528 | 4015.119 | Fish | Carangidae | Carangoides | fulvoguttatus | 37 337037 | 340.02485 |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 10076 | 24.4147 | Post | 387.742 | 39.484 | 25.497 | 5226.285 | Fish | Carangidae | Carangoides | fulvoguttatus | 37 337037 | 497.53733 |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 10111 | 24.438 | Post | 342.772 | 5.855 | 11.632 | 2236.581 | Fish | Carangidae | Carangoides | fulvoguttatus | 37 337037 | 347.99011 |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 12125 | 25.7807 | Post | 477.748 | 16.93 | 22.754 | 4040.258 | Fish | Serranidae | Plectropomus | leopardus | 37 311078 | 1567.5539 |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 12138 | 25.7893 | Post | 562.908 | 52.791 | 36.001 | 6058.563 | Fish | Serranidae | Plectropomus | leopardus | 37 311078 | 2508.0852 |
| E5_11/2023 | NearField | mB | 3 | B3_2_Left.MP4 | 12143 | 25.7927 | Post | 351.282 | 24.345 | 26.27 | 4777.805 | Fish | Serranidae | Plectropomus | leopardus | 37 311078 | 649.50393 |
| E5_11/2023 | Remediation | mC | 1 | C1_2_Left.MP4 | 12409 | 25.97 | Post | 311.786 | 3.367 | 40.124 | 1721.149 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 664.8311 |
| E5_11/2023 | Remediation | mC | 1 | C1_2_Left.MP4 | 12409 | 25.97 | Post | 263.356 | 11.622 | 69.058 | 3279.799 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 405.34962 |
| E5_11/2023 | Remediation | mC | 2 | C2_1_Left.MP4 | 17348 | 11.5653 | Post | 217.85 | 3.884 | 37.818 | 1763.316 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 232.46492 |
| E5_11/2023 | Remediation | mC | 2 | C2_1_Left.MP4 | 17348 | 11.5653 | Post | 266.291 | 1.787 | 35.576 | 1739.015 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 418.73327 |
| E5_11/2023 | Remediation | mC | 2 | C2_1_Left.MP4 | 22502 | 15.0013 | Post | 1011.063 | 8.066 | 106.361 | 4919.85 | Fish | Lutjanidae | Symphorus | nametophorus | 37 346017 | 25069.718 |
| E5_11/2023 | Remediation | mC | 3 | C3_1_Left.MP4 | 4714 | 3.1427 | Post | 380.39 | 4.295 | 3.147 | 2654.435 | Fish | Labridae | Choerodon | venustus | 37 384042 | 1677.1964 |
| E5_11/2023 | Remediation | mC | 3 | C3_2_Left.MP4 | 1493 | 18.6927 | Post | 307.99 | 11.663 | 2.42 | 3026.869 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 641.38444 |
| E5_11/2023 | NearField | mD | 1 | D1_1_Left.MP4 | 6257 | 4.1713 | Post | 400.681 | 21.403 | 6.079 | 3731.416 | Fish | Labridae | Choerodon | schoenleinii | 37 384010 | 1355.125 |
| E5_11/2023 | NearField | mD | 1 | D1_1_Left.MP4 | 6257 | 4.1713 | Post | 431.093 | 28.052 | 28.589 | 4283.914 | Fish | Labridae | Choerodon | schoenleinii | 37 384010 | 1671.2511 |
| E5_11/2023 | NearField | mD | 1 | D1_1_Left.MP4 | 6957 | 4.638 | Post | 289.127 | 6.764 | 23.48 | 3183.68 | Fish | Labridae | Choerodon | venustus | 37 384042 | 711.65587 |
| E5_11/2023 | NearField | mD | 1 | D1_1_Left.MP4 | 6957 | 4.638 | Post | 465.174 | 23.527 | 18.201 | 3918.176 | Fish | Labridae | Choerodon | venustus | 37 384042 | 3145.3301 |
| E5_11/2023 | NearField | mD | 1 | D1_1_Left.MP4 | 6957 | 4.638 | Post | 554.028 | 18.527 | 11.721 | 4512.583 | Fish | Labridae | Choerodon | venustus | 37 384042 | 5431.3102 |
| E5_11/2023 | NearField | mD | 1 | D1_1_Left.MP4 | 17723 | 11.8153 | Post | 340.706 | 22.481 | 52.411 | 5963.763 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 1053.1319 |
| E5_11/2023 | NearField | mD | 1 | D1_1_Left.MP4 | 17723 | 11.8153 | Post | 387.187 | 20.974 | 83.131 | 6910.686 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 1547.6086 |
| E5_11/2023 | NearField | mD | 1 | D1_2_Left.MP4 | 8935 | 23.654 | Post | 290.542 | 1.983 | 4.998 | 1306.871 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 540.6086 |
| E5_11/2023 | NearField | mD | 1 | D1_2_Left.MP4 | 8935 | 23.654 | Post | 312.88 | 2.012 | 6.784 | 1363.575 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 671.69164 |
| E5_11/2023 | NearField | mD | 1 | D1_2_Left.MP4 | 8935 | 23.654 | Post | 240.785 | 2.81 | 13.731 | 1580.163 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 311.72631 |
| E5_11/2023 | NearField | mD | 1 | D1_2_Left.MP4 | 8935 | 23.654 | Post | 290.558 | 1.639 | 16.088 | 979.255 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 540.69586 |
| E5_11/2023 | NearField | mD | 1 | D1_2_Left.MP4 | 9307 | 23.902 | Post | 270.946 | 5.05 | 13.016 | 2386.012 | Fish | Siganidae | Siganus | canaliculatus | 37 438004 | 254.06974 |
| E5_11/2023 | NearField | mD | 1 | D1_2_Left.MP4 | 9307 | 23.902 | Post | 287.001 | 9.578 | 16.904 | 2649.251 | Fish | Siganidae | Siganus | canaliculatus | 37 438004 | 302.15512 |
| E5_11/2023 | NearField | mD | 1 | D1_2_Left.MP4 | 9319 | 23.91 | Post | 257.635 | 10.214 | 2.789 | 2582.85 | Fish | Siganidae | Siganus | canaliculatus | 37 438004 | 218.31252 |
| E5_11/2023 | NearField | mD | 1 | D1_2_Left.MP4 | 9369 | 23.9433 | Post | 323.341 | 3.007 | 11.471 | 2175.803 | Fish | Siganidae | Siganus | canaliculatus | 37 438004 | 432.64492 |
| E5_11/2023 | NearField | mD | 1 | D1_2_Left.MP4 | 11877 | 25.6153 | Post | 349.724 | 10.16 | 33.646 | 3838.49 | Fish | Nemipteridae | Scolopsis | monogramma | 37 347006 | 130.30414 |
| E5_11/2023 | NearField | mD | 1 | D1_2_Left.MP4 | 11877 | 25.6153 | Post | 331.484 | 42.122 | 37.903 | 6926.17 | Fish | Nemipteridae | Scolopsis | monogramma | 37 347006 | 114.09492 |
| E5_11/2023 | NearField | mD | 2 | D2_1_Left.MP4 | 7965 | 5.31 | Post | 345.145 | 14.442 | 27.817 | 4858.251 | Fish | Labridae | Choerodon | venustus | 37 384042 | 1237.7216 |
| E5_11/2023 | NearField | mD | 2 | D2_2_Left.MP4 | 10163 | 24.4727 | Post | 317.185 | 3.329 | 12.812 | 1814.852 | Fish | Labridae | Choerodon | schoenleinii | 37 384010 | 693.60149 |
| E5_11/2023 | NearField | mD | 2 | D2_2_Left.MP4 | 13212 | 26.5053 | Post | 267.703 | 3.424 | 6.286 | 1882.74 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 425.2744 |
| E5_11/2023 | NearField | mD | 2 | D2_2_Left.MP4 | 13212 | 26.5053 | Post | 303.794 | 2.828 | 7.342 | 1397.138 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 616.10852 |
| E5_11/2023 | NearField | mD | 3 | D3_1_Left.MP4 | 2244 | 1.496 | Post | 707.83 | 16.29 | 46.365 | 5433.277 | Fish | Labridae | Choerodon | schoenleinii | 37 384010 | 6922.7598 |
| E5_11/2023 | NearField | mD | 3 | D3_1_Left.MP4 | 18711 | 12.474 | Post | 383.013 | 3.365 | 18.5 | 2805.931 | Fish | Labridae | Choerodon | venustus | 37 384042 | 1713.6031 |
| E5_11/2023 | NearField | mD | 3 | D3_2_Left.MP4 | 764 | 18.2067 | Post | 712.252 | 11.574 | 20.145 | 2726.916 | Elasmobranch | Hemiscylliidae | Chiloscyllium | punctatum | 37 013008 | 3217.3485 |
| E5_11/2023 | NearField | mD | 3 | D3_2_Left.MP4 | 5819 | 21.5767 | Post | 665.233 | 3.572 | 12.21 | 1991.898 | Fish | Lutjanidae | Lutjanus | sebae | 37 346004 | 5055.3675 |
| E5_11/2023 | NearField | mD | 3 | D3_2_Left.MP4 | 16682 | 28.8187 | Post | 284.408 | 7.355 | 13.598 | 2331.1 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 507.83314 |
| E5_11/2023 | NearField | mD | 3 | D3_2_Left.MP4 | 16735 | 28.854 | Post | 348.768 | 4.633 | 11.316 | 2368.044 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 923.40552 |
| E5_11/2023 | NearField | mD | 3 | D3_2_Left.MP4 | 16783 | 28.886 | Post | 345.835 | 23.332 | 25.269 | 3981.79 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 900.82924 |
| E5_11/2023 | NearField | mD | 1 | E1_1_Left.MP4 | 2334 | 1.556 | Post | 316.238 | 13.875 | 5.809 | 3792.261 | Fish | Labridae | Choerodon | schoenleinii | 37 384010 | 687.68277 |
| E5_11/2023 | NearField | mD | 1 | E1_1_Left.MP4 | 20913 | 13.942 | Post | 232.75 | 3.194 | 2.373 | 2081.995 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 282.20927 |
| E5_11/2023 | NearField | mD | 1 | E1_2_Left.MP4 | 6230 | 21.8507 | Post | 851.477 | 4.599 | 5.612 | 2021.617 | Elasmobranch | Hemiscylliidae | Chiloscyllium | punctatum | 37 013008 | 5636.0044 |
| E5_11/2023 | NearField | mD | 2 | E2_1_Left.MP4 | 8338 | 5.5587 | Post | 306.331 | 11.312 | 24.209 | 2780.48 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 631.31087 |
| E5_11/2023 | Remediation | mE | 2 | E2_1_Left.MP4 | 8338 | 5.5587 | Post | 267.692 | 15.232 | 32.591 | 4721.804 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 425.22318 |
| E5_11/2023 | Remediation | mE | 2 | E2_1_Left.MP4 | 14867 | 9.9113 | Post | 314.708 | 7.145 | 15.463 | 2393.934 | Fish | Nemipteridae | Scolopsis | monogramma | 37 347006 | 100.30681 |
| E5_11/2023 | Remediation | mE | 2 | E2_1_Left.MP4 | 24090 | 16.06 | Post | 323.799 | 21.1 | 32.476 | 4119.904 | Fish | Labridae | Choerodon | schoenleinii | 37 384010 | 735.86556 |
| E5_11/2023 | Remediation | mE | 2 | E2_2_Left.MP4 | 12744 | 26.1933 | Post | 391.141 | 3.056 | 17.399 | 2488.219 | Fish | Labridae | Choerodon | venustus | 37 384042 | 1829.8256 |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 5899 | 3.9327 | Post | 200.243 | 6.543 | 29.366 | 2976.457 | Fish | Labridae | Choerodon | venustus | 37 384042 | 225.8056 |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 6049 | 4.0327 | Post | 296.46 | 8.046 | 12.793 | 3260.031 | Fish | Labridae | Choerodon | schoenleinii | 37 384010 | 571.47852 |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 6049 | 4.0327 | Post | 214.292 | 3.581 | 9.692 | 1642.576 | Fish | Labridae | Choerodon | schoenleinii | 37 384010 | 225.42082 |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 6859 | 4.5727 | Post | 249.79 | 9.136 | 12.638 | 2711.024 | Fish | Siganidae | Siganus | canaliculatus | 37 438004 | 198.90307 |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 6859 | 4.5727 | Post | 223.145 | 8.613 | 15.103 | 2751.22 | Fish | Siganidae | Siganus | canaliculatus | 37 438004 | 141.62468 |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 6859 | 4.5727 | Post | 201.121 | 4.042 | 13.442 | 2725.921 | Fish | Siganidae | Siganus | canaliculatus | 37 438004 | 103.57461 |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 6859 | 4.5727 | Post | 247.468 | 11.345 | 17.588 | 2923.944 | Fish | Siganidae | Siganus | canaliculatus | 37 438004 | 193.38771 |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 6859 | 4.5727 | Post | 249.179 | 9.276 | 18.33 | 3101.586 | Fish | Siganidae | Siganus | canaliculatus | 37 438004 | 197.44173 |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 6859 | 4.5727 | Post | 250.471 | 5.315 | 18.322 | 3003.409 | Fish | Siganidae | Siganus | canaliculatus | 37 438004 | 200.54031 |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 6859 | 4.5727 | Post | 229.466 | 6.391 | 18.05 | 3329.381 | Fish | Siganidae | Siganus | canaliculatus | 37 438004 | 154.0515 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 7397 | 4.9313 | Post | 220.673 | 10.904 | 20.991 | 3405.516 | Fish | Lethrinidae | Lethrinus | Obsoletus | 37 351015 | 109.86 |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 24043 | 16.0287 | Post | 230.044 | 4.865 | 14.439 | 2572.837 | Fish | Lethrinidae | Lethrinus | miniatus | 37 351009 | 203.75083 |
| E5_11/2023 | Remediation | mE | 3 | E3_1_Left.MP4 | 24043 | 16.0287 | Post | 235.121 | 9.597 | 32.721 | 6085.722 | Fish | Lethrinidae | Lethrinus | miniatus | 37 351009 | 217.15659 |
| E5_11/2023 | Remediation | mE | 3 | E3_2_Left.MP4 | 15464 | 28.0067 | Post | 326.691 | 4.199 | 7.999 | 1962.507 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 762.34867 |
| E5_11/2023 | Remediation | mE | 3 | E3_2_Left.MP4 | 15464 | 28.0067 | Post | 252.856 | 31.059 | 46.037 | 8051.406 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 359.78175 |
| E5_11/2023 | Remediation | mE | 1 | G1_1_Left.MP4 | 7669 | 5.1127 | Post | 531.02 | 79.199 | 10.596 | 6938.15 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 4005.0079 |
| E5_11/2023 | Remediation | mE | 1 | G1_1_Left.MP4 | 7669 | 5.1127 | Post | 294.132 | 26.317 | 5.62 | 5498.715 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 676.59983 |
| E5_11/2023 | Remediation | mE | 1 | G1_1_Left.MP4 | 9001 | 6.0007 | Post | 311.207 | 1.699 | 1.773 | 1428.208 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 661.21891 |
| E5_11/2023 | Remediation | mE | 1 | G1_1_Left.MP4 | 9001 | 6.0007 | Post | 278.217 | 4.422 | 3.313 | 2384.67 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 476.1087 |
| E5_11/2023 | NearField | mG | 1 | G1_1_Left.MP4 | 14933 | 9.9553 | Post | 314.244 | 4.72 | 4.235 | 2349.63 | Fish | Labridae | Choerodon | schoenleinii | 37 384010 | 675.32805 |
| E5_11/2023 | NearField | mG | 1 | G1_2_Left.MP4 | 10543 | 24.726 | Post | 719.035 | 5.526 | 2.804 | 2783.406 | Fish | Echeneidae | Echeneis | naucrates | 37 336001 | 2554.511 |
| E5_11/2023 | NearField | mG | 1 | G1_2_Left.MP4 | 19434 | 30.6533 | Post | 2106.897 | 73.91 | 2.816 | 6911.177 | Elasmobranch | Ginglymostomatidae | Nebrius | ferrugineus | 37 013010 | 71937.847 |
| E5_11/2023 | NearField | mG | 1 | G1_2_Left.MP4 | 20981 | 31.6847 | Post | 949.803 | 4.404 | 2.579 | 1956.375 | Fish | Carangidae | Caranx | ignobilis | 37 337027 | 11323.967 |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 5242 | 3.4947 | Post | 374.12 | 45.507 | 14.584 | 5658.415 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 1395.6693 |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 5268 | 3.512 | Post | 522.743 | 36.8 | 5.58 | 5015.074 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 3820.0337 |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 5291 | 3.5273 | Post | 418.874 | 25.958 | 18.02 | 4843.541 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 1961.0591 |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 5291 | 3.5273 | Post | 416.188 | 32.548 | 8.748 | 5015.748 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 1923.4513 |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 5291 | 3.5273 | Post | 352.648 | 18.716 | 41.076 | 7255.277 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 1168.2003 |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 5291 | 3.5273 | Post | 506.013 | 36.155 | 7.581 | 4935.866 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 3463.7479 |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 5291 | 3.5273 | Post | 370.272 | 38.156 | 27.53 | 5820.724 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 1352.9055 |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 9632 | 6.4213 | Post | 611.525 | 5.128 | 19.104 | 2045.342 | Fish | Labridae | Choerodon | venustus | 37 384042 | 7394.5615 |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 9636 | 6.424 | Post | 560.831 | 5.36 | 29.509 | 1986.492 | Fish | Haemulidae | Diagramma | pictum | 37 350003 | 2590.2091 |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 26195 | 17.4633 | Post | 298.977 | 8.626 | 26.934 | 2503.972 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 587.91147 |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 26202 | 17.468 | Post | 315.463 | 17.9 | 22.683 | 3396.203 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 688.07447 |
| E5_11/2023 | NearField | mG | 2 | G2_1_Left.MP4 | 26409 | 17.606 | Post | 345.146 | 16.002 | 24.78 | 4316.62 | Fish | Lethrinidae | Lethrinus | miniatus | 37 351009 | 665.89178 |
| E5_11/2023 | NearField | mG | 2 | G2_2_Left.MP4 | 1782 | 18.8853 | Post | 369.555 | 10.28 | 19.417 | 2592.153 | Fish | Labridae | Choerodon | schoenleinii | 37 384010 | 1074.7882 |
| E5_11/2023 | NearField | mG | 2 | G2_2_Left.MP4 | 1782 | 18.8853 | Post | 314.782 | 36.801 | 41.408 | 5182.285 | Fish | Labridae | Choerodon | schoenleinii | 37 384010 | 678.64711 |
| E5_11/2023 | NearField | mG | 2 | G2_2_Left.MP4 | 8457 | 23.3353 | Post | 590.444 | 19.71 | 49.529 | 6190.918 | Fish | Serranidae | Epinephelus | coioides | 37 311007 | 3121.9156 |
| E5_11/2023 | NearField | mG | 3 | G3_1_Left.MP4 | 2095 | 1.3967 | Post | 217.787 | 32.479 | 30.114 | 5083.881 | Fish | Acanthuridae | Naso | fageni | 37 437027 | 201.43293 |
| E5_11/2023 | NearField | mG | 3 | G3_1_Left.MP4 | 2379 | 1.586 | Post | 486.702 | 34.254 | 49.109 | 9241.795 | Fish | Labridae | Choerodon | schoenleinii | 37 384010 | 2366.2614 |
| E5_11/2023 | NearField | mG | 3 | G3_1_Left.MP4 | 11171 | 7.4473 | Post | 377.249 | 22.934 | 4.999 | 3927.711 | Fish | Acanthuridae | Naso | annulatus | 37 437024 | 1006.0963 |
| E5_11/2023 | NearField | mG | 1 | H1_1_Left.MP4 | 17101 | 11.4007 | Post | 777.037 | 45.381 | 12.235 | 6053.235 | Fish | Lutjanidae | Symphorus | nametophorus | 37 346017 | 11539.839 |
| E5_11/2023 | NearField | mG | 1 | H1_1_Left.MP4 | 20973 | 13.982 | Post | 303.298 | 34.267 | 5.07 | 4936.496 | Fish | Acanthuridae | Naso | fageni | 37 437027 | 544.05556 |
| E5_11/2023 | NearField | mG | 2 | H2_1_Left.MP4 | 4194 | 2.796 | Post | 853.835 | 50.161 | 19.559 | 6105.098 | Fish | Lutjanidae | Symphorus | nametophorus | 37 346017 | 15234.461 |
| E5_11/2023 | NearField | mG | 2 | H2_1_Left.MP4 | 4958 | 3.3053 | Post | 354.102 | 5.354 | 16.813 | 2626.338 | Fish | Labridae | Choerodon | schoenleinii | 37 384010 | 950.94348 |
| E5_11/2023 | Control | mH | 2 | H2_1_Left.MP4 | 8267 | 5.5113 | Post | 290.287 | 6.147 | 17.603 | 2928.921 | Fish | Labridae | Choerodon | venustus | 37 384042 | 720.61652 |
| E5_11/2023 | Control | mH | 2 | H2_2_Left.MP4 | 3615 | 20.1073 | Post | 658.901 | 27.991 | 34.53 | 5730.775 | Elasmobranch | Dasyatidae | | | | 3908.9189 |
| E5_11/2023 | Control | mH | 3 | H3_1_Left.MP4 | 2772 | 1.848 | Post | 340.698 | 2.299 | 25.777 | 2069.874 | Fish | Labridae | Choerodon | venustus | 37 384042 | 1188.565 |
| E5_11/2023 | Control | mH | 3 | H3_1_Left.MP4 | 2772 | 1.848 | Post | 278.865 | 15.717 | 79.646 | 3423.312 | Fish | Labridae | Choerodon | venustus | 37 384042 | 635.65912 |
| E5_11/2023 | Control | mI | 1 | I1_1_Left.MP4 | 5896 | 3.9307 | Post | 328.971 | 6.261 | 2.862 | 2851.169 | Fish | Labridae | Choerodon | venustus | 37 384042 | 1065.3334 |
| E5_11/2023 | Control | mI | 2 | I2_1_Left.MP4 | 4762 | 3.1747 | Post | 301.339 | 2.082 | 10.359 | 2048.156 | Fish | Labridae | Choerodon | schoenleinii | 37 384010 | 598.85044 |
| E5_11/2023 | Control | mI | 2 | I2_1_Left.MP4 | 15512 | 10.3413 | Post | 269.327 | 2.294 | 4.587 | 1178.827 | Fish | Lethrinidae | Lethrinus | Obsoletus | 37 351015 | 198.53439 |
| E5_11/2023 | Control | mI | 2 | I2_1_Left.MP4 | 21019 | 14.0127 | Post | 213.266 | 4.405 | 6.011 | 2119.027 | Fish | Labridae | Choerodon | venustus | 37 384042 | 274.94642 |
| E5_11/2023 | Control | mI | 2 | I2_1_Left.MP4 | 21356 | 14.2373 | Post | 291.707 | 11.841 | 12.943 | 3120.218 | Fish | Labridae | Choerodon | venustus | 37 384042 | 731.68965 |
| E5_11/2023 | Control | mI | 2 | I2_1_Left.MP4 | 23436 | 15.624 | Post | 261.925 | 1.168 | 5.821 | 1080.817 | Fish | Nemipteridae | Pentapodus | paradiseus | 37 347028 | 247.92442 |
| E5_11/2023 | Control | mI | 3 | I3_1_Left.MP4 | 3355 | 2.2367 | Post | 3701.657 | 12.514 | 39.745 | 3474.872 | Elasmobranch | Carcharhinidae | Galeocerdo | cuvier | 37 018022 | 661045.79 |
| E5_11/2023 | Control | mI | 3 | I3_1_Left.MP4 | 3384 | 2.256 | Post | 638.332 | 8.264 | 6.438 | 3536.089 | Fish | Echeneidae | Echeneis | naucrates | 37 336001 | 1726.6469 |
| E5_11/2023 | Control | mI | 3 | I3_1_Left.MP4 | 3384 | 2.256 | Post | 333.458 | 4.771 | 4.917 | 3027.519 | Fish | Echeneidae | Echeneis | naucrates | 37 336001 | 203.89451 |
| E5_11/2023 | Control | mI | 3 | I3_1_Left.MP4 | 3488 | 2.3253 | Post | 368.943 | 4.593 | 3.194 | 1865.635 | Fish | Labridae | Choerodon | schoenleinii | 37 384010 | 1069.6947 |
| E5_11/2023 | Control | mI | 3 | I3_1_Left.MP4 | 3648 | 2.432 | Post | 275.51 | 6.065 | 1.777 | 2794.616 | Fish | Labridae | Choerodon | venustus | 37 384042 | 612.06462 |
| E5_11/2023 | Control | mI | 3 | I3_1_Left.MP4 | 3799 | 2.5327 | Post | 453.714 | 12.029 | 6.657 | 3512.245 | Fish | Labridae | Choerodon | venustus | 37 384042 | 2909.4595 |
| E5_11/2023 | Control | mI | 3 | I3_1_Left.MP4 | 3830 | 2.5533 | Post | 383.575 | 9.71 | 4.443 | 4156.184 | Fish | Labridae | Choerodon | venustus | 37 384042 | 1721.4728 |
| E5_11/2023 | Control | mI | 3 | I3_1_Left.MP4 | 3847 | 2.5647 | Post | 352.615 | 3.357 | 2.309 | 2136.804 | Fish | Labridae | Choerodon | venustus | 37 384042 | 1323.3751 |
| E5_11/2023 | Control | mI | 3 | I3_1_Left.MP4 | 3939 | 2.626 | Post | 206.231 | 3.726 | 0.418 | 2978.704 | Fish | Siganidae | Siganus | canaliculatus | 37 438004 | 111.70246 |
| E5_11/2023 | Control | mI | 3 | I3_1_Left.MP4 | 12389 | 8.2593 | Post | 408.213 | 16.263 | 10.875 | 3364.27 | Fish | Lutjanidae | Lutjanus | adetii | 37 346033 | 1036.7534 |
| E5_11/2023 | Control | mI | 3 | I3_1_Left.MP4 | 16040 | 10.6933 | Post | 205.994 | 15.58 | 0.253 | 3495.25 | Fish | Acanthuridae | Naso | fageni | 37 437027 | 170.45052 |
| E5_11/2023 | Control | mI | 3 | I3_1_Left.MP4 | 16995 | 11.33 | Post | 422.463 | 3.96 | 4.124 | 2585.607 | Fish | Lethrinidae | Lethrinus | Obsoletus | 37 351015 | 755.95657 |
| E5_11/2023 | Control | mI | 3 | I3_1_Left.MP4 | 20362 | 13.5747 | Post | 1147.454 | 14.757 | 6.819 | 4148.71 | Elasmobranch | Hemiscylliidae | Chiloscyllium | punctatum | 37 013008 | 14381.267 |
| E5_11/2023 | Control | mI | 3 | I3_2_Left.MP4 | 4477 | 20.682 | Post | 231.166 | 4.255 | 3.663 | 3514.979 | Fish | Lethrinidae | Lethrinus | miniatus | 37 351009 | 206.66521 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E5_11/2023 | Control | ml | 3 | I3_2_Left.MP4 | 4694 | 20.8267 | Post | 256.324 | 4.06 | 2.748 | 1488.761 | Fish | Lethrinidae | Lethrinus | miniatus | 37 351009 | 279.40182 |
| E5_11/2023 | Control | ml | 3 | I3_2_Left.MP4 | 10575 | 24.7473 | Post | 251.891 | 48.934 | 11.381 | 6833.624 | Fish | Acanthuridae | Naso | annulatus | 37 437024 | 303.14867 |
| E5_11/2023 | Control | ml | 3 | I3_2_Left.MP4 | 10575 | 24.7473 | Post | 200.45 | 52.34 | 15.95 | 6183.101 | Fish | Acanthuridae | Naso | annulatus | 37 437024 | 153.81975 |

| Event | Treatment | Location | Replicate | Filename | Frame | Time (mins) | Remed Period |
|---|---|---|---|---|---|---|---|
| E5_05/2024 | Remediation | mA | 1 | A1_PORT_2.MP4 | 8550 | 23.3973 | Post |
| E5_05/2024 | Remediation | mA | 1 | A1_PORT_2.MP4 | 7611 | 22.7713 | Post |
| E5_05/2024 | Remediation | mA | 1 | A1_PORT_1.MP4 | 20886 | 13.924 | Post |
| E5_05/2024 | Remediation | mA | 1 | A1_PORT_2.MP4 | 4246 | 20.528 | Post |
| E5_05/2024 | Remediation | mA | 1 | A1_PORT_2.MP4 | 6231 | 21.8513 | Post |
| E5_05/2024 | Remediation | mA | 1 | A1_PORT_1.MP4 | 18786 | 12.524 | Post |
| E5_05/2024 | Remediation | mA | 1 | A1_PORT_1.MP4 | 8145 | 5.43 | Post |
| E5_05/2024 | Remediation | mA | 1 | A1_PORT_2.MP4 | 2165 | 19.1407 | Post |
| E5_05/2024 | Remediation | mA | 1 | A1_PORT_2.MP4 | 2972 | 19.6787 | Post |
| E5_05/2024 | Remediation | mA | 1 | A1_PORT_1.MP4 | 10470 | 6.98 | Post |
| E5_05/2024 | Remediation | mA | 1 | A1_PORT_1.MP4 | 18325 | 12.2167 | Post |
| E5_05/2024 | Remediation | mA | 1 | A1_PORT_2.MP4 | 7950 | 22.9973 | Post |
| E5_05/2024 | Remediation | mA | 1 | A1_PORT_2.MP4 | 10496 | 24.6947 | Post |
| E5_05/2024 | Remediation | mA | 1 | A1_PORT_1.MP4 | 4406 | 2.9373 | Post |
| E5_05/2024 | Remediation | mA | 1 | A1_PORT_2.MP4 | 4930 | 20.984 | Post |
| E5_05/2024 | Remediation | mA | 1 | A1_PORT_1.MP4 | 6984 | 4.656 | Post |
| E5_05/2024 | Remediation | mA | 1 | A1_PORT_2.MP4 | 4930 | 20.984 | Post |
| E5_05/2024 | Remediation | mA | 1 | A1_PORT_1.MP4 | 20721 | 13.814 | Post |
| E5_05/2024 | Remediation | mA | 1 | A1_PORT_2.MP4 | 9576 | 24.0813 | Post |
| E5_05/2024 | Remediation | mA | 1 | A1_PORT_1.MP4 | 9341 | 6.2273 | Post |
| E5_05/2024 | Remediation | mA | 1 | A1_PORT_1.MP4 | 20478 | 13.652 | Post |
| E5_05/2024 | Remediation | mA | 1 | A1_PORT_1.MP4 | 3315 | 2.21 | Post |
| E5_05/2024 | Remediation | mA | 1 | A1_PORT_2.MP4 | 15365 | 27.9407 | Post |
| E5_05/2024 | Remediation | mA | 1 | A1_PORT_1.MP4 | 3968 | 2.6453 | Post |
| E5_05/2024 | Remediation | mA | 1 | A1_PORT_1.MP4 | 8076 | 5.384 | Post |
| E5_05/2024 | Remediation | mA | 1 | A1_PORT_1.MP4 | 7324 | 4.8827 | Post |
| E5_05/2024 | Remediation | mA | 1 | A1_PORT_1.MP4 | 4858 | 3.2387 | Post |
| E5_05/2024 | Remediation | mA | 1 | A1_PORT_2.MP4 | 2712 | 19.5053 | Post |
| E5_05/2024 | Remediation | mA | 2 | A2_PORT_1.MP4 | 4029 | 2.686 | Post |
| E5_05/2024 | Remediation | mA | 2 | A2_PORT_2.MP4 | 864 | 18.2733 | Post |
| E5_05/2024 | Remediation | mA | 2 | A2_PORT_1.MP4 | 7432 | 4.9547 | Post |
| E5_05/2024 | Remediation | mA | 2 | A2_PORT_1.MP4 | 9035 | 6.0233 | Post |
| E5_05/2024 | Remediation | mA | 2 | A2_PORT_1.MP4 | 9585 | 6.39 | Post |
| E5_05/2024 | Remediation | mA | 2 | A2_PORT_1.MP4 | 25043 | 16.6953 | Post |
| E5_05/2024 | Remediation | mA | 2 | A2_PORT_1.MP4 | 3755 | 2.5033 | Post |
| E5_05/2024 | Remediation | mA | 2 | A2_PORT_2.MP4 | 14471 | 27.3447 | Post |
| E5_05/2024 | Remediation | mA | 2 | A2_PORT_1.MP4 | 5571 | 3.714 | Post |
| E5_05/2024 | Remediation | mA | 2 | A2_PORT_1.MP4 | 1953 | 1.302 | Post |
| E5_05/2024 | Remediation | mA | 2 | A2_PORT_1.MP4 | 2831 | 1.8873 | Post |
| E5_05/2024 | Remediation | mA | 2 | A2_PORT_1.MP4 | 18353 | 12.2353 | Post |
| E5_05/2024 | Remediation | mA | 2 | A2_PORT_1.MP4 | 2710 | 1.8067 | Post |
| E5_05/2024 | Remediation | mA | 2 | A2_PORT_1.MP4 | 2797 | 1.8647 | Post |
| E5_05/2024 | Remediation | mA | 2 | A2_PORT_1.MP4 | 13008 | 8.672 | Post |
| E5_05/2024 | Remediation | mA | 2 | A2_PORT_1.MP4 | 1954 | 1.3027 | Post |
| E5_05/2024 | Remediation | mA | 2 | A2_PORT_1.MP4 | 1889 | 1.2593 | Post |

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|---|---|---|---|---|---|---|---|
| E5_05/2024 | Remediation | mA | 2 | A2_PORT_1.MP4 | 2814 | 1.876 | Post |
| E5_05/2024 | Remediation | mA | 2 | A2_PORT_1.MP4 | 4176 | 2.784 | Post |
| E5_05/2024 | Remediation | mA | 2 | A2_PORT_1.MP4 | 13418 | 8.9453 | Post |
| E5_05/2024 | Remediation | mA | 2 | A2_PORT_2.MP4 | 6577 | 22.082 | Post |
| E5_05/2024 | Remediation | mA | 2 | A2_PORT_1.MP4 | 11301 | 7.534 | Post |
| E5_05/2024 | Remediation | mA | 2 | A2_PORT_1.MP4 | 6846 | 4.564 | Post |
| E5_05/2024 | Remediation | mA | 2 | A2_PORT_2.MP4 | 20906 | 31.6347 | Post |
| E5_05/2024 | Remediation | mA | 2 | A2_PORT_1.MP4 | 2122 | 1.4147 | Post |
| E5_05/2024 | Remediation | mA | 2 | A2_PORT_2.MP4 | 12963 | 26.3393 | Post |
| E5_05/2024 | Remediation | mA | 3 | A3_PORT_1.MP4 | 13041 | 8.694 | Post |
| E5_05/2024 | Remediation | mA | 3 | A3_PORT_1.MP4 | 14357 | 9.5713 | Post |
| E5_05/2024 | Remediation | mA | 3 | A3_PORT_1.MP4 | 21739 | 14.4927 | Post |
| E5_05/2024 | Remediation | mA | 3 | A3_PORT_2.MP4 | 18506 | 30.0347 | Post |
| E5_05/2024 | Remediation | mA | 3 | A3_PORT_2.MP4 | 2423 | 19.3127 | Post |
| E5_05/2024 | Remediation | mA | 3 | A3_PORT_2.MP4 | 6563 | 22.0727 | Post |
| E5_05/2024 | Remediation | mA | 3 | A3_PORT_1.MP4 | 4336 | 2.8907 | Post |
| E5_05/2024 | Remediation | mA | 3 | A3_PORT_1.MP4 | 5362 | 3.5747 | Post |
| E5_05/2024 | Remediation | mA | 3 | A3_PORT_1.MP4 | 4020 | 2.68 | Post |
| E5_05/2024 | Remediation | mA | 3 | A3_PORT_1.MP4 | 6213 | 4.142 | Post |
| E5_05/2024 | Remediation | mA | 3 | A3_PORT_1.MP4 | 12835 | 8.5567 | Post |
| E5_05/2024 | Remediation | mA | 3 | A3_PORT_1.MP4 | 8263 | 5.5087 | Post |
| E5_05/2024 | Remediation | mA | 3 | A3_PORT_1.MP4 | 5108 | 3.4053 | Post |
| E5_05/2024 | Remediation | mA | 3 | A3_PORT_1.MP4 | 21149 | 14.0993 | Post |
| E5_05/2024 | Remediation | mA | 3 | A3_PORT_1.MP4 | 9186 | 6.124 | Post |
| E5_05/2024 | Remediation | mA | 3 | A3_PORT_1.MP4 | 7898 | 5.2653 | Post |
| E5_05/2024 | Remediation | mA | 3 | A3_PORT_1.MP4 | 4149 | 2.766 | Post |
| E5_05/2024 | Remediation | mA | 3 | A3_PORT_1.MP4 | 13335 | 8.89 | Post |
| E5_05/2024 | Remediation | mA | 3 | A3_PORT_2.MP4 | 20954 | 31.6667 | Post |
| E5_05/2024 | Remediation | mA | 3 | A3_PORT_1.MP4 | 14942 | 9.9613 | Post |
| E5_05/2024 | Remediation | mA | 3 | A3_PORT_1.MP4 | 3747 | 2.498 | Post |
| E5_05/2024 | Remediation | mA | 3 | A3_PORT_1.MP4 | 3829 | 2.5527 | Post |
| E5_05/2024 | Remediation | mA | 3 | A3_PORT_1.MP4 | 14942 | 9.9613 | Post |
| E5_05/2024 | NearField | mB | 1 | B1_PORT_2.MP4 | 8448 | 23.3293 | Post |
| E5_05/2024 | NearField | mB | 1 | B1_PORT_2.MP4 | 8157 | 23.1353 | Post |
| E5_05/2024 | NearField | mB | 1 | B1_PORT_1.MP4 | 3542 | 2.3613 | Post |
| E5_05/2024 | NearField | mB | 1 | B1_PORT_1.MP4 | 3259 | 2.1727 | Post |
| E5_05/2024 | NearField | mB | 1 | B1_PORT_1.MP4 | 5884 | 3.9227 | Post |
| E5_05/2024 | NearField | mB | 1 | B1_PORT_1.MP4 | 11057 | 7.3713 | Post |
| E5_05/2024 | NearField | mB | 1 | B1_PORT_2.MP4 | 9537 | 24.0553 | Post |
| E5_05/2024 | NearField | mB | 1 | B1_PORT_2.MP4 | 883 | 18.286 | Post |
| E5_05/2024 | NearField | mB | 1 | B1_PORT_1.MP4 | 1420 | 0.9467 | Post |
| E5_05/2024 | NearField | mB | 1 | B1_PORT_1.MP4 | 4710 | 3.14 | Post |
| E5_05/2024 | NearField | mB | 1 | B1_PORT_1.MP4 | 1454 | 0.9693 | Post |
| E5_05/2024 | NearField | mB | 1 | B1_PORT_1.MP4 | 7689 | 5.126 | Post |
| E5_05/2024 | NearField | mB | 1 | B1_PORT_2.MP4 | 19981 | 31.018 | Post |
| E5_05/2024 | NearField | mB | 1 | B1_PORT_1.MP4 | 15306 | 10.204 | Post |
| E5_05/2024 | NearField | mB | 1 | B1_PORT_1.MP4 | 18796 | 12.5307 | Post |

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|---|---|---|---|---|---|---|---|
| E5_05/2024 | NearField | mB | 1 | B1_PORT_2.MP4 | 3613 | 20.106 | Post |
| E5_05/2024 | NearField | mB | 1 | B1_PORT_2.MP4 | 18512 | 30.0387 | Post |
| E5_05/2024 | NearField | mB | 1 | B1_PORT_1.MP4 | 2958 | 1.972 | Post |
| E5_05/2024 | NearField | mB | 1 | B1_PORT_2.MP4 | 3487 | 20.022 | Post |
| E5_05/2024 | NearField | mB | 1 | B1_PORT_2.MP4 | 7758 | 22.8693 | Post |
| E5_05/2024 | NearField | mB | 1 | B1_PORT_1.MP4 | 4710 | 3.14 | Post |
| E5_05/2024 | NearField | mB | 1 | B1_PORT_2.MP4 | 20421 | 31.3113 | Post |
| E5_05/2024 | NearField | mB | 1 | B1_PORT_1.MP4 | 23541 | 15.694 | Post |
| E5_05/2024 | NearField | mB | 1 | B1_PORT_2.MP4 | 13980 | 27.0173 | Post |
| E5_05/2024 | NearField | mB | 1 | B1_PORT_1.MP4 | 7322 | 4.8813 | Post |
| E5_05/2024 | NearField | mB | 1 | B1_PORT_1.MP4 | 22546 | 15.0307 | Post |
| E5_05/2024 | NearField | mB | 1 | B1_PORT_1.MP4 | 15615 | 10.41 | Post |
| E5_05/2024 | NearField | mB | 1 | B1_PORT_1.MP4 | 22149 | 14.766 | Post |
| E5_05/2024 | NearField | mB | 1 | B1_PORT_1.MP4 | 2840 | 1.8933 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_port_1.MP4 | 15609 | 10.406 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_port_1.MP4 | 12688 | 8.4587 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_port_1.MP4 | 19985 | 13.3233 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_port_1.MP4 | 16958 | 11.3053 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_port_1.MP4 | 12264 | 8.176 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_port_1.MP4 | 3097 | 2.0647 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_port_1.MP4 | 9041 | 6.0273 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_port_1.MP4 | 26023 | 17.3487 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_port_1.MP4 | 13011 | 8.674 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_port_1.MP4 | 12225 | 8.15 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_port_1.MP4 | 16846 | 11.2307 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_PORT_2.MP4 | 9552 | 24.0653 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_port_1.MP4 | 22712 | 15.1413 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_port_1.MP4 | 14036 | 9.3573 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_port_1.MP4 | 9525 | 6.35 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_port_1.MP4 | 4784 | 3.1893 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_port_1.MP4 | 3697 | 2.4647 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_port_1.MP4 | 4708 | 3.1387 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_port_1.MP4 | 15609 | 10.406 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_port_1.MP4 | 23907 | 15.938 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_port_1.MP4 | 7465 | 4.9767 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_port_1.MP4 | 22617 | 15.078 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_PORT_2.MP4 | 2943 | 19.6593 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_PORT_2.MP4 | 1900 | 18.964 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_port_1.MP4 | 3063 | 2.042 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_port_1.MP4 | 5261 | 3.5073 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_PORT_2.MP4 | 17812 | 29.572 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_PORT_2.MP4 | 649 | 18.13 | Post |
| E5_05/2024 | NearField | mB | 2 | B2_port_1.MP4 | 23713 | 15.8087 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_1.MP4 | 7898 | 5.2653 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_1.MP4 | 8019 | 5.346 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_1.MP4 | 3672 | 2.448 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_2.MP4 | 8666 | 23.4747 | Post |

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|---|---|---|---|---|---|---|---|
| E5_05/2024 | NearField | mB | 3 | B3_PORT_1.MP4 | 5964 | 3.976 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_1.MP4 | 7813 | 5.2087 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_1.MP4 | 23733 | 15.822 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_1.MP4 | 1928 | 1.2853 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_1.MP4 | 4454 | 2.9693 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_1.MP4 | 24606 | 16.404 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_2.MP4 | 2478 | 19.3493 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_1.MP4 | 6967 | 4.6447 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_1.MP4 | 2971 | 1.9807 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_1.MP4 | 20245 | 13.4967 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_2.MP4 | 13896 | 26.9613 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_1.MP4 | 19257 | 12.838 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_2.MP4 | 292 | 17.892 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_1.MP4 | 19412 | 12.9413 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_2.MP4 | 19683 | 30.8193 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_1.MP4 | 2341 | 1.5607 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_1.MP4 | 19062 | 12.708 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_1.MP4 | 1881 | 1.254 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_1.MP4 | 17665 | 11.7767 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_1.MP4 | 17450 | 11.6333 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_1.MP4 | 9171 | 6.114 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_1.MP4 | 25242 | 16.828 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_1.MP4 | 15910 | 10.6067 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_1.MP4 | 4200 | 2.8 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_2.MP4 | 4195 | 20.494 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_1.MP4 | 10532 | 7.0213 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_1.MP4 | 3320 | 2.2133 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_1.MP4 | 2159 | 1.4393 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_1.MP4 | 23663 | 15.7753 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_2.MP4 | 13311 | 26.5713 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_1.MP4 | 21699 | 14.466 | Post |
| E5_05/2024 | NearField | mB | 3 | B3_PORT_2.MP4 | 6513 | 22.0393 | Post |
| E5_05/2024 | Remediation | mC | 1 | C1_PORT_2.MP4 | 5542 | 21.392 | Post |
| E5_05/2024 | Remediation | mC | 1 | C1_PORT_1.MP4 | 2832 | 1.888 | Post |
| E5_05/2024 | Remediation | mC | 1 | C1_PORT_1.MP4 | 19414 | 12.9427 | Post |
| E5_05/2024 | Remediation | mC | 1 | C1_PORT_2.MP4 | 6087 | 21.7553 | Post |
| E5_05/2024 | Remediation | mC | 1 | C1_PORT_2.MP4 | 5864 | 21.6067 | Post |
| E5_05/2024 | Remediation | mC | 1 | C1_PORT_1.MP4 | 12266 | 8.1773 | Post |
| E5_05/2024 | Remediation | mC | 1 | C1_PORT_1.MP4 | 1895 | 1.2633 | Post |
| E5_05/2024 | Remediation | mC | 1 | C1_PORT_1.MP4 | 2779 | 1.8527 | Post |
| E5_05/2024 | Remediation | mC | 1 | C1_PORT_2.MP4 | 6699 | 22.1633 | Post |
| E5_05/2024 | Remediation | mC | 1 | C1_PORT_1.MP4 | 4957 | 3.3047 | Post |
| E5_05/2024 | Remediation | mC | 1 | C1_PORT_1.MP4 | 1746 | 1.164 | Post |
| E5_05/2024 | Remediation | mC | 1 | C1_PORT_1.MP4 | 10258 | 6.8387 | Post |
| E5_05/2024 | Remediation | mC | 1 | C1_PORT_1.MP4 | 2796 | 1.864 | Post |
| E5_05/2024 | Remediation | mC | 1 | C1_PORT_1.MP4 | 7071 | 4.714 | Post |
| E5_05/2024 | Remediation | mC | 1 | C1_PORT_1.MP4 | 8593 | 5.7287 | Post |

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|---|---|---|---|---|---|---|---|
| E5_05/2024 | Remediation | mC | 1 | C1_PORT_1.MP4 | 2690 | 1.7933 | Post |
| E5_05/2024 | Remediation | mC | 1 | C1_PORT_1.MP4 | 3172 | 2.1147 | Post |
| E5_05/2024 | Remediation | mC | 1 | C1_PORT_1.MP4 | 2021 | 1.3473 | Post |
| E5_05/2024 | Remediation | mC | 1 | C1_PORT_1.MP4 | 8792 | 5.8613 | Post |
| E5_05/2024 | Remediation | mC | 1 | C1_PORT_1.MP4 | 2690 | 1.7933 | Post |
| E5_05/2024 | Remediation | mC | 1 | C1_PORT_1.MP4 | 4640 | 3.0933 | Post |
| E5_05/2024 | Remediation | mC | 1 | C1_PORT_1.MP4 | 9671 | 6.4473 | Post |
| E5_05/2024 | Remediation | mC | 1 | C1_PORT_1.MP4 | 1958 | 1.3053 | Post |
| E5_05/2024 | Remediation | mC | 1 | C1_PORT_1.MP4 | 14135 | 9.4233 | Post |
| E5_05/2024 | Remediation | mC | 2 | C2b_PORT_1.MP4 | 5487 | 3.658 | Post |
| E5_05/2024 | Remediation | mC | 2 | C2b_PORT_2.MP4 | 21250 | 31.864 | Post |
| E5_05/2024 | Remediation | mC | 2 | C2b_PORT_2.MP4 | 16638 | 28.7893 | Post |
| E5_05/2024 | Remediation | mC | 2 | C2b_PORT_1.MP4 | 23309 | 15.5393 | Post |
| E5_05/2024 | Remediation | mC | 2 | C2b_PORT_1.MP4 | 3839 | 2.5593 | Post |
| E5_05/2024 | Remediation | mC | 2 | C2b_PORT_1.MP4 | 7411 | 4.9407 | Post |
| E5_05/2024 | Remediation | mC | 2 | C2b_PORT_1.MP4 | 5058 | 3.372 | Post |
| E5_05/2024 | Remediation | mC | 2 | C2b_PORT_1.MP4 | 4710 | 3.14 | Post |
| E5_05/2024 | Remediation | mC | 2 | C2b_PORT_1.MP4 | 11579 | 7.7193 | Post |
| E5_05/2024 | Remediation | mC | 2 | C2b_PORT_1.MP4 | 14590 | 9.7267 | Post |
| E5_05/2024 | Remediation | mC | 2 | C2b_PORT_1.MP4 | 18044 | 12.0293 | Post |
| E5_05/2024 | Remediation | mC | 2 | C2b_PORT_1.MP4 | 16456 | 10.9707 | Post |
| E5_05/2024 | Remediation | mC | 2 | C2b_PORT_1.MP4 | 9390 | 6.26 | Post |
| E5_05/2024 | Remediation | mC | 2 | C2b_PORT_1.MP4 | 9031 | 6.0207 | Post |
| E5_05/2024 | Remediation | mC | 2 | C2b_PORT_1.MP4 | 21448 | 14.2987 | Post |
| E5_05/2024 | Remediation | mC | 2 | C2b_PORT_1.MP4 | 9847 | 6.5647 | Post |
| E5_05/2024 | Remediation | mC | 2 | C2b_PORT_2.MP4 | 13313 | 26.5727 | Post |
| E5_05/2024 | Remediation | mC | 2 | C2b_PORT_1.MP4 | 3205 | 2.1367 | Post |
| E5_05/2024 | Remediation | mC | 2 | C2b_PORT_1.MP4 | 3319 | 2.2127 | Post |
| E5_05/2024 | Remediation | mC | 3 | C3_PORT_1.MP4 | 3741 | 2.494 | Post |
| E5_05/2024 | Remediation | mC | 3 | C3_PORT_1.MP4 | 16011 | 10.674 | Post |
| E5_05/2024 | Remediation | mC | 3 | C3_PORT_1.MP4 | 2942 | 1.9613 | Post |
| E5_05/2024 | Remediation | mC | 3 | C3_PORT_1.MP4 | 2158 | 1.4387 | Post |
| E5_05/2024 | Remediation | mC | 3 | C3_PORT_2.MP4 | 6371 | 21.9447 | Post |
| E5_05/2024 | Remediation | mC | 3 | C3_PORT_1.MP4 | 1651 | 1.1007 | Post |
| E5_05/2024 | Remediation | mC | 3 | C3_PORT_2.MP4 | 17620 | 29.444 | Post |
| E5_05/2024 | Remediation | mC | 3 | C3_PORT_2.MP4 | 13887 | 26.9553 | Post |
| E5_05/2024 | Remediation | mC | 3 | C3_PORT_1.MP4 | 3017 | 2.0113 | Post |
| E5_05/2024 | Remediation | mC | 3 | C3_PORT_1.MP4 | 12838 | 8.5587 | Post |
| E5_05/2024 | Remediation | mC | 3 | C3_PORT_1.MP4 | 6846 | 4.564 | Post |
| E5_05/2024 | Remediation | mC | 3 | C3_PORT_1.MP4 | 9032 | 6.0213 | Post |
| E5_05/2024 | Remediation | mC | 3 | C3_PORT_1.MP4 | 1792 | 1.1947 | Post |
| E5_05/2024 | Remediation | mC | 3 | C3_PORT_1.MP4 | 2853 | 1.902 | Post |
| E5_05/2024 | Remediation | mC | 3 | C3_PORT_2.MP4 | 2690 | 19.4907 | Post |
| E5_05/2024 | Remediation | mC | 3 | C3_PORT_2.MP4 | 13642 | 26.792 | Post |
| E5_05/2024 | Remediation | mC | 3 | C3_PORT_2.MP4 | 5714 | 21.5067 | Post |
| E5_05/2024 | Remediation | mC | 3 | C3_PORT_1.MP4 | 3724 | 2.4827 | Post |
| E5_05/2024 | Remediation | mC | 3 | C3_PORT_2.MP4 | 3896 | 20.2947 | Post |

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|---|---|---|---|---|---|---|---|
| E5_05/2024 | Remediation | mC | 3 | C3_PORT_1.MP4 | 9045 | 6.03 | Post |
| E5_05/2024 | Remediation | mC | 3 | C3_PORT_1.MP4 | 22706 | 15.1373 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_1.MP4 | 11813 | 7.8753 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_1.MP4 | 7633 | 5.0887 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_1.MP4 | 22394 | 14.9293 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_1.MP4 | 2089 | 1.3927 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_2.MP4 | 14837 | 27.5887 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_1.MP4 | 3442 | 2.2947 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_1.MP4 | 14110 | 9.4067 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_1.MP4 | 2041 | 1.3607 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_1.MP4 | 9555 | 6.37 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_1.MP4 | 1720 | 1.1467 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_2.MP4 | 3588 | 20.0893 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_1.MP4 | 17123 | 11.4153 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_1.MP4 | 2304 | 1.536 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_1.MP4 | 1913 | 1.2753 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_1.MP4 | 11888 | 7.9253 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_2.MP4 | 16836 | 28.9213 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_1.MP4 | 2903 | 1.9353 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_1.MP4 | 24208 | 16.1387 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_1.MP4 | 20381 | 13.5873 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_1.MP4 | 3694 | 2.4627 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_1.MP4 | 18830 | 12.5533 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_2.MP4 | 1603 | 18.766 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_1.MP4 | 8268 | 5.512 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_2.MP4 | 6859 | 22.27 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_1.MP4 | 2535 | 1.69 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_1.MP4 | 17850 | 11.9 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_1.MP4 | 8125 | 5.4167 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_1.MP4 | 2399 | 1.5993 | Post |
| E5_05/2024 | NearField | mD | 1 | D1_port_1.MP4 | 14274 | 9.516 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_1.MP4 | 10009 | 6.6727 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_1.MP4 | 3217 | 2.1447 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_1.MP4 | 16630 | 11.0867 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_2.MP4 | 18738 | 30.1893 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_1.MP4 | 20703 | 13.802 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_1.MP4 | 4501 | 3.0007 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_1.MP4 | 2422 | 1.6147 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_1.MP4 | 21788 | 14.5253 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_1.MP4 | 2110 | 1.4067 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_1.MP4 | 2882 | 1.9213 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_1.MP4 | 2460 | 1.64 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_1.MP4 | 5853 | 3.902 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_2.MP4 | 2279 | 19.2167 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_1.MP4 | 2608 | 1.7387 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_1.MP4 | 6694 | 4.4627 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_1.MP4 | 21509 | 14.3393 | Post |

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|---|---|---|---|---|---|---|---|
| E5_05/2024 | NearField | mD | 2 | D2_port_1.MP4 | 22653 | 15.102 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_1.MP4 | 22653 | 15.102 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_2.MP4 | 11919 | 25.6433 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_1.MP4 | 24121 | 16.0807 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_1.MP4 | 6362 | 4.2413 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_1.MP4 | 4020 | 2.68 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_1.MP4 | 2177 | 1.4513 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_1.MP4 | 1889 | 1.2593 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_1.MP4 | 19633 | 13.0887 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_1.MP4 | 5613 | 3.742 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_1.MP4 | 3588 | 2.392 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_1.MP4 | 3635 | 2.4233 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_1.MP4 | 4612 | 3.0747 | Post |
| E5_05/2024 | NearField | mD | 2 | D2_port_1.MP4 | 14163 | 9.442 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 4847 | 3.2313 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 4561 | 3.0407 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_2.MP4 | 5999 | 21.6967 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 4537 | 3.0247 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 22799 | 15.1993 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 16201 | 10.8007 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 18030 | 12.02 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 8393 | 5.5953 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 7023 | 4.682 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 15027 | 10.018 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 2644 | 1.7627 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 6074 | 4.0493 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 4647 | 3.098 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 5655 | 3.77 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_2.MP4 | 6996 | 22.3613 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 13619 | 9.0793 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 4462 | 2.9747 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 7457 | 4.9713 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 14567 | 9.7113 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 15958 | 10.6387 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 3190 | 2.1267 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 18474 | 12.316 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_2.MP4 | 12400 | 25.964 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 9798 | 6.532 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 19473 | 12.982 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 15534 | 10.356 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 6394 | 4.2627 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 16187 | 10.7913 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 3348 | 2.232 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 10118 | 6.7453 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 1643 | 1.0953 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 10693 | 7.1287 | Post |
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 20264 | 13.5093 | Post |

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|---|---|---|---|---|---|---|---|
| E5_05/2024 | NearField | mD | 3 | D3_port_1.MP4 | 18474 | 12.316 | Post |
| E5_05/2024 | Remediation | mE | 1 | E1_port_1.MP4 | 14092 | 9.3947 | Post |
| E5_05/2024 | Remediation | mE | 1 | E1_port_2.MP4 | 12020 | 25.7107 | Post |
| E5_05/2024 | Remediation | mE | 1 | E1_port_2.MP4 | 5450 | 21.3307 | Post |
| E5_05/2024 | Remediation | mE | 1 | E1_port_2.MP4 | 6813 | 22.2393 | Post |
| E5_05/2024 | Remediation | mE | 1 | E1_port_1.MP4 | 4047 | 2.698 | Post |
| E5_05/2024 | Remediation | mE | 1 | E1_port_1.MP4 | 2552 | 1.7013 | Post |
| E5_05/2024 | Remediation | mE | 1 | E1_port_2.MP4 | 12078 | 25.7493 | Post |
| E5_05/2024 | Remediation | mE | 1 | E1_port_1.MP4 | 19513 | 13.0087 | Post |
| E5_05/2024 | Remediation | mE | 1 | E1_port_1.MP4 | 12092 | 8.0613 | Post |
| E5_05/2024 | Remediation | mE | 1 | E1_port_1.MP4 | 15071 | 10.0473 | Post |
| E5_05/2024 | Remediation | mE | 1 | E1_port_1.MP4 | 14729 | 9.8193 | Post |
| E5_05/2024 | Remediation | mE | 1 | E1_port_1.MP4 | 12714 | 8.476 | Post |
| E5_05/2024 | Remediation | mE | 1 | E1_port_1.MP4 | 19274 | 12.8493 | Post |
| E5_05/2024 | Remediation | mE | 1 | E1_port_1.MP4 | 4977 | 3.318 | Post |
| E5_05/2024 | Remediation | mE | 1 | E1_port_1.MP4 | 4104 | 2.736 | Post |
| E5_05/2024 | Remediation | mE | 1 | E1_port_1.MP4 | 23498 | 15.6653 | Post |
| E5_05/2024 | Remediation | mE | 1 | E1_port_1.MP4 | 2487 | 1.658 | Post |
| E5_05/2024 | Remediation | mE | 1 | E1_port_2.MP4 | 3162 | 19.8053 | Post |
| E5_05/2024 | Remediation | mE | 1 | E1_port_2.MP4 | 9607 | 24.102 | Post |
| E5_05/2024 | Remediation | mE | 2 | E2_port_1.MP4 | 6879 | 4.586 | Post |
| E5_05/2024 | Remediation | mE | 2 | E2_port_2.MP4 | 2532 | 19.3853 | Post |
| E5_05/2024 | Remediation | mE | 2 | E2_port_1.MP4 | 16884 | 11.256 | Post |
| E5_05/2024 | Remediation | mE | 2 | E2_port_1.MP4 | 20589 | 13.726 | Post |
| E5_05/2024 | Remediation | mE | 2 | E2_port_2.MP4 | 16667 | 28.8087 | Post |
| E5_05/2024 | Remediation | mE | 2 | E2_port_1.MP4 | 4137 | 2.758 | Post |
| E5_05/2024 | Remediation | mE | 2 | E2_port_1.MP4 | 23584 | 15.7227 | Post |
| E5_05/2024 | Remediation | mE | 2 | E2_port_1.MP4 | 8146 | 5.4307 | Post |
| E5_05/2024 | Remediation | mE | 2 | E2_port_1.MP4 | 2795 | 1.8633 | Post |
| E5_05/2024 | Remediation | mE | 2 | E2_port_1.MP4 | 9095 | 6.0633 | Post |
| E5_05/2024 | Remediation | mE | 2 | E2_port_1.MP4 | 2935 | 1.9567 | Post |
| E5_05/2024 | Remediation | mE | 2 | E2_port_1.MP4 | 4137 | 2.758 | Post |
| E5_05/2024 | Remediation | mE | 2 | E2_port_1.MP4 | 3298 | 2.1987 | Post |
| E5_05/2024 | Remediation | mE | 2 | E2_port_1.MP4 | 7930 | 5.2867 | Post |
| E5_05/2024 | Remediation | mE | 2 | E2_port_1.MP4 | 14871 | 9.914 | Post |
| E5_05/2024 | Remediation | mE | 2 | E2_port_2.MP4 | 15310 | 27.904 | Post |
| E5_05/2024 | Remediation | mE | 2 | E2_port_1.MP4 | 13509 | 9.006 | Post |
| E5_05/2024 | Remediation | mE | 2 | E2_port_1.MP4 | 9328 | 6.2187 | Post |
| E5_05/2024 | Remediation | mE | 2 | E2_port_1.MP4 | 13639 | 9.0927 | Post |
| E5_05/2024 | Remediation | mE | 2 | E2_port_1.MP4 | 3629 | 2.4193 | Post |
| E5_05/2024 | Remediation | mE | 2 | E2_port_1.MP4 | 4808 | 3.2053 | Post |
| E5_05/2024 | Remediation | mE | 2 | E2_port_1.MP4 | 5047 | 3.3647 | Post |
| E5_05/2024 | Remediation | mE | 2 | E2_port_1.MP4 | 3000 | 2 | Post |
| E5_05/2024 | Remediation | mE | 2 | E2_port_1.MP4 | 3629 | 2.4193 | Post |
| E5_05/2024 | Remediation | mE | 2 | E2_port_1.MP4 | 3629 | 2.4193 | Post |
| E5_05/2024 | Remediation | mE | 2 | E2_port_1.MP4 | 10592 | 7.0613 | Post |
| E5_05/2024 | Remediation | mE | 2 | E2_port_1.MP4 | 5033 | 3.3553 | Post |

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|---|---|---|---|---|---|---|---|
| E5_05/2024 | Remediation | mE | 2 | E2_port_1.MP4 | 13423 | 8.9487 | Post |
| E5_05/2024 | Remediation | mE | 3 | E3_port_2.MP4 | 13053 | 26.3993 | Post |
| E5_05/2024 | Remediation | mE | 3 | E3_port_1.MP4 | 18097 | 12.0647 | Post |
| E5_05/2024 | Remediation | mE | 3 | E3_port_2.MP4 | 8113 | 23.106 | Post |
| E5_05/2024 | Remediation | mE | 3 | E3_port_1.MP4 | 1990 | 1.3267 | Post |
| E5_05/2024 | Remediation | mE | 3 | E3_port_1.MP4 | 16857 | 11.238 | Post |
| E5_05/2024 | Remediation | mE | 3 | E3_port_1.MP4 | 4253 | 2.8353 | Post |
| E5_05/2024 | Remediation | mE | 3 | E3_port_1.MP4 | 8744 | 5.8293 | Post |
| E5_05/2024 | Remediation | mE | 3 | E3_port_1.MP4 | 1976 | 1.3173 | Post |
| E5_05/2024 | Remediation | mE | 3 | E3_port_2.MP4 | 15202 | 27.832 | Post |
| E5_05/2024 | Remediation | mE | 3 | E3_port_1.MP4 | 11001 | 7.334 | Post |
| E5_05/2024 | Remediation | mE | 3 | E3_port_1.MP4 | 9744 | 6.496 | Post |
| E5_05/2024 | Remediation | mE | 3 | E3_port_1.MP4 | 13731 | 9.154 | Post |
| E5_05/2024 | Remediation | mE | 3 | E3_port_1.MP4 | 13856 | 9.2373 | Post |
| E5_05/2024 | Remediation | mE | 3 | E3_port_1.MP4 | 16703 | 11.1353 | Post |
| E5_05/2024 | Remediation | mE | 3 | E3_port_2.MP4 | 4700 | 20.8307 | Post |
| E5_05/2024 | Remediation | mE | 3 | E3_port_2.MP4 | 5747 | 21.5287 | Post |
| E5_05/2024 | Remediation | mE | 3 | E3_port_1.MP4 | 15234 | 10.156 | Post |
| E5_05/2024 | Remediation | mE | 3 | E3_port_1.MP4 | 24155 | 16.1033 | Post |
| E5_05/2024 | Remediation | mE | 3 | E3_port_1.MP4 | 8924 | 5.9493 | Post |
| E5_05/2024 | Remediation | mE | 3 | E3_port_1.MP4 | 23712 | 15.808 | Post |
| E5_05/2024 | Remediation | mE | 3 | E3_port_1.MP4 | 3072 | 2.048 | Post |
| E5_05/2024 | Remediation | mE | 3 | E3_port_2.MP4 | 13151 | 26.4647 | Post |
| E5_05/2024 | Remediation | mE | 3 | E3_port_1.MP4 | 5431 | 3.6207 | Post |
| E5_05/2024 | Remediation | mE | 3 | E3_port_1.MP4 | 10097 | 6.7313 | Post |
| E5_05/2024 | Remediation | mE | 3 | E3_port_1.MP4 | 8562 | 5.708 | Post |
| E5_05/2024 | NearField | mG | 1 | G1_port_2.MP4 | 17830 | 29.584 | Post |
| E5_05/2024 | NearField | mG | 1 | G1_port_1.MP4 | 2745 | 1.83 | Post |
| E5_05/2024 | NearField | mG | 1 | G1_port_1.MP4 | 8878 | 5.9187 | Post |
| E5_05/2024 | NearField | mG | 1 | G1_port_2.MP4 | 2724 | 19.5133 | Post |
| E5_05/2024 | NearField | mG | 1 | G1_port_1.MP4 | 3891 | 2.594 | Post |
| E5_05/2024 | NearField | mG | 1 | G1_port_2.MP4 | 4925 | 20.9807 | Post |
| E5_05/2024 | NearField | mG | 1 | G1_port_2.MP4 | 10358 | 24.6027 | Post |
| E5_05/2024 | NearField | mG | 1 | G1_port_1.MP4 | 8119 | 5.4127 | Post |
| E5_05/2024 | NearField | mG | 1 | G1_port_1.MP4 | 3865 | 2.5767 | Post |
| E5_05/2024 | NearField | mG | 1 | G1_port_1.MP4 | 2256 | 1.504 | Post |
| E5_05/2024 | NearField | mG | 1 | G1_port_1.MP4 | 11720 | 7.8133 | Post |
| E5_05/2024 | NearField | mG | 1 | G1_port_1.MP4 | 2164 | 1.4427 | Post |
| E5_05/2024 | NearField | mG | 1 | G1_port_1.MP4 | 13485 | 8.99 | Post |
| E5_05/2024 | NearField | mG | 1 | G1_port_1.MP4 | 6411 | 4.274 | Post |
| E5_05/2024 | NearField | mG | 1 | G1_port_2.MP4 | 6757 | 22.202 | Post |
| E5_05/2024 | NearField | mG | 1 | G1_port_1.MP4 | 6262 | 4.1747 | Post |
| E5_05/2024 | NearField | mG | 1 | G1_port_1.MP4 | 5416 | 3.6107 | Post |
| E5_05/2024 | NearField | mG | 1 | G1_port_1.MP4 | 10606 | 7.0707 | Post |
| E5_05/2024 | NearField | mG | 1 | G1_port_1.MP4 | 1958 | 1.3053 | Post |
| E5_05/2024 | NearField | mG | 1 | G1_port_1.MP4 | 2260 | 1.5067 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_1.MP4 | 18338 | 12.2253 | Post |

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|---|---|---|---|---|---|---|---|
| E5_05/2024 | NearField | mG | 2 | G2_port_1.MP4 | 9923 | 6.6153 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_1.MP4 | 18556 | 12.3707 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_1.MP4 | 2973 | 1.982 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_2.MP4 | 8074 | 23.08 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_1.MP4 | 8149 | 5.4327 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_2.MP4 | 1925 | 18.9807 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_1.MP4 | 1831 | 1.2207 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_2.MP4 | 1925 | 18.9807 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_1.MP4 | 1244 | 0.8293 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_1.MP4 | 1420 | 0.9467 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_1.MP4 | 14749 | 9.8327 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_1.MP4 | 4296 | 2.864 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_1.MP4 | 2035 | 1.3567 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_1.MP4 | 12516 | 8.344 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_1.MP4 | 9617 | 6.4113 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_1.MP4 | 2035 | 1.3567 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_2.MP4 | 7625 | 22.7807 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_1.MP4 | 2015 | 1.3433 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_1.MP4 | 3260 | 2.1733 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_1.MP4 | 4093 | 2.7287 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_1.MP4 | 7100 | 4.7333 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_1.MP4 | 7100 | 4.7333 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_1.MP4 | 6333 | 4.222 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_1.MP4 | 13545 | 9.03 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_1.MP4 | 5068 | 3.3787 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_1.MP4 | 1394 | 0.9293 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_1.MP4 | 2085 | 1.39 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_1.MP4 | 5787 | 3.858 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_1.MP4 | 3260 | 2.1733 | Post |
| E5_05/2024 | NearField | mG | 2 | G2_port_2.MP4 | 8934 | 23.6533 | Post |
| E5_05/2024 | NearField | mG | 3 | G3_PORT_1.MP4 | 3402 | 2.268 | Post |
| E5_05/2024 | NearField | mG | 3 | G3_PORT_2.MP4 | 9447 | 23.9953 | Post |
| E5_05/2024 | NearField | mG | 3 | G3_PORT_1.MP4 | 6214 | 4.1427 | Post |
| E5_05/2024 | NearField | mG | 3 | G3_PORT_1.MP4 | 2924 | 1.9493 | Post |
| E5_05/2024 | NearField | mG | 3 | G3_PORT_2.MP4 | 5155 | 21.134 | Post |
| E5_05/2024 | NearField | mG | 3 | G3_PORT_2.MP4 | 11183 | 25.1527 | Post |
| E5_05/2024 | NearField | mG | 3 | G3_PORT_2.MP4 | 11183 | 25.1527 | Post |
| E5_05/2024 | NearField | mG | 3 | G3_PORT_1.MP4 | 4351 | 2.9007 | Post |
| E5_05/2024 | NearField | mG | 3 | G3_PORT_1.MP4 | 22701 | 15.134 | Post |
| E5_05/2024 | NearField | mG | 3 | G3_PORT_1.MP4 | 22388 | 14.9253 | Post |
| E5_05/2024 | NearField | mG | 3 | G3_PORT_1.MP4 | 2756 | 1.8373 | Post |
| E5_05/2024 | NearField | mG | 3 | G3_PORT_1.MP4 | 2223 | 1.482 | Post |
| E5_05/2024 | NearField | mG | 3 | G3_PORT_1.MP4 | 2032 | 1.3547 | Post |
| E5_05/2024 | NearField | mG | 3 | G3_PORT_1.MP4 | 10857 | 7.238 | Post |
| E5_05/2024 | NearField | mG | 3 | G3_PORT_1.MP4 | 2032 | 1.3547 | Post |
| E5_05/2024 | NearField | mG | 3 | G3_PORT_1.MP4 | 7510 | 5.0067 | Post |
| E5_05/2024 | NearField | mG | 3 | G3_PORT_1.MP4 | 2977 | 1.9847 | Post |

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|---|---|---|---|---|---|---|---|
| E5_05/2024 | NearField | mG | 3 | G3_PORT_2.MP4 | 3997 | 20.362 | Post |
| E5_05/2024 | NearField | mG | 3 | G3_PORT_1.MP4 | 1644 | 1.096 | Post |
| E5_05/2024 | NearField | mG | 3 | G3_PORT_1.MP4 | 9745 | 6.4967 | Post |
| E5_05/2024 | NearField | mG | 3 | G3_PORT_1.MP4 | 3793 | 2.5287 | Post |
| E5_05/2024 | NearField | mG | 3 | G3_PORT_1.MP4 | 8167 | 5.4447 | Post |
| E5_05/2024 | NearField | mG | 3 | G3_PORT_1.MP4 | 10827 | 7.218 | Post |
| E5_05/2024 | NearField | mG | 3 | G3_PORT_1.MP4 | 10585 | 7.0567 | Post |
| E5_05/2024 | NearField | mG | 3 | G3_PORT_1.MP4 | 4351 | 2.9007 | Post |
| E5_05/2024 | NearField | mG | 3 | G3_PORT_1.MP4 | 2260 | 1.5067 | Post |
| E5_05/2024 | NearField | mG | 3 | G3_PORT_2.MP4 | 6085 | 21.754 | Post |
| E5_05/2024 | NearField | mG | 1 | G3_PORT_1.MP4 | 3793 | 2.5287 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 9997 | 6.6647 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 10022 | 6.6813 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 14722 | 9.8147 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 3932 | 2.6213 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 3514 | 2.3427 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 4689 | 3.126 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 5910 | 3.94 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 9886 | 6.5907 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_2.MP4 | 865 | 18.274 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_2.MP4 | 4267 | 20.542 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 20414 | 13.6093 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 3715 | 2.4767 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 2925 | 1.95 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 8230 | 5.4867 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 13721 | 9.1473 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 5311 | 3.5407 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 10646 | 7.0973 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 4228 | 2.8187 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 3573 | 2.382 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 3789 | 2.526 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 5244 | 3.496 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 4202 | 2.8013 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 7959 | 5.306 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_2.MP4 | 967 | 18.342 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 6977 | 4.6513 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 9886 | 6.5907 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 20851 | 13.9007 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_2.MP4 | 4275 | 20.5473 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 2963 | 1.9753 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 8264 | 5.5093 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_2.MP4 | 5460 | 21.3373 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 10633 | 7.0887 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 4185 | 2.79 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 8429 | 5.6193 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_2.MP4 | 5962 | 21.672 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_2.MP4 | 6173 | 21.8127 | Post |

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|---|---|---|---|---|---|---|---|
| E5_05/2024 | Reference | mH | 1 | H1_PORT_1.MP4 | 2998 | 1.9987 | Post |
| E5_05/2024 | Reference | mH | 1 | H1_PORT_2.MP4 | 2656 | 19.468 | Post |
| E5_05/2024 | Reference | mH | 2 | H2_PORT_1.MP4 | 22027 | 14.6847 | Post |
| E5_05/2024 | Reference | mH | 2 | H2_PORT_1.MP4 | 16188 | 10.792 | Post |
| E5_05/2024 | Reference | mH | 2 | H2_PORT_1.MP4 | 17105 | 11.4033 | Post |
| E5_05/2024 | Reference | mH | 2 | H2_PORT_2.MP4 | 14869 | 27.61 | Post |
| E5_05/2024 | Reference | mH | 2 | H2_PORT_1.MP4 | 6115 | 4.0767 | Post |
| E5_05/2024 | Reference | mH | 2 | H2_PORT_1.MP4 | 8415 | 5.61 | Post |
| E5_05/2024 | Reference | mH | 2 | H2_PORT_1.MP4 | 5100 | 3.4 | Post |
| E5_05/2024 | Reference | mH | 2 | H2_PORT_1.MP4 | 3691 | 2.4607 | Post |
| E5_05/2024 | Reference | mH | 2 | H2_PORT_1.MP4 | 3346 | 2.2307 | Post |
| E5_05/2024 | Reference | mH | 2 | H2_PORT_1.MP4 | 5587 | 3.7247 | Post |
| E5_05/2024 | Reference | mH | 2 | H2_PORT_1.MP4 | 22210 | 14.8067 | Post |
| E5_05/2024 | Reference | mH | 2 | H2_PORT_1.MP4 | 6797 | 4.5313 | Post |
| E5_05/2024 | Reference | mH | 2 | H2_PORT_1.MP4 | 12565 | 8.3767 | Post |
| E5_05/2024 | Reference | mH | 2 | H2_PORT_1.MP4 | 19167 | 12.778 | Post |
| E5_05/2024 | Reference | mH | 2 | H2_PORT_2.MP4 | 10826 | 24.9147 | Post |
| E5_05/2024 | Reference | mH | 2 | H2_PORT_1.MP4 | 10293 | 6.862 | Post |
| E5_05/2024 | Reference | mH | 2 | H2_PORT_1.MP4 | 14503 | 9.6687 | Post |
| E5_05/2024 | Reference | mH | 2 | H2_PORT_2.MP4 | 2557 | 19.402 | Post |
| E5_05/2024 | Reference | mH | 2 | H2_PORT_2.MP4 | 13921 | 26.978 | Post |
| E5_05/2024 | Reference | mH | 2 | H2_PORT_2.MP4 | 14161 | 27.138 | Post |
| E5_05/2024 | Reference | mH | 2 | H2_PORT_2.MP4 | 1872 | 18.9453 | Post |
| E5_05/2024 | Reference | mH | 3 | H3_PORT_1.MP4 | 25463 | 16.9753 | Post |
| E5_05/2024 | Reference | mH | 3 | H3_PORT_2.MP4 | 19996 | 31.028 | Post |
| E5_05/2024 | Reference | mH | 3 | H3_PORT_1.MP4 | 18493 | 12.3287 | Post |
| E5_05/2024 | Reference | mH | 3 | H3_PORT_1.MP4 | 9478 | 6.3187 | Post |
| E5_05/2024 | Reference | mH | 3 | H3_PORT_1.MP4 | 9878 | 6.5853 | Post |
| E5_05/2024 | Reference | mH | 3 | H3_PORT_2.MP4 | 9754 | 24.2 | Post |
| E5_05/2024 | Reference | mH | 3 | H3_PORT_1.MP4 | 22189 | 14.7927 | Post |
| E5_05/2024 | Reference | mH | 3 | H3_PORT_1.MP4 | 2397 | 1.598 | Post |
| E5_05/2024 | Reference | mH | 3 | H3_PORT_1.MP4 | 2103 | 1.402 | Post |
| E5_05/2024 | Reference | mH | 3 | H3_PORT_1.MP4 | 15152 | 10.1013 | Post |
| E5_05/2024 | Reference | mH | 3 | H3_PORT_1.MP4 | 5553 | 3.702 | Post |
| E5_05/2024 | Reference | mH | 3 | H3_PORT_1.MP4 | 6506 | 4.3373 | Post |
| E5_05/2024 | Reference | mH | 3 | H3_PORT_1.MP4 | 2951 | 1.9673 | Post |
| E5_05/2024 | Reference | mH | 3 | H3_PORT_1.MP4 | 5886 | 3.924 | Post |
| E5_05/2024 | Reference | mH | 3 | H3_PORT_1.MP4 | 4549 | 3.0327 | Post |
| E5_05/2024 | Reference | mH | 3 | H3_PORT_1.MP4 | 14499 | 9.666 | Post |
| E5_05/2024 | Reference | mH | 3 | H3_PORT_2.MP4 | 856 | 18.268 | Post |
| E5_05/2024 | Reference | mH | 3 | H3_PORT_1.MP4 | 3541 | 2.3607 | Post |
| E5_05/2024 | Reference | mH | 3 | H3_PORT_2.MP4 | 3406 | 19.968 | Post |
| E5_05/2024 | Reference | mH | 3 | H3_PORT_2.MP4 | 4928 | 20.9827 | Post |
| E5_05/2024 | Reference | mH | 3 | H3_PORT_1.MP4 | 21849 | 14.566 | Post |
| E5_05/2024 | Reference | mH | 3 | H3_PORT_1.MP4 | 3759 | 2.506 | Post |
| E5_05/2024 | Reference | mH | 3 | H3_PORT_2.MP4 | 13346 | 26.5947 | Post |
| E5_05/2024 | Reference | mH | 3 | H3_PORT_2.MP4 | 20224 | 31.18 | Post |

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|---|---|---|---|---|---|---|---|
| E5_05/2024 | Reference | mH | 3 | H3_PORT_1.MP4 | 2175 | 1.45 | Post |
| E5_05/2024 | Reference | mH | 3 | H3_PORT_2.MP4 | 3939 | 20.3233 | Post |
| E5_05/2024 | Reference | mH | 3 | H3_PORT_1.MP4 | 23384 | 15.5893 | Post |
| E5_05/2024 | Reference | mI | 1 | mI_Port_1.MP4 | 1381 | 0.9207 | Post |
| E5_05/2024 | Reference | mI | 1 | mI_Port_1.MP4 | 4223 | 2.8153 | Post |
| E5_05/2024 | Reference | mI | 1 | mI_Port_1.MP4 | 2695 | 1.7967 | Post |
| E5_05/2024 | Reference | mI | 1 | mI_Port_1.MP4 | 8856 | 5.904 | Post |
| E5_05/2024 | Reference | mI | 1 | mI_Port_1.MP4 | 10302 | 6.868 | Post |
| E5_05/2024 | Reference | mI | 1 | mI_Port_1.MP4 | 17760 | 11.84 | Post |
| E5_05/2024 | Reference | mI | 1 | mI_Port_1.MP4 | 1942 | 1.2947 | Post |
| E5_05/2024 | Reference | mI | 1 | mI_Port_1.MP4 | 3157 | 2.1047 | Post |
| E5_05/2024 | Reference | mI | 1 | mI_Port_1.MP4 | 2209 | 1.4727 | Post |
| E5_05/2024 | Reference | mI | 1 | mI_Port_1.MP4 | 2963 | 1.9753 | Post |
| E5_05/2024 | Reference | mI | 1 | mI_Port_1.MP4 | 25494 | 16.996 | Post |
| E5_05/2024 | Reference | mI | 1 | mI_Port_1.MP4 | 23184 | 15.456 | Post |
| E5_05/2024 | Reference | mI | 1 | mI_Port_1.MP4 | 2092 | 1.3947 | Post |
| E5_05/2024 | Reference | mI | 1 | mI_Port_2.MP4 | 1123 | 18.446 | Post |
| E5_05/2024 | Reference | mI | 1 | mI_Port_1.MP4 | 1762 | 1.1747 | Post |
| E5_05/2024 | Reference | mI | 1 | mI_Port_1.MP4 | 10605 | 7.07 | Post |
| E5_05/2024 | Reference | mI | 1 | mI_Port_1.MP4 | 4035 | 2.69 | Post |
| E5_05/2024 | Reference | mI | 1 | mI_Port_1.MP4 | 6529 | 4.3527 | Post |
| E5_05/2024 | Reference | mI | 1 | mI_Port_1.MP4 | 2728 | 1.8187 | Post |
| E5_05/2024 | Reference | mI | 1 | mI_Port_2.MP4 | 10199 | 24.4967 | Post |
| E5_05/2024 | Reference | mI | 1 | mI_Port_1.MP4 | 4476 | 2.984 | Post |
| E5_05/2024 | Reference | mI | 1 | mI_Port_1.MP4 | 2383 | 1.5887 | Post |
| E5_05/2024 | Reference | mI | 2 | I2_PORT_2.MP4 | 14440 | 27.324 | Post |
| E5_05/2024 | Reference | mI | 2 | I2_PORT_1.MP4 | 3482 | 2.3213 | Post |
| E5_05/2024 | Reference | mI | 2 | I2_PORT_2.MP4 | 16661 | 28.8047 | Post |
| E5_05/2024 | Reference | mI | 2 | I2_PORT_1.MP4 | 3523 | 2.3487 | Post |
| E5_05/2024 | Reference | mI | 2 | I2_PORT_1.MP4 | 3893 | 2.5953 | Post |
| E5_05/2024 | Reference | mI | 2 | I2_PORT_1.MP4 | 4327 | 2.8847 | Post |
| E5_05/2024 | Reference | mI | 2 | I2_PORT_1.MP4 | 16589 | 11.0593 | Post |
| E5_05/2024 | Reference | mI | 2 | I2_PORT_1.MP4 | 14344 | 9.5627 | Post |
| E5_05/2024 | Reference | mI | 2 | I2_PORT_1.MP4 | 7417 | 4.9447 | Post |
| E5_05/2024 | Reference | mI | 2 | I2_PORT_1.MP4 | 19294 | 12.8627 | Post |
| E5_05/2024 | Reference | mI | 2 | I2_PORT_1.MP4 | 11443 | 7.6287 | Post |
| E5_05/2024 | Reference | mI | 2 | I2_PORT_1.MP4 | 12333 | 8.222 | Post |
| E5_05/2024 | Reference | mI | 2 | I2_PORT_2.MP4 | 15519 | 28.0433 | Post |
| E5_05/2024 | Reference | mI | 2 | I2_PORT_1.MP4 | 6041 | 4.0273 | Post |
| E5_05/2024 | Reference | mI | 2 | I2_PORT_2.MP4 | 17847 | 29.5953 | Post |
| E5_05/2024 | Reference | mI | 2 | I2_PORT_1.MP4 | 17274 | 11.516 | Post |
| E5_05/2024 | Reference | mI | 2 | I2_PORT_1.MP4 | 7276 | 4.8507 | Post |
| E5_05/2024 | Reference | mI | 2 | I2_PORT_1.MP4 | 12100 | 8.0667 | Post |
| E5_05/2024 | Reference | mI | 2 | I2_PORT_1.MP4 | 11962 | 7.9747 | Post |
| E5_05/2024 | Reference | mI | 2 | I2_PORT_1.MP4 | 3957 | 2.638 | Post |
| E5_05/2024 | Reference | mI | 3 | I3_PORT_1.MP4 | 26264 | 17.5093 | Post |
| E5_05/2024 | Reference | mI | 3 | I3_PORT_1.MP4 | 16138 | 10.7587 | Post |

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|---|---|---|---|---|---|---|---|
| E5_05/2024 | Reference | ml | 3 | I3_PORT_1.MP4 | 5549 | 3.6993 | Post |
| E5_05/2024 | Reference | ml | 3 | I3_PORT_1.MP4 | 4308 | 2.872 | Post |
| E5_05/2024 | Reference | ml | 3 | I3_PORT_1.MP4 | 16387 | 10.9247 | Post |
| E5_05/2024 | Reference | ml | 3 | I3_PORT_1.MP4 | 11457 | 7.638 | Post |
| E5_05/2024 | Reference | ml | 3 | I3_PORT_1.MP4 | 4284 | 2.856 | Post |
| E5_05/2024 | Reference | ml | 3 | I3_PORT_1.MP4 | 12579 | 8.386 | Post |
| E5_05/2024 | Reference | ml | 3 | I3_PORT_1.MP4 | 6054 | 4.036 | Post |
| E5_05/2024 | Reference | ml | 3 | I3_PORT_2.MP4 | 15160 | 27.804 | Post |
| E5_05/2024 | Reference | ml | 3 | I3_PORT_1.MP4 | 4654 | 3.1027 | Post |
| E5_05/2024 | Reference | ml | 3 | I3_PORT_1.MP4 | 9112 | 6.0747 | Post |
| E5_05/2024 | Reference | ml | 3 | I3_PORT_1.MP4 | 25356 | 16.904 | Post |
| E5_05/2024 | Reference | ml | 3 | I3_PORT_1.MP4 | 4619 | 3.0793 | Post |
| E5_05/2024 | Reference | ml | 3 | I3_PORT_1.MP4 | 3686 | 2.4573 | Post |
| E5_05/2024 | Reference | ml | 3 | I3_PORT_1.MP4 | 5756 | 3.8373 | Post |
| E5_05/2024 | Reference | ml | 3 | I3_PORT_1.MP4 | 4871 | 3.2473 | Post |

| Family | Genus | Species | Code | MaxN |
|---|---|---|---|---|
| Acanthuridae | Acanthurus | dussumieri | 37 437008 | 1 |
| Acanthuridae | Naso | annulatus | 37 437024 | 4 |
| Acanthuridae | Naso | tonganus | 37 437047 | 7 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 1 |
| Blennidae | Ecsenius | australianus | 37 408021 | 20 |
| Blennidae | Istiblennius | meleagris | 37 408046 | 1 |
| Chaetodontidae | Chaetodon | rainfordi | 37 365053 | 2 |
| Haemulidae | Diagramma | pictum | 37 350003 | 2 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 3 |
| Labridae | Labroides | dimidiatus | 37 384028 | 2 |
| Labridae | Pseudojuloides | cerasinus | 37 384939 | 1 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 2 |
| Labridae | Thalassoma | lunare | 37 384167 | 1 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 17 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 1 |
| Pomacanthidae | Chaetodontoplus | duboulayi | 37 365009 | 1 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 1 |
| Pomacentridae | Chromis | nitida | 37 372049 | 29 |
| Pomacentridae | Dascyllus | reticulatus | 37 372074 | 11 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 9 |
| Pomacentridae | Pomacentrus | coelestis | 37 372111 | 47 |
| Pseudochromidae | Pseudochromis | fuscus | 37 313006 | 1 |
| Serranidae | Plectropomus | leopardus | 37 311078 | 1 |
| Siganidae | Siganus | fuscescens | 37 438001 | 4 |
| Siganidae | Siganus | punctatus | 37 438003 | 3 |
| Tetraodontidae | Canthigaster | valentini | 37 467043 | 1 |
| Acanthuridae | Acanthurus | nigricauda | 37 437013 | 4 |
| Acanthuridae | Naso | annulatus | 37 437024 | 2 |
| Acanthuridae | Naso | tonganus | 37 437047 | 6 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 1 |
| Blennidae | Omobranchus | germaini | 37 408061 | 1 |
| Blennidae | Petroscirtes | fallax | 37 408072 | 1 |
| Chaetodontidae | Chaetodon | rainfordi | 37 365053 | 1 |
| Chaetodontidae | Chelmon | rostratus | 37 365017 | 1 |
| Hemiscylliidae | Chiloscyllium | punctatum | 37 013008 | 1 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 1 |
| Labridae | Coris | batuensis | 37 384098 | 1 |
| Labridae | Coris | pictoides | 37 384096 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 2 |
| Labridae | Labroides | dimidiatus | 37 384028 | 3 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 6 |
| Labridae | Stethojulis | bandanensis | 37 384154 | 1 |

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|---|---|---|---|---|
| Labridae | Stethojulis | strigiventer | 37 384156 | 1 |
| Labridae | Thalassoma | lunare | 37 384167 | 1 |
| Nemipteridae | Scolopsis | monogramma | 37 347006 | 1 |
| Ostraciidae | Ostracion | meleagrus | 37 466019 | 1 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 1 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 2 |
| Pomacentridae | Chromis | nitida | 37 372049 | 66 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 7 |
| Pseudochromidae | Pseudochromis | fuscus | 37 313006 | 1 |
| Apogonidae | Apogon | spp | | 21 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 1 |
| Caesionidae | Pterocaesio | digramma | 37 346050 | 42 |
| Chaetodontidae | Chaetodon | rainfordi | 37 365053 | 1 |
| Gobidae | Ptereleotris | microlepis | 37 435019 | 5 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 1 |
| Labridae | Coris | pictoides | 37 384096 | 2 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 2 |
| Labridae | Labroides | dimidiatus | 37 384028 | 3 |
| Labridae | Leptojulis | cyanopleura | 37 384027 | 5 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 4 |
| Labridae | Scarus | longipinnis | 37 386019 | 1 |
| Labridae | Thalassoma | lunare | 37 384167 | 1 |
| Lethrinidae | Lethrinus | lentjan | 37 351007 | 1 |
| Lethrinidae | Lethrinus | miniatus | 37 351009 | 3 |
| Nemipteridae | Pentapodus | nagasakiensis | 37 347012 | 2 |
| Nemipteridae | Pentapodus | paradiseus | 37 347028 | 2 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 3 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 4 |
| Pomacentridae | Chromis | nitida | 37 372049 | 6 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 9 |
| Pseudochromidae | Pseudochromis | fuscus | 37 313006 | 1 |
| Acanthuridae | Acanthurus | auranticavus | 37 437005 | 1 |
| Acanthuridae | Acanthurus | xanthopterus | 37 437020 | 2 |
| Acanthuridae | Naso | brevirostris | 37 437026 | 12 |
| Acanthuridae | Naso | hexacanthus | 37 437028 | 1 |
| Acanthuridae | Naso | tonganus | 37 437047 | 1 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 1 |
| Carangidae | Caranx | sexfasciatus | 37 337039 | 1 |
| Carangidae | Gnathanodon | speciosus | 37 337012 | 1 |
| Carcharhinidae | Carcharhinus | leucas | 37018021 | 1 |
| Chaetodontidae | Chaetodon | lineolatus | 37 365041 | 1 |
| Chaetodontidae | Chaetodon | rainfordi | 37 365053 | 2 |
| Chaetodontidae | Coradion | altivelis | 37 365018 | 1 |
| Chaetodontidae | Heniochus | acuminatus | 37 365011 | 2 |
| Haemulidae | Diagramma | pictum | 37 350003 | 1 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 1 |

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|---|---|---|---|---|
| Labridae | Choerodon | venustus | 37 384042 | 2 |
| Labridae | Scarus | chameleon | 37 386012 | 1 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 23 |
| Lethrinidae | Lethrinus | miniatus | 37 351009 | 3 |
| Lutjanidae | Lutjanus | adetii | 37 346033 | 73 |
| Lutjanidae | Lutjanus | russelli | 37 346065 | 1 |
| Lutjanidae | Lutjanus | sebae | 37 346004 | 4 |
| Pomacanthidae | Chaetodontoplus | duboulayi | 37 365009 | 1 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 1 |
| Pomacanthidae | Pomacanthus | semicirculatus | 37 365080 | 1 |
| Pomacentridae | Chromis | nitida | 37 372049 | 1 |
| Serranidae | Diploprion | bifasciatum | 37 312002 | 1 |
| Serranidae | Plectropomus | leopardus | 37 311078 | 2 |
| Siganidae | Siganus | fuscescens | 37 438001 | 2 |
| Acanthuridae | Acanthurus | dussumieri | 37 437008 | 8 |
| Acanthuridae | Naso | brevirostris | 37 437026 | 11 |
| Acanthuridae | Naso | hexacanthus | 37 437028 | 1 |
| Acanthuridae | Naso | tonganus | 37 437047 | 3 |
| Acanthuridae | Naso | unicornis | 37 437031 | 3 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 1 |
| Blennidae | | | | 1 |
| Chaetodontidae | Chaetodon | rainfordi | 37 365053 | 2 |
| Chaetodontidae | Coradion | altivelis | 37 365018 | 1 |
| Gobidae | Ptereleotris | microlepis | 37 435019 | 102 |
| Haemulidae | Diagramma | pictum | 37 350003 | 1 |
| Labridae | Chlorurus | japanensis | 37 386025 | 3 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 1 |
| Labridae | Coris | batuensis | 37 384098 | 1 |
| Labridae | Coris | pictoides | 37 384096 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 4 |
| Labridae | Labroides | dimidiatus | 37 384028 | 3 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 5 |
| Nemipteridae | Pentapodus | paradiseus | 37 347028 | 1 |
| Ostraciidae | Ostracion | meleagrus | 37 466019 | 1 |
| Pomacanthidae | Chaetodontoplus | duboulayi | 37 365009 | 1 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 2 |
| Pomacanthidae | Pomacanthus | semicirculatus | 37 365080 | 1 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 28 |
| Pomacentridae | Pomacentrus | coelestis | 37 372111 | 8 |
| Pseudochromidae | Pseudochromis | fuscus | 37 313006 | 1 |
| Serranidae | Cephalopholis | boenak | 37 311008 | 1 |
| Serranidae | Plectropomus | leopardus | 37 311078 | 6 |
| Acanthuridae | Acanthurus | dussumieri | 37 437008 | 2 |
| Acanthuridae | Acanthurus | nigricauda | 37 437013 | 1 |
| Acanthuridae | Naso | annulatus | 37 437024 | 1 |
| Acanthuridae | Naso | brevirostris | 37 437026 | 6 |

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|---|---|---|---|---|
| Acanthuridae | Naso | tonganus | 37 437047 | 1 |
| Acanthuridae | Naso | unicornis | 37 437031 | 2 |
| Apogonidae | Apogon | spp | | 6 |
| Apogonidae | Cheilodipterus | spp | | 1 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 1 |
| Blennidae | Ecsenius | madibularis | 37 408027 | 1 |
| Carangidae | Carangoides | fulvoguttatus | 37 337037 | 3 |
| Chaetodontidae | Chaetodon | lineolatus | 37 365041 | 1 |
| Chaetodontidae | Chaetodon | rainfordi | 37 365053 | 3 |
| Haemulidae | Diagramma | pictum | 37 350003 | 1 |
| Labridae | Anampses | neoguinaicus | 37 384050 | 1 |
| Labridae | Chlorurus | microrhinos | 37 386020 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 1 |
| Labridae | Coris | aygula | 37 384090 | 1 |
| Labridae | Coris | batuensis | 37 384098 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 1 |
| Labridae | Labroides | dimidiatus | 37 384028 | 2 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 1 |
| Labridae | Scarus | chameleon | 37 386012 | 1 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 16 |
| Lutjanidae | Lutjanus | adetii | 37 346033 | 2 |
| Lutjanidae | Lutjanus | carponotatus | 37 346011 | 1 |
| Monacanthidae | Aluterus | scriptus | 37 465045 | 1 |
| Nemipteridae | Scolopsis | monogramma | 37 347006 | 1 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 3 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 1 |
| Pomacentridae | Chromis | nitida | 37 372049 | 49 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 23 |
| Pomacentridae | Pomacentrus | coelestis | 37 372111 | 24 |
| Serranidae | Cromileptes | altivelis | 37 311044 | 1 |
| Siganidae | Siganus | fuscescens | 37 438001 | 34 |
| Siganidae | Siganus | punctatus | 37 438003 | 2 |
| Apogonidae | Apogon | spp | | 10 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 1 |
| Blennidae | Petroscirtes | fallax | 37 408072 | 2 |
| Carangidae | Carangoides | fulvoguttatus | 37 337037 | 1 |
| Gobidae | Ptereleotris | microlepis | 37 435019 | 13 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 2 |
| Labridae | Coris | pictoides | 37 384096 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 3 |
| Labridae | Labroides | dimidiatus | 37 384028 | 2 |
| Labridae | Leptojulis | cyanopleura | 37 384027 | 2 |
| Labridae | Macropharyngodon | choati | 37 384134 | 1 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 5 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 3 |
| Nemipteridae | Pentapodus | Aureofasciatus | 37 347029 | 1 |

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|---|---|---|---|---|
| Nemipteridae | Pentapodus | nagasakiensis | 37 347012 | 1 |
| Nemipteridae | Pentapodus | paradiseus | 37 347028 | 2 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 1 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 1 |
| Pomacentridae | Chromis | nitida | 37 372049 | 41 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 33 |
| Pseudochromidae | Pseudochromis | fuscus | 37 313006 | 2 |
| Scombridae | Scomberomorus | commerson | 37 441007 | 1 |
| Serranidae | Epinephelus | quoyanus | 37 311040 | 1 |
| Blennidae | Plagiotremus | laudandus | 37 408075 | 1 |
| Echeneidae | Echeneis | naucrates | 37 336001 | 1 |
| Gobidae | Ptereleotris | microlepis | 37 435019 | 37 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 2 |
| Labridae | Choerodon | venustus | 37 384042 | 1 |
| Labridae | Coris | pictoides | 37 384096 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 3 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 3 |
| Labridae | Scarus | dimidiatus | 37 386013 | 1 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 1 |
| Lethrinidae | Lethrinus | miniatus | 37 351009 | 1 |
| Mullidae | Parupeneus | barberinus | 37 355022 | 1 |
| Nemipteridae | Pentapodus | nagasakiensis | 37 347012 | 2 |
| Nemipteridae | Pentapodus | paradiseus | 37 347028 | 5 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 3 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 2 |
| Pomacentridae | Chromis | nitida | 37 372049 | 13 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 8 |
| Pomacentridae | Pomacentrus | coelestis | 37 372111 | 1 |
| Blennidae | Meiacanthus | luteus | 37 408054 | 1 |
| Blennidae | Petroscirtes | fallax | 37 408072 | 1 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 1 |
| Labridae | Coris | pictoides | 37 384096 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 1 |
| Labridae | Labroides | dimidiatus | 37 384028 | 2 |
| Labridae | Pseudojuloides | cerasinus | 37 384939 | 1 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 5 |
| Labridae | Stethojulis | strigiventer | 37 384156 | 1 |
| Mullidae | Parupeneus | barberinoides | 37 355021 | 1 |
| Nemipteridae | Pentapodus | nagasakiensis | 37 347012 | 3 |
| Nemipteridae | Pentapodus | paradiseus | 37 347028 | 1 |
| Nemipteridae | Scolopsis | monogramma | 37 347006 | 2 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 2 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 2 |
| Pomacentridae | Chromis | nitida | 37 372049 | 31 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 11 |
| Pomacentridae | Pomacentrus | coelestis | 37 372111 | 7 |

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|---|---|---|---|---|
| Pseudochromidae | Pseudochromis | fuscus | 37 313006 | 2 |
| Scombridae | Scomberomorus | commerson | 37 441007 | 1 |
| Acanthuridae | Acanthurus | blochii | 37 437007 | 1 |
| Acanthuridae | Naso | unicornis | 37 437031 | 1 |
| Apogonidae | Apogon | spp | | 135 |
| Apogonidae | Cheilodipterus | spp | | 1 |
| Balistidae | Rhinecanthus | rectangulus | 37 465073 | 2 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 1 |
| Blennidae | Ecsenius | spp | | 1 |
| Chaetodontidae | Chaetodon | kleinii | 37 365040 | 1 |
| Chaetodontidae | Coradion | altivelis | 37 365018 | 1 |
| Gobidae | Ptereleotris | microlepis | 37 435019 | 35 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 2 |
| Labridae | Choerodon | venustus | 37 384042 | 1 |
| Labridae | Coris | pictoides | 37 384096 | 2 |
| Labridae | Labroides | dimidiatus | 37 384028 | 3 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 8 |
| Labridae | Stethojulis | strigiventer | 37 384156 | 2 |
| Labridae | Thalassoma | lunare | 37 384167 | 3 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 3 |
| Nemipteridae | Scolopsis | monogramma | 37 347006 | 1 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 2 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 2 |
| Pomacanthidae | Pomacanthus | semicirculatus | 37 365080 | 1 |
| Pomacentridae | Chromis | nitida | 37 372049 | 56 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 30 |
| Pomacentridae | Pomacentrus | coelestis | 37 372111 | 1 |
| Pseudochromidae | Pseudochromis | fuscus | 37 313006 | 2 |
| Serranidae | Epinephelus | tukula | 37 311068 | 2 |
| Siganidae | Siganus | fuscescens | 37 438001 | 2 |
| Siganidae | Siganus | punctatus | 37 438003 | 2 |
| Apogonidae | Apogon | spp | | 14 |
| Apogonidae | Cheilodipterus | spp | | 1 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 1 |
| Blennidae | Aspidontus | dussumieri | 37 408007 | 1 |
| Caesionidae | Pterocaesio | digramma | 37 346050 | 1 |
| Gobidae | Ptereleotris | microlepis | 37 435019 | 56 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 2 |
| Labridae | Choerodon | venustus | 37 384042 | 3 |
| Labridae | Coris | pictoides | 37 384096 | 2 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 5 |
| Labridae | Labroides | dimidiatus | 37 384028 | 1 |
| Labridae | Leptojulis | cyanopleura | 37 384027 | 9 |
| Labridae | Pseudojuloides | cerasinus | 37 384939 | 1 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 3 |
| Labridae | Scarus | chameleon | 37 386012 | 1 |
| Labridae | Thalassoma | lunare | 37 384167 | 3 |

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|---|---|---|---|---|
| Lethrinidae | Lethrinus | atkinsoni | 37 351013 | 1 |
| Lethrinidae | Lethrinus | miniatus | 37 351009 | 1 |
| Lutjanidae | Symphorus | nametophorus | 37 346017 | 1 |
| Mullidae | Parupeneus | barberinoides | 37 355021 | 1 |
| Nemipteridae | Pentapodus | nagasakiensis | 37 347012 | 5 |
| Nemipteridae | Pentapodus | paradiseus | 37 347028 | 2 |
| Nemipteridae | Pentapodus | porosus | 37 347007 | 1 |
| Nemipteridae | Scolopsis | monogramma | 37 347006 | 1 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 3 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 2 |
| Pomacentridae | Chromis | nitida | 37 372049 | 10 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 24 |
| Pomacentridae | Pomacentrus | coelestis | 37 372111 | 5 |
| Siganidae | Siganus | fuscescens | 37 438001 | 1 |
| Acanthuridae | Acanthurus | blochii | 37 437007 | 9 |
| Acanthuridae | Naso | annulatus | 37 437024 | 1 |
| Acanthuridae | Naso | tonganus | 37 437047 | 2 |
| Acanthuridae | Naso | unicornis | 37 437031 | 14 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 1 |
| Blennidae | Ecsenius | bicolor | 37 408022 | 1 |
| Caesionidae | Pterocaesio | digramma | 37 346050 | 22 |
| Carcharhinidae | Triaenodon | obesus | 37 018038 | 1 |
| Chaetodontidae | Chaetodon | lineolatus | 37 365041 | 1 |
| Gobidae | Ptereleotris | microlepis | 37 435019 | 52 |
| Haemulidae | Plectorhinchus | gibbosus | 37 350012 | 8 |
| Kyphosidae | Kyphosus | vaigiensis | 37 361014 | 1 |
| Labridae | Chlorurus | microrhinos | 37 386020 | 1 |
| Labridae | Choerodon | graphicus | 37 384075 | 1 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 1 |
| Labridae | Coris | pictoides | 37 384096 | 3 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 2 |
| Labridae | Hipposcarus | longiceps | 37 386008 | 1 |
| Labridae | Labroides | dimidiatus | 37 384028 | 2 |
| Labridae | Leptojulis | cyanopleura | 37 384027 | 4 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 2 |
| Lethrinidae | Lethrinus | nebulosus | 37 351008 | 1 |
| Lutjanidae | Aprion | virescens | 37 346027 | 1 |
| Lutjanidae | Lutjanus | carponotatus | 37 346011 | 1 |
| Lutjanidae | Symphorus | nametophorus | 37 346017 | 2 |
| Nemipteridae | Pentapodus | paradiseus | 37 347028 | 2 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 2 |
| Pomacanthidae | Pomacanthus | semicirculatus | 37 365080 | 1 |
| Pomacentridae | Chromis | nitida | 37 372049 | 2 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 4 |
| Pomacentridae | Pomacentrus | coelestis | 37 372111 | 12 |
| Serranidae | Plectropomus | leopardus | 37 311078 | 4 |

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|---|---|---|---|---|
| Siganidae | Siganus | fuscescens | 37 438001 | 12 |
| Blennidae | Petroscirtes | fallax | 37 408072 | 1 |
| Carangidae | Carangoides | fulvoguttatus | 37 337037 | 5 |
| Gobidae | Ptereleotris | microlepis | 37 435019 | 17 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 2 |
| Labridae | Coris | pictoides | 37 384096 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 7 |
| Labridae | Labroides | dimidiatus | 37 384028 | 2 |
| Labridae | Labropsis | australis | 37 384132 | 6 |
| Labridae | Leptojulis | cyanopleura | 37 384027 | 14 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 5 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 3 |
| Lutjanidae | Lutjanus | sebae | 37 346004 | 1 |
| Nemipteridae | Pentapodus | nagasakiensis | 37 347012 | 5 |
| Nemipteridae | Pentapodus | paradiseus | 37 347028 | 6 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 2 |
| Pomacentridae | Chromis | nitida | 37 372049 | 2 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 9 |
| Pseudochromidae | Pseudochromis | fuscus | 37 313006 | 1 |
| Apogonidae | Apogon | spp | | 49 |
| Balistidae | Rhinecanthus | rectangulus | 37 465073 | 1 |
| Blennidae | Petroscirtes | fallax | 37 408072 | 1 |
| Carangidae | Selaroides | leptolepsis | 37 337015 | 10 |
| Carcharhinidae | Carcharhinus | leucas | 37018021 | 1 |
| Carcharhinidae | Galeocerdo | cuvier | 37 018022 | 1 |
| Gobidae | Ptereleotris | microlepis | 37 435019 | 35 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 3 |
| Labridae | Coris | pictoides | 37 384096 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 6 |
| Labridae | Labroides | dimidiatus | 37 384028 | 1 |
| Labridae | Leptojulis | cyanopleura | 37 384027 | 2 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 9 |
| Labridae | Thalassoma | lunare | 37 384167 | 1 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 1 |
| Lethrinidae | Lethrinus | miniatus | 37 351009 | 1 |
| Lutjanidae | Symphorus | nametophorus | 37 346017 | 1 |
| Mullidae | Parupeneus | barberinoides | 37 355021 | 1 |
| Nemipteridae | Pentapodus | paradiseus | 37 347028 | 2 |
| Nemipteridae | Scolopsis | monogramma | 37 347006 | 1 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 3 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 2 |
| Pomacentridae | Chromis | nitida | 37 372049 | 46 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 38 |
| Pomacentridae | Pomacentrus | nagasakiensis | 37 372119 | 2 |
| Pseudochromidae | Pseudochromis | fuscus | 37 313006 | 3 |

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| Siganidae | Siganus | fuscescens | 37 438001 | 2 |
| Carangidae | Carangoides | fulvoguttatus | 37 337037 | 4 |
| Carcharhinidae | Galeocerdo | cuvier | 37 018022 | 1 |
| Hemiscylliidae | Chiloscyllium | punctatum | 37 013008 | 1 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 1 |
| Labridae | Coris | pictoides | 37 384096 | 2 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 1 |
| Labridae | Labroides | dimidiatus | 37 384028 | 1 |
| Labridae | Leptojulis | cyanopleura | 37 384027 | 4 |
| Labridae | Pseudojuloides | cerasinus | 37 384939 | 1 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 2 |
| Labridae | Stethojulis | strigiventer | 37 384156 | 1 |
| Labridae | Thalassoma | lunare | 37 384167 | 1 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 3 |
| Lethrinidae | Lethrinus | miniatus | 37 351009 | 4 |
| Mobulidae | Mobula | spp | | 1 |
| Mullidae | Parupeneus | barberinoides | 37 355021 | 1 |
| Nemipteridae | Pentapodus | nagasakiensis | 37 347012 | 3 |
| Nemipteridae | Pentapodus | paradiseus | 37 347028 | 2 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 2 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 3 |
| Pomacentridae | Chromis | nitida | 37 372049 | 6 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 6 |
| Scombridae | Scomberomorus | commerson | 37 441007 | 1 |
| Siganidae | Siganus | fuscescens | 37 438001 | 7 |
| Acanthuridae | Naso | tonganus | 37 437047 | 3 |
| Apogonidae | Apogon | spp | | 77 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 1 |
| Blennidae | Petroscirtes | fallax | 37 408072 | 1 |
| Caesionidae | Pterocaesio | Chrysozona | 37 346926 | 1 |
| Chaetodontidae | Chaetodon | rainfordi | 37 365053 | 1 |
| Gobidae | Ptereleotris | microlepis | 37 435019 | 14 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 1 |
| Labridae | Coris | pictoides | 37 384096 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 3 |
| Labridae | Labroides | dimidiatus | 37 384028 | 3 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 1 |
| Labridae | Thalassoma | lunare | 37 384167 | 2 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 2 |
| Nemipteridae | Pentapodus | Aureofasciatus | 37 347029 | 1 |
| Nemipteridae | Pentapodus | paradiseus | 37 347028 | 2 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 3 |
| Pomacentridae | Chromis | nitida | 37 372049 | 5 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 3 |
| Pseudochromidae | Pseudochromis | fuscus | 37 313006 | 1 |
| Acanthuridae | Acanthurus | blochii | 37 437007 | 1 |

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|---|---|---|---|---|
| Apogonidae | Apogon | spp | | 158 |
| Balistidae | Rhinecanthus | rectangulus | 37 465073 | 1 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 1 |
| Blennidae | Petroscirtes | fallax | 37 408072 | 1 |
| Carangidae | Carangoides | fulvoguttatus | 37 337037 | 7 |
| Carcharhinidae | Carcharhinus | leucas | 37018021 | 1 |
| Chaetodontidae | Chaetodon | rainfordi | 37 365053 | 1 |
| Echeneidae | Echeneis | naucrates | 37 336001 | 2 |
| Ephippidae | Platax | pinnatus | 37 362006 | 1 |
| Gobidae | Ptereleotris | microlepis | 37 435019 | 13 |
| Hemiscylliidae | Chiloscyllium | punctatum | 37 013008 | 2 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 1 |
| Labridae | Coris | pictoides | 37 384096 | 3 |
| Labridae | Halichoeres | spp | | 2 |
| Labridae | Labroides | dimidiatus | 37 384028 | 2 |
| Labridae | Macropharyngodon | choati | 37 384134 | 1 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 8 |
| Labridae | Stethojulis | strigiventer | 37 384156 | 1 |
| Labridae | Thalassoma | lunare | 37 384167 | 1 |
| Lethrinidae | Lethrinus | miniatus | 37 351009 | 1 |
| Mullidae | Parupeneus | barberinoides | 37 355021 | 1 |
| Nemipteridae | Scolopsis | monogramma | 37 347006 | 1 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 4 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 1 |
| Pomacentridae | Chromis | nitida | 37 372049 | 81 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 41 |
| Pomacentridae | Pomacentrus | grammorphynchus | 37 372112 | 1 |
| Pseudochromidae | Pseudochromis | fuscus | 37 313006 | 2 |
| Scombridae | Scomberomorus | commerson | 37 441007 | 1 |
| Acanthuridae | Naso | fageni | 37 437027 | 1 |
| Apogonidae | Apogon | spp | | 57 |
| Balistidae | Rhinecanthus | rectangulus | 37 465073 | 1 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 1 |
| Blennidae | Petroscirtes | fallax | 37 408072 | 2 |
| Carcharhinidae | Carcharhinus | leucas | 37018021 | 1 |
| Echeneidae | Echeneis | naucrates | 37 336001 | 1 |
| Gobidae | Ptereleotris | microlepis | 37 435019 | 17 |
| Hemiscylliidae | Chiloscyllium | punctatum | 37 013008 | 1 |
| Labridae | Choerodon | schoenleinii | 37 384010 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 1 |
| Labridae | Coris | pictoides | 37 384096 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 1 |
| Labridae | Labroides | dimidiatus | 37 384028 | 1 |
| Labridae | Leptojulis | cyanopleura | 37 384027 | 1 |
| Labridae | Macropharyngodon | choati | 37 384134 | 1 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 3 |

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|---|---|---|---|---|
| Labridae | Scarus | chameleon | 37 386012 | 1 |
| Labridae | Stethojulis | strigiventer | 37 384156 | 1 |
| Lethrinidae | Gymnocranius | audleyi | 37 351018 | 2 |
| Lethrinidae | Lethrinus | miniatus | 37 351009 | 1 |
| Nemipteridae | Pentapodus | paradiseus | 37 347028 | 1 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 1 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 3 |
| Pomacentridae | Chromis | nitida | 37 372049 | 52 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 14 |
| Pseudochromidae | Pseudochromis | fuscus | 37 313006 | 3 |
| Siganidae | Siganus | fuscescens | 37 438001 | 5 |
| Acanthuridae | Acanthurus | nigricauda | 37 437013 | 6 |
| Acanthuridae | Naso | annulatus | 37 437024 | 2 |
| Acanthuridae | Naso | fageni | 37 437027 | 2 |
| Acanthuridae | Zebrasoma | spp | | 1 |
| Apogonidae | Cheilodipterus | spp | | 2 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 1 |
| Blennidae | Aspidontus | dussumieri | 37 408007 | 1 |
| Chaetodontidae | Chaetodon | rainfordi | 37 365053 | 4 |
| Hemiscylliidae | Chiloscyllium | punctatum | 37 013008 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 4 |
| Labridae | Coris | pictoides | 37 384096 | 2 |
| Labridae | Diproctacanthus | xanthurus | 37 384102 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 1 |
| Labridae | Labroides | dimidiatus | 37 384028 | 1 |
| Labridae | Macropharyngodon | choati | 37 384134 | 1 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 4 |
| Labridae | Scarus | chameleon | 37 386012 | 2 |
| Labridae | Scarus | spp | | 1 |
| Labridae | Stethojulis | strigiventer | 37 384156 | 1 |
| Labridae | Thalassoma | lunare | 37 384167 | 6 |
| Lethrinidae | Lethrinus | miniatus | 37 351009 | 1 |
| Lutjanidae | Lutjanus | adetii | 37 346033 | 1 |
| Lutjanidae | Symphorus | nametophorus | 37 346017 | 2 |
| Mullidae | Parupeneus | barberinus | 37 355022 | 3 |
| Mullidae | Parupeneus | multifasciatus | 37 355026 | 2 |
| Mullidae | Parupeneus | spilurus | 37 355015 | 1 |
| Muraenidae | Gymnothorax | spp | | 1 |
| Nemipteridae | Pentapodus | paradiseus | 37 347028 | 3 |
| Nemipteridae | Scolopsis | monogramma | 37 347006 | 1 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 3 |
| Pomacanthidae | Centropyge | bicolor | 37 365022 | 1 |
| Pomacanthidae | Centropyge | tibicen | 37365031 | 1 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 2 |
| Pomacentridae | Chromis | nitida | 37 372049 | 32 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 49 |
| Pomacentridae | Pomacentrus | coelestis | 37 372111 | 4 |

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|---|---|---|---|---|
| Pseudochromidae | Pseudochromis | fuscus | 37 313006 | 1 |
| Serranidae | Epinephelus | merra | 37 311063 | 1 |
| Acanthuridae | Acanthurus | nigricauda | 37 437013 | 1 |
| Apogonidae | Apogon | spp | | 43 |
| Balistidae | Rhinecanthus | rectangulus | 37 465073 | 1 |
| Blennidae | Petroscirtes | fallax | 37 408072 | 1 |
| Chaetodontidae | Chaetodon | kleinii | 37 365040 | 2 |
| Labridae | Coris | pictoides | 37 384096 | 2 |
| Labridae | Halichoeres | melanurus | 37 384032 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 1 |
| Labridae | Labroides | dimidiatus | 37 384028 | 1 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 5 |
| Labridae | Scarus | longipinnis | 37 386019 | 1 |
| Labridae | Thalassoma | lunare | 37 384167 | 1 |
| Lethrinidae | Lethrinus | miniatus | 37 351009 | 3 |
| Lutjanidae | Symphorus | nametophorus | 37 346017 | 1 |
| Mullidae | Parupeneus | barberinus | 37 355022 | 1 |
| Nemipteridae | Pentapodus | paradiseus | 37 347028 | 2 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 2 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 2 |
| Pomacentridae | Chromis | nitida | 37 372049 | 38 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 17 |
| Pseudochromidae | Pseudochromis | fuscus | 37 313006 | 3 |
| Acanthuridae | Acanthurus | nigricauda | 37 437013 | 3 |
| Apogonidae | Apogon | spp | | 1 |
| Apogonidae | Cheilodipterus | spp | | 1 |
| Balistidae | Rhinecanthus | rectangulus | 37 465073 | 1 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 1 |
| Chaetodontidae | Chaetodon | rainfordi | 37 365053 | 2 |
| Labridae | Choerodon | venustus | 37 384042 | 1 |
| Labridae | Coris | pictoides | 37 384096 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 1 |
| Labridae | Labroides | dimidiatus | 37 384028 | 1 |
| Labridae | Macropharyngodon | choati | 37 384134 | 1 |
| Labridae | Pseudojuloides | cerasinus | 37 384939 | 1 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 8 |
| Labridae | Scarus | longipinnis | 37 386019 | 1 |
| Labridae | Stethojulis | strigiventer | 37 384156 | 1 |
| Labridae | Thalassoma | lunare | 37 384167 | 4 |
| Lethrinidae | Lethrinus | miniatus | 37 351009 | 5 |
| Lutjanidae | Lutjanus | adetii | 37 346033 | 1 |
| Lutjanidae | Lutjanus | carponotatus | 37 346011 | 1 |
| Mullidae | Parupeneus | barberinus | 37 355022 | 2 |
| Nemipteridae | Pentapodus | paradiseus | 37 347028 | 2 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 3 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 2 |
| Pomacentridae | Chromis | nitida | 37 372049 | 1 |

| | | | | |
|---|---|---|---|---|
| Pomacentridae | Pomacentrus | australis | 37 372107 | 19 |
| Serranidae | Epinephelus | quoyanus | 37 311040 | 1 |
| Siganidae | Siganus | fuscescens | 37 438001 | 3 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 1 |
| Chaetodontidae | Chaetodon | kleinii | 37 365040 | 2 |
| Cirrhitidae | Cirrhitichthys | aprinus | 37 374001 | 1 |
| Hemiscylliidae | Chiloscyllium | punctatum | 37 013008 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 5 |
| Labridae | Coris | pictoides | 37 384096 | 1 |
| Labridae | Halichoeres | nebulosus | 37 384118 | 2 |
| Labridae | Labroides | dimidiatus | 37 384028 | 2 |
| Labridae | Pseudolabrus | guentheri | 37 384150 | 4 |
| Labridae | Stethojulis | strigiventer | 37 384156 | 1 |
| Labridae | Thalassoma | lunare | 37 384167 | 5 |
| Lethrinidae | Lethrinus | miniatus | 37 351009 | 3 |
| Mullidae | Parupeneus | barberinoides | 37 355021 | 2 |
| Mullidae | Parupeneus | multifasciatus | 37 355026 | 1 |
| Nemipteridae | Pentapodus | nagasakiensis | 37 347012 | 3 |
| Nemipteridae | Pentapodus | paradiseus | 37 347028 | 3 |
| Pinguipedidae | Parapercis | xanthozona | 37 390025 | 2 |
| Pomacanthidae | Chaetodontoplus | meredithi | 37 365065 | 4 |
| Pomacentridae | Chromis | nitida | 37 372049 | 3 |
| Pomacentridae | Pomacentrus | australis | 37 372107 | 5 |
| Pomacentridae | Pomacentrus | coelestis | 37 372111 | 2 |
| Siganidae | Siganus | fuscescens | 37 438001 | 34 |
| Acanthuridae | Acanthurus | nigricauda | 37 437013 | 1 |
| Balistidae | Sufflamen | chrysopterum | 37 465079 | 2 |
| Hemiscylliidae | Chiloscyllium | punctatum | 37 013008 | 1 |
| Labridae | Cheilinus | chlorurus | 37 384064 | 1 |
| Labridae | Choerodon | venustus | 37 384042 | 2 |
| Labridae | *Halichoeres* | *nebulosus* | 37 384118 | 3 |
| Labridae | *Labroides* | *dimidiatus* | 37 384028 | 2 |
| Labridae | *Pseudojuloides* | *cerasinus* | 37 384939 | 1 |
| Labridae | *Pseudolabrus* | *guentheri* | 37 384150 | 2 |
| Labridae | *Thalassoma* | *lunare* | 37 384167 | 5 |
| Lethrinidae | *Lethrinus* | *miniatus* | 37 351009 | 6 |
| Lutjanidae | *Lutjanus* | *carponotatus* | 37 346011 | 1 |
| Mullidae | *Parupeneus* | *barberinus* | 37 355022 | 9 |
| Mullidae | *Parupeneus* | *spilurus* | 37 355015 | 1 |
| Nemipteridae | *Pentapodus* | *paradiseus* | 37 347028 | 4 |
| Pinguipedidae | *Parapercis* | *xanthozona* | 37 390025 | 2 |
| Pomacanthidae | *Chaetodontoplus* | *meredithi* | 37 365065 | 2 |
| Pomacentridae | *Chromis* | *nitida* | 37 372049 | 2 |
| Pomacentridae | *Pomacentrus* | *australis* | 37 372107 | 9 |
| Siganidae | *Siganus* | *fuscescens* | 37 438001 | 39 |
| Balistidae | *Rhinecanthus* | *rectangulus* | 37 465073 | 3 |
| Labridae | *Choerodon* | *schoenleinii* | 37 384010 | 1 |

| | | | | |
|---|---|---|---|---|
| Labridae | *Choerodon* | *venustus* | 37 384042 | 2 |
| Labridae | *Halichoeres* | *nebulosus* | 37 384118 | 1 |
| Labridae | *Labroides* | *dimidiatus* | 37 384028 | 1 |
| Labridae | *Pseudolabrus* | *guentheri* | 37 384150 | 2 |
| Labridae | *Thalassoma* | *lunare* | 37 384167 | 1 |
| Lethrinidae | *Lethrinus* | *miniatus* | 37 351009 | 4 |
| Mullidae | *Parupeneus* | *barberinus* | 37 355022 | 3 |
| Mullidae | *Parupeneus* | *spilurus* | 37 355015 | 1 |
| Nemipteridae | *Pentapodus* | *nagasakiensis* | 37 347012 | 10 |
| Nemipteridae | *Pentapodus* | *paradiseus* | 37 347028 | 3 |
| Pinguipedidae | *Parapercis* | *xanthozona* | 37 390025 | 2 |
| Pomacanthidae | *Chaetodontoplus* | *meredithi* | 37 365065 | 1 |
| Pomacentridae | *Chromis* | *nitida* | 37 372049 | 1 |
| Pomacentridae | *Pomacentrus* | *australis* | 37 372107 | 3 |
| Siganidae | *Siganus* | *fuscescens* | 37 438001 | 3 |

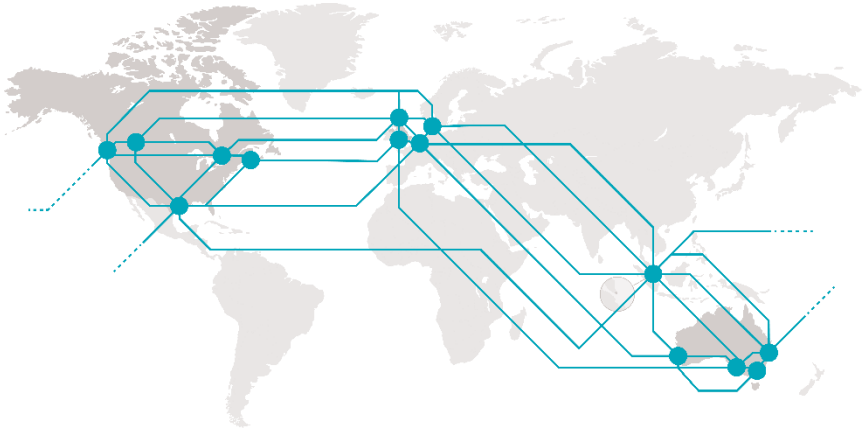
| Event | Treatment | Location | Replicate | Filename | Frame | Time (mins) | Remed Period | Length (mm) | Precision (mm) | RMS (mm) | Range (mm) | Type | Family | Genus | Species | Code | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Remediation | mA | 1 | A1_PORT_1.MP4 | 4872 | 3.248 | After | 235.3302 | 12.239 | 4.257 | 4032.394 | Fish | Siganidae | Siganus | punctatus | 37 438003 | 380.80313 |
| 6 | Remediation | mA | 1 | A1_PORT_1.MP4 | 4890 | 3.26 | After | 275.4396 | 21.037 | 3.511 | 3878.577 | Fish | Siganidae | Siganus | punctatus | 37 438003 | 625.17119 |
| 6 | Remediation | mA | 1 | A1_PORT_1.MP4 | 4908 | 3.272 | After | 277.083 | 20.66 | 10.756 | 4917.077 | Fish | Siganidae | Siganus | punctatus | 37 438003 | 636.99642 |
| 6 | Remediation | mA | 1 | A1_PORT_1.MP4 | 7407 | 4.938 | After | 236.4705 | 7.67 | 6.528 | 2913.08 | Fish | Siganidae | Siganus | fuscescens | 37 438001 | 161.25345 |
| 6 | Remediation | mA | 1 | A1_PORT_1.MP4 | 7407 | 4.938 | After | 241.6626 | 7.86 | 3.236 | 2493.855 | Fish | Siganidae | Siganus | fuscescens | 37 438001 | 172.07275 |
| 6 | Remediation | mA | 1 | A1_PORT_1.MP4 | 7407 | 4.938 | After | 223.0623 | 2.242 | 5.761 | 2121.59 | Fish | Siganidae | Siganus | fuscescens | 37 438001 | 135.42852 |
| 6 | Remediation | mA | 1 | A1_PORT_1.MP4 | 7416 | 4.944 | After | 206.9694 | 2.371 | 5.183 | 2239.648 | Fish | Siganidae | Siganus | fuscescens | 37 438001 | 108.2618 |
| 6 | Remediation | mA | 1 | A1_PORT_1.MP4 | 8076 | 5.384 | After | 317.9142 | 4.995 | 4.91 | 2338.385 | Fish | Serranidae | Plectropomus | leopardus | 37 311078 | 487.95815 |
| 6 | Remediation | mA | 1 | A1_PORT_1.MP4 | 10470 | 6.98 | After | 323.9604 | 1.885 | 1.475 | 1498.774 | Fish | Labridae | Choerodon | venustus | 37 384042 | 1015.4424 |
| 6 | Remediation | mA | 1 | A1_PORT_1.MP4 | 20758 | 13.8387 | After | 287.4537 | 6.956 | 4.181 | 2460.535 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 631.40646 |
| 6 | Remediation | mA | 1 | A1_PORT_1.MP4 | 20759 | 13.8393 | After | 348.6879 | 20.221 | 8.725 | 4124.825 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 1129.1578 |
| 6 | Remediation | mA | 1 | A1_PORT_1.MP4 | 20835 | 13.89 | After | 356.3784 | 8.033 | 6.083 | 4400.779 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 1205.7933 |
| 6 | Remediation | mA | 1 | A1_PORT_1.MP4 | 20886 | 13.924 | After | 343.7865 | 5.481 | 7.242 | 4179.36 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 1082.0541 |
| 6 | Remediation | mA | 1 | A1_PORT_1.MP4 | 20886 | 13.924 | After | 323.091 | 11.435 | 6.813 | 3497.029 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 897.60955 |
| 6 | Remediation | mA | 1 | A1_PORT_1.MP4 | 20886 | 13.924 | After | 289.7676 | 15.634 | 4.661 | 3248.288 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 646.82918 |
| 6 | Remediation | mA | 1 | A1_PORT_1.MP4 | 20931 | 13.954 | After | 259.9713 | 12.187 | 0.293 | 3375.91 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 466.6004 |
| 6 | Remediation | mA | 1 | A1_PORT_2.MP4 | 2050 | 19.064 | After | 413.7678 | 32.545 | 17.87 | 7012.805 | Fish | Haemulidae | Diagramma | pictum | 37 350003 | 1034.1879 |
| 6 | Remediation | mA | 1 | A1_PORT_2.MP4 | 2482 | 19.352 | After | 496.467 | 12.4 | 4.184 | 2933.248 | Fish | Haemulidae | Diagramma | pictum | 37 350003 | 1792.6853 |
| 6 | Remediation | mA | 1 | A1_PORT_2.MP4 | 2972 | 19.6787 | After | 248.5944 | 1.823 | 3.263 | 2042.202 | Fish | Labridae | Choerodon | schoenleinii | 37 384010 | 344.99722 |
| 6 | Remediation | mA | 1 | A1_PORT_2.MP4 | 7509 | 22.7033 | After | 222.768 | 8.606 | 9.891 | 4542.752 | Fish | Acanthuridae | Naso | annulatus | 37 437024 | 210.46357 |
| 6 | Remediation | mA | 1 | A1_PORT_2.MP4 | 7593 | 22.7593 | After | 229.8393 | 16.3 | 2.773 | 3429.372 | Fish | Acanthuridae | Naso | annulatus | 37 437024 | 230.93206 |
| 6 | Remediation | mA | 1 | A1_PORT_2.MP4 | 7688 | 22.8227 | After | 201.3786 | 12.803 | 2.592 | 3215.977 | Fish | Acanthuridae | Naso | annulatus | 37 437024 | 155.94579 |
| 6 | Remediation | mA | 1 | A1_PORT_2.MP4 | 8553 | 23.3993 | After | 234.0495 | 6.967 | 3.722 | 2782.702 | Fish | Acanthuridae | Acanthurus | dussumieri | 37 437008 | 38.286996 |
| 6 | Remediation | mA | 2 | A2_PORT_1.MP4 | 1948 | 1.2987 | After | 330.49485 | 4.595 | 15.924 | 1943.624 | Fish | Labridae | Choerodon | schoenleinii | 37 384010 | 780.32549 |
| 6 | Remediation | mA | 2 | A2_PORT_1.MP4 | 7207 | 4.8047 | After | 735.30975 | 2.397 | 8.015 | 1556.953 | Fish | Hemiscylliidae | Chiloscyllium | punctatum | 37 013008 | 3555.8642 |
| 6 | Remediation | mA | 2 | A2_PORT_1.MP4 | 7399 | 4.9327 | After | 252.0063 | 8.997 | 26.523 | 3212.471 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 424.88162 |
| 6 | Remediation | mA | 2 | A2_PORT_1.MP4 | 7399 | 4.9327 | After | 330.2502 | 6.379 | 17.227 | 3157.101 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 958.82055 |
| 6 | Remediation | mA | 2 | A2_PORT_1.MP4 | 7399 | 4.9327 | After | 307.54395 | 4.343 | 19.047 | 3400.067 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 773.78494 |
| 6 | Remediation | mA | 2 | A2_PORT_1.MP4 | 7399 | 4.9327 | After | 286.3518 | 4.81 | 18.494 | 3089.988 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 624.14915 |
| 6 | Remediation | mA | 2 | A2_PORT_1.MP4 | 7399 | 4.9327 | After | 298.70925 | 16.853 | 31.121 | 3709.219 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 708.7909 |
| 6 | Remediation | mA | 2 | A2_PORT_1.MP4 | 7419 | 4.946 | After | 337.26525 | 11.995 | 28.854 | 3009.479 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 1021.443 |
| 6 | Remediation | mA | 2 | A2_PORT_1.MP4 | 13926 | 9.284 | After | 387.67155 | 1.867 | 14.889 | 1655.369 | Fish | Nemipteridae | Scolopsis | monogramma | 37 347006 | 168.23242 |
| 6 | Remediation | mA | 2 | A2_PORT_2.MP4 | 682 | 18.152 | After | 313.4607 | 6.899 | 28.183 | 3853.531 | Fish | Acanthuridae | Naso | annulatus | 37 437024 | 580.3873 |
| 6 | Remediation | mA | 2 | A2_PORT_2.MP4 | 864 | 18.2733 | After | 287.45115 | 13.789 | 33.826 | 5899.823 | Fish | Acanthuridae | Naso | annulatus | 37 437024 | 448.73436 |
| 6 | Remediation | mA | 3 | A3_PORT_2.MP4 | 6563 | 22.0727 | After | 287.834 | 2.707 | 5.487 | 1671.794 | Fish | Labridae | Choerodon | schoenleinii | 37 384010 | 525.10362 |
| 6 | NearField | mB | 1 | B1_PORT_1.MP4 | 1408 | 0.9387 | After | 1931.2704 | 23.279 | 11.069 | 6543.959 | Fish | Carcharhinidae | Carcharhinus | leucas | 37018021 | 56341.003 |
| 6 | NearField | mB | 1 | B1_PORT_1.MP4 | 2834 | 1.8893 | After | 202.5531 | 15.382 | 5.486 | 3355.399 | Fish | Siganidae | Siganus | fuscescens | 37 438001 | 101.50026 |
| 6 | NearField | mB | 1 | B1_PORT_1.MP4 | 2958 | 1.972 | After | 222.8589 | 16.825 | 6.328 | 3443.977 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 248.48117 |
| 6 | NearField | mB | 1 | B1_PORT_1.MP4 | 2958 | 1.972 | After | 205.2387 | 16.151 | 7.222 | 3275.492 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 195.18637 |
| 6 | NearField | mB | 1 | B1_PORT_1.MP4 | 3258 | 2.172 | After | 297.1773 | 15.761 | 5.95 | 3329.678 | Fish | Acanthuridae | Naso | brevirostris | 37 437026 | 554.87233 |
| 6 | NearField | mB | 1 | B1_PORT_1.MP4 | 3487 | 2.3247 | After | 220.4343 | 10.904 | 4.895 | 3814.6 | Fish | Acanthuridae | Naso | brevirostris | 37 437026 | 217.96031 |
| 6 | NearField | mB | 1 | B1_PORT_1.MP4 | 3532 | 2.3547 | After | 245.664 | 13.238 | 2.648 | 4445.413 | Fish | Acanthuridae | Naso | brevirostris | 37 437026 | 305.90632 |
| 6 | NearField | mB | 1 | B1_PORT_1.MP4 | 3542 | 2.3613 | After | 284.3244 | 13.903 | 5.561 | 3647.074 | Fish | Acanthuridae | Naso | brevirostris | 37 437026 | 483.20428 |
| 6 | NearField | mB | 1 | B1_PORT_1.MP4 | 3553 | 2.3687 | After | 318.7152 | 8.082 | 6.442 | 4287.319 | Fish | Acanthuridae | Naso | brevirostris | 37 437026 | 690.6278 |
| 6 | NearField | mB | 1 | B1_PORT_1.MP4 | 3553 | 2.3687 | After | 223.9857 | 5.282 | 3.049 | 3991.564 | Fish | Acanthuridae | Naso | brevirostris | 37 437026 | 229.13385 |
| 6 | NearField | mB | 1 | B1_PORT_1.MP4 | 3565 | 2.3767 | After | 216.8217 | 9.42 | 3.67 | 3116.566 | Fish | Acanthuridae | Naso | brevirostris | 37 437026 | 206.98056 |
| 6 | NearField | mB | 1 | B1_PORT_1.MP4 | 3576 | 2.384 | After | 206.8371 | 4.212 | 1.995 | 2906.255 | Fish | Acanthuridae | Naso | brevirostris | 37 437026 | 178.60184 |
| 6 | NearField | mB | 1 | B1_PORT_1.MP4 | 3598 | 2.3987 | After | 286.2792 | 2.283 | 3.657 | 2422.107 | Fish | Acanthuridae | Naso | brevirostris | 37 437026 | 493.67218 |
| 6 | NearField | mB | 1 | B1_PORT_1.MP4 | 3714 | 2.476 | After | 310.9329 | 8.13 | 6.862 | 3306.634 | Fish | Acanthuridae | Naso | brevirostris | 37 437026 | 639.23646 |
| 6 | NearField | mB | 1 | B1_PORT_1.MP4 | 4020 | 2.68 | After | 217.2924 | 3.795 | 4.212 | 2827.645 | Fish | Acanthuridae | Naso | brevirostris | 37 437026 | 208.38933 |
| 6 | NearField | mB | 1 | B1_PORT_1.MP4 | 4754 | 3.1693 | After | 297.1368 | 4.636 | 4.315 | 2545.065 | Fish | Lutjanidae | Lutjanus | russelli | 37 346065 | 308.55004 |
| 6 | NearField | mB | 1 | B1_PORT_1.MP4 | 6088 | 4.0587 | After | 254.6559 | 7.357 | 3.877 | 2483.744 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 438.47052 |
| 6 | NearField | mB | 1 | B1_PORT_1.MP4 | 22006 | 14.6707 | After | 424.7811 | 4.17 | 2.392 | 1541.896 | Fish | Serranidae | Plectropomus | leopardus | 37 311078 | 1119.4267 |
| 6 | NearField | mB | 1 | B1_PORT_1.MP4 | 22236 | 14.824 | After | 334.1799 | 5.291 | 1.63 | 2705.428 | Fish | Serranidae | Plectropomus | leopardus | 37 311078 | 562.9564 |
| 6 | NearField | mB | 1 | B1_PORT_2.MP4 | 883 | 18.286 | After | 267.1137 | 11.535 | 2.876 | 2746.362 | Fish | Carangidae | Gnathanodon | speciosus | 37 337012 | 205.60449 |
| 6 | NearField | mB | 1 | B1_PORT_2.MP4 | 3390 | 19.9573 | After | 236.8359 | 1.988 | 1.146 | 1420.363 | Fish | Lethrinidae | Lethrinus | miniatus | 37 351009 | 221.81234 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | NearField | mB | 1 | B1_PORT_2.MP4 | 3552 | 20.0653 | After | 222.57 | 1.009 | 1.276 | 1184.157 | Fish | Lethrinidae | Lethrinus | miniatus | 37 | 351009 | 185.02415 |
| 6 | NearField | mB | 1 | B1_PORT_2.MP4 | 7758 | 22.8693 | After | 242.1837 | 1.076 | 4.863 | 1262.202 | Fish | Lutjanidae | Lutjanus | adetii | 37 | 346033 | 231.51869 |
| 6 | NearField | mB | 1 | B1_PORT_2.MP4 | 7758 | 22.8693 | After | 238.2138 | 0.98 | 1.717 | 1258.341 | Fish | Lutjanidae | Lutjanus | adetii | 37 | 346033 | 220.78748 |
| 6 | NearField | mB | 1 | B1_PORT_2.MP4 | 7758 | 22.8693 | After | 237.2994 | 0.953 | 0.907 | 1114.797 | Fish | Lutjanidae | Lutjanus | adetii | 37 | 346033 | 218.36259 |
| 6 | NearField | mB | 1 | B1_PORT_2.MP4 | 7758 | 22.8693 | After | 234.0423 | 1.14 | 1.398 | 1152.718 | Fish | Lutjanidae | Lutjanus | adetii | 37 | 346033 | 209.86629 |
| 6 | NearField | mB | 1 | B1_PORT_2.MP4 | 18512 | 30.0387 | After | 264.7323 | 22.892 | 3.999 | 5028.95 | Fish | Labridae | Scarus | chameleon | 37 | 386012 | 316.93693 |
| 6 | NearField | mB | 1 | B1_PORT_2.MP4 | 20202 | 31.1653 | After | 242.9586 | 36.683 | 13.212 | 5654.521 | Fish | Lutjanidae | Lutjanus | sebae | 37 | 346004 | 238.94886 |
| 6 | NearField | mB | 1 | B1_PORT_2.MP4 | 20685 | 31.4873 | After | 250.1181 | 5.118 | 5.152 | 3204.945 | Fish | Lutjanidae | Lutjanus | sebae | 37 | 346004 | 260.92872 |
| 6 | NearField | mB | 1 | B1_PORT_2.MP4 | 20765 | 31.5407 | After | 247.7034 | 3.207 | 1.568 | 2559.571 | Fish | Lutjanidae | Lutjanus | sebae | 37 | 346004 | 253.37049 |
| 6 | NearField | mB | 1 | B1_PORT_2.MP4 | 21521 | 32.0447 | After | 283.5675 | 0.943 | 2.628 | 1207.698 | Fish | Lutjanidae | Lutjanus | sebae | 37 | 346004 | 381.67281 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 12128 | 8.0853 | After | 281.90505 | 15.813 | 53.556 | 5817.404 | Fish | Acanthuridae | Naso | unicornis | 37 | 437031 | 464.79378 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 12264 | 8.176 | After | 353.39115 | 77.353 | 47.131 | 8593.987 | Fish | Acanthuridae | Naso | unicornis | 37 | 437031 | 913.14746 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 12513 | 8.342 | After | 353.61375 | 13.329 | 41.193 | 5834.701 | Fish | Acanthuridae | Naso | brevirostris | 37 | 437026 | 955.87111 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 12533 | 8.3553 | After | 309.20295 | 51.547 | 40.55 | 6589.834 | Fish | Acanthuridae | Naso | unicornis | 37 | 437031 | 612.63378 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 12594 | 8.396 | After | 396.65955 | 25.664 | 39.443 | 5537.332 | Fish | Acanthuridae | Naso | brevirostris | 37 | 437026 | 1369.1512 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 12594 | 8.396 | After | 386.5638 | 14.752 | 43.228 | 5986.073 | Fish | Acanthuridae | Naso | brevirostris | 37 | 437026 | 1263.0718 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 12662 | 8.4413 | After | 468.39975 | 53.749 | 26.757 | 6010.91 | Fish | Acanthuridae | Naso | brevirostris | 37 | 437026 | 2302.9742 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 12688 | 8.4587 | After | 335.013 | 23.71 | 40.207 | 4779.783 | Fish | Acanthuridae | Naso | brevirostris | 37 | 437026 | 807.2221 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 12688 | 8.4587 | After | 392.9331 | 21.042 | 42.566 | 4920.254 | Fish | Acanthuridae | Naso | brevirostris | 37 | 437026 | 1329.3177 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 12688 | 8.4587 | After | 342.30315 | 9.254 | 45.549 | 5621.737 | Fish | Acanthuridae | Naso | brevirostris | 37 | 437026 | 863.45052 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 12688 | 8.4587 | After | 348.8898 | 29.743 | 41.032 | 5309.194 | Fish | Acanthuridae | Naso | brevirostris | 37 | 437026 | 916.49287 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 12688 | 8.4587 | After | 367.4118 | 8.222 | 41.264 | 5344.971 | Fish | Acanthuridae | Naso | brevirostris | 37 | 437026 | 1077.4548 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 12710 | 8.4733 | After | 373.6131 | 22.282 | 39.465 | 4242.34 | Fish | Acanthuridae | Naso | brevirostris | 37 | 437026 | 1135.3676 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 12711 | 8.474 | After | 342.19815 | 23.228 | 48.006 | 5564.274 | Fish | Acanthuridae | Naso | brevirostris | 37 | 437026 | 862.62231 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 14139 | 9.426 | After | 398.05185 | 6.144 | 26.729 | 3371.979 | Fish | Labridae | Choerodon | venustus | 37 | 384042 | 1932.7665 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 15523 | 10.3487 | After | 296.58195 | 9.035 | 33.105 | 3297.363 | Fish | Acanthuridae | Acanthurus | dussumieri | 37 | 437008 | 73.618039 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 15565 | 10.3767 | After | 259.63665 | 17.129 | 21.85 | 4608.864 | Fish | Acanthuridae | Acanthurus | dussumieri | 37 | 437008 | 50.986735 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 15609 | 10.406 | After | 289.9176 | 4.02 | 15.548 | 2622.118 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 | 351018 | 537.21038 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 15643 | 10.4287 | After | 305.78625 | 14.299 | 17.747 | 2953.341 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 | 351018 | 628.026 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 15721 | 10.4807 | After | 303.57915 | 21.616 | 42.579 | 4402.293 | Fish | Acanthuridae | Acanthurus | dussumieri | 37 | 437008 | 78.513712 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 15774 | 10.516 | After | 369.40995 | 32.961 | 46.012 | 5326.747 | Fish | Acanthuridae | Acanthurus | dussumieri | 37 | 437008 | 134.9845 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 15774 | 10.516 | After | 293.0088 | 8.341 | 30.908 | 4221.906 | Fish | Acanthuridae | Acanthurus | dussumieri | 37 | 437008 | 71.195115 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 15774 | 10.516 | After | 292.2612 | 9.083 | 19.039 | 3552.946 | Fish | Acanthuridae | Acanthurus | dussumieri | 37 | 437008 | 70.694702 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 15957 | 10.638 | After | 352.29705 | 23.828 | 46.63 | 5818.564 | Fish | Acanthuridae | Acanthurus | dussumieri | 37 | 437008 | 118.41547 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 15988 | 10.6587 | After | 351.24495 | 15.77 | 47.172 | 6082.635 | Fish | Acanthuridae | Acanthurus | dussumieri | 37 | 437008 | 117.44165 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 16823 | 11.2153 | After | 406.3752 | 54.041 | 56.787 | 5884.956 | Fish | Acanthuridae | Naso | tonganus | 37 | 437047 | 1790.1544 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 16846 | 11.2307 | After | 509.34345 | 14.177 | 29.796 | 3664.95 | Fish | Haemulidae | Diagramma | pictum | 37 | 350003 | 1936.7625 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 16988 | 11.3253 | After | 398.1201 | 19.058 | 39.449 | 4926.48 | Fish | Acanthuridae | Naso | tonganus | 37 | 437047 | 1682.9146 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 16988 | 11.3253 | After | 390.12645 | 16.309 | 37.678 | 4426.728 | Fish | Acanthuridae | Naso | tonganus | 37 | 437047 | 1583.2441 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 19985 | 13.3233 | After | 270.7236 | 8.985 | 33.629 | 3428.788 | Fish | Acanthuridae | Naso | hexacanthus | 37 | 437028 | 410.48794 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 22676 | 15.1173 | After | 303.42375 | 4.473 | 12.274 | 2209.696 | Fish | Labridae | Choerodon | schoenleinii | 37 | 384010 | 610.80156 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 22737 | 15.158 | After | 224.2821 | 2.674 | 19.198 | 2437.027 | Fish | Pomacanthidae | Chaetodontoplus | duboulayi | 37 | 365009 | 192.20068 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 23349 | 15.566 | After | 482.43195 | 20.274 | 35.016 | 4815.642 | Fish | Serranidae | Plectropomus | leopardus | 37 | 311078 | 1611.9935 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 23601 | 15.734 | After | 370.4064 | 11.017 | 24.576 | 3001.698 | Fish | Serranidae | Plectropomus | leopardus | 37 | 311078 | 756.0463 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 23713 | 15.8087 | After | 339.3306 | 6.994 | 17.973 | 2590.07 | Fish | Serranidae | Plectropomus | leopardus | 37 | 311078 | 588.17708 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 23713 | 15.8087 | After | 393.3384 | 25.895 | 35.33 | 4016.224 | Fish | Serranidae | Plectropomus | leopardus | 37 | 311078 | 898.0447 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 24043 | 16.0287 | After | 366.3849 | 6.295 | 32.329 | 2956.044 | Fish | Serranidae | Plectropomus | leopardus | 37 | 311078 | 732.76421 |
| 6 | NearField | mB | 2 | B2_port_1.MP4 | 24043 | 16.0287 | After | 440.85825 | 6.735 | 24.779 | 3075.948 | Fish | Serranidae | Plectropomus | leopardus | 37 | 311078 | 1245.1561 |
| 6 | NearField | mB | 2 | B2_PORT_2.MP4 | 649 | 18.13 | After | 295.4217 | 19.993 | 35.521 | 4025.995 | Fish | Serranidae | Cephalopholis | boenak | 37 | 311008 | 416.92769 |
| 6 | NearField | mB | 2 | B2_PORT_2.MP4 | 1900 | 18.964 | After | 299.1996 | 64.323 | 74.637 | 7993.687 | Fish | Pomacanthidae | Pomacanthus | semicirculatus | 37 | 365080 | 447.43184 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 4200 | 2.8 | After | 283.102 | 22.218 | 5.203 | 4269.242 | Fish | Nemipteridae | Scolopsis | monogramma | 37 | 347006 | 77.1503 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 5964 | 3.976 | After | 361.81 | 12.078 | 1.759 | 4036.282 | Fish | Acanthuridae | Naso | tonganus | 37 | 437047 | 1261.9616 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 7813 | 5.2087 | After | 288.51 | 10.666 | 5.267 | 3506.363 | Fish | Acanthuridae | Naso | unicornis | 37 | 437031 | 498.09669 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 7813 | 5.2087 | After | 254.35 | 12.2 | 5.89 | 3696.715 | Fish | Acanthuridae | Naso | unicornis | 37 | 437031 | 341.80863 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 7865 | 5.2433 | After | 352.408 | 27.514 | 4.229 | 4392.321 | Fish | Acanthuridae | Acanthurus | dussumieri | 37 | 437008 | 118.51847 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 7898 | 5.2653 | After | 250.018 | 19.974 | 6.154 | 3721.82 | Fish | Acanthuridae | Acanthurus | dussumieri | 37 | 437008 | 45.940041 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 9171 | 6.114 | After | 324.113 | 7.484 | 4.9 | 2553.304 | Fish | Lutjanidae | Lutjanus | adetii | 37 | 346033 | 534.53826 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 9171 | 6.114 | After | 319.57 | 13.545 | 7.214 | 2981.411 | Fish | Lutjanidae | Lutjanus | adetii | 37 | 346033 | 513.30467 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 15916 | 10.6107 | After | 495.707 | 1.509 | 4.811 | 1353.94 | Fish | Monacanthidae | Aluterus | scriptus | 37 | 465045 | 1622.2003 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 17510 | 11.6733 | After | 231.567 | 8.42 | 5.013 | 3195.433 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 | 351018 | 278.02568 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 17510 | 11.6733 | After | 260.414 | 4.894 | 3.469 | 2034.583 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 | 351018 | 392.22001 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 17510 | 11.6733 | After | 263.216 | 2.085 | 3.725 | 1553.042 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 | 351018 | 404.71836 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 17510 | 11.6733 | After | 288.4 | 4.987 | 5.205 | 1996.577 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 | 351018 | 529.00977 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 17510 | 11.6733 | After | 253.496 | 6.226 | 8.607 | 2148.843 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 | 351018 | 362.45736 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 17510 | 11.6733 | After | 300.741 | 1.939 | 3.085 | 1357.361 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 | 351018 | 598.13639 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 17510 | 11.6733 | After | 264.323 | 1.557 | 8.578 | 1175.474 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 | 351018 | 409.72754 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 17665 | 11.7767 | After | 266.727 | 21.864 | 3.829 | 4004.731 | Fish | Labridae | Scarus | chameleon | 37 | 386012 | 324.22821 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 17732 | 11.8213 | After | 306.705 | 1.604 | 5.586 | 1428.777 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 | 351018 | 633.57266 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 19406 | 12.9373 | After | 613.548 | 39.112 | 3.808 | 5074.315 | Fish | Labridae | Chlorurus | microrhinos | 37 | 386020 | 4046.2148 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 20063 | 13.3753 | After | 539.749 | 58.415 | 11.298 | 7638.476 | Fish | Haemulidae | Diagramma | pictum | 37 | 350003 | 2307.2687 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 21682 | 14.4547 | After | 257.143 | 2.885 | 5.18 | 1987.808 | Fish | Siganidae | Siganus | fuscescens | 37 | 438001 | 207.17542 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 21682 | 14.4547 | After | 257.063 | 3.646 | 4.6 | 2091.045 | Fish | Siganidae | Siganus | fuscescens | 37 | 438001 | 206.98276 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 21682 | 14.4547 | After | 245.081 | 1.754 | 3.609 | 1895.518 | Fish | Siganidae | Siganus | fuscescens | 37 | 438001 | 179.4534 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 21682 | 14.4547 | After | 281.872 | 2.071 | 3.322 | 1904.719 | Fish | Siganidae | Siganus | fuscescens | 37 | 438001 | 272.62844 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 21682 | 14.4547 | After | 200.381 | 3.735 | 4.103 | 1632.772 | Fish | Siganidae | Siganus | fuscescens | 37 | 438001 | 98.2804 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 21699 | 14.466 | After | 248.947 | 2.779 | 4.138 | 2005.413 | Fish | Siganidae | Siganus | fuscescens | 37 | 438001 | 188.05093 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 21699 | 14.466 | After | 270.314 | 2.434 | 2.874 | 1990.445 | Fish | Siganidae | Siganus | fuscescens | 37 | 438001 | 240.54858 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 21699 | 14.466 | After | 276.982 | 4.849 | 2.65 | 2348.151 | Fish | Siganidae | Siganus | fuscescens | 37 | 438001 | 258.72952 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 21699 | 14.466 | After | 240.067 | 2.525 | 4.89 | 1782.035 | Fish | Siganidae | Siganus | fuscescens | 37 | 438001 | 168.698 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 21699 | 14.466 | After | 244.911 | 3.863 | 5.226 | 1675.706 | Fish | Siganidae | Siganus | fuscescens | 37 | 438001 | 179.08147 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 21709 | 14.4727 | After | 239.627 | 6.114 | 6.084 | 2062.957 | Fish | Siganidae | Siganus | fuscescens | 37 | 438001 | 167.7752 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 21709 | 14.4727 | After | 228.071 | 3.369 | 4.3 | 1759.655 | Fish | Siganidae | Siganus | fuscescens | 37 | 438001 | 144.7256 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 21714 | 14.476 | After | 252.297 | 1.945 | 4.565 | 2265.85 | Fish | Siganidae | Siganus | fuscescens | 37 | 438001 | 195.71901 |
| 6 | NearField | mB | 3 | B3_PORT_1.MP4 | 21749 | 14.4993 | After | 279.651 | 2.449 | 4.667 | 2254.605 | Fish | Siganidae | Siganus | fuscescens | 37 | 438001 | 266.25565 |
| 6 | NearField | mB | 3 | B3_PORT_2.MP4 | 292 | 17.892 | After | 274.064 | 2.934 | 4.128 | 1952.278 | Fish | Labridae | Choerodon | venustus | 37 | 384042 | 602.08177 |
| 6 | NearField | mB | 3 | B3_PORT_2.MP4 | 6513 | 22.0393 | After | 313.753 | 11.815 | 6.499 | 4349.141 | Fish | Siganidae | Siganus | punctatus | 37 | 438003 | 942253.39 |
| 6 | NearField | mB | 3 | B3_PORT_2.MP4 | 6513 | 22.0393 | After | 335.202 | 17.072 | 5.875 | 4472.146 | Fish | Siganidae | Siganus | punctatus | 37 | 438003 | 1160464 |
| 6 | NearField | mB | 3 | B3_PORT_2.MP4 | 8666 | 23.4747 | After | 351.527 | 8.07 | 5.234 | 2908.35 | Fish | Acanthuridae | Naso | brevirostris | 37 | 437026 | 938.33723 |
| 6 | NearField | mB | 3 | B3_PORT_2.MP4 | 8666 | 23.4747 | After | 346.02 | 9.577 | 3.638 | 2707.484 | Fish | Acanthuridae | Naso | brevirostris | 37 | 437026 | 893.11777 |
| 6 | NearField | mB | 3 | B3_PORT_2.MP4 | 8666 | 23.4747 | After | 233.721 | 9.327 | 2.084 | 2693.461 | Fish | Acanthuridae | Naso | brevirostris | 37 | 437026 | 261.75 |
| 6 | NearField | mB | 3 | B3_PORT_2.MP4 | 8814 | 23.5733 | After | 294.559 | 2.673 | 3.938 | 1566.581 | Fish | Acanthuridae | Naso | brevirostris | 37 | 437026 | 539.72324 |
| 6 | NearField | mB | 3 | B3_PORT_2.MP4 | 8911 | 23.638 | After | 267.964 | 6.6 | 4.555 | 2182.042 | Fish | Acanthuridae | Naso | brevirostris | 37 | 437026 | 401.44247 |
| 6 | NearField | mB | 3 | B3_PORT_2.MP4 | 8996 | 23.6947 | After | 264.206 | 6.99 | 7.128 | 2440.88 | Fish | Acanthuridae | Naso | brevirostris | 37 | 437026 | 384.09342 |
| 6 | NearField | mB | 3 | B3_PORT_2.MP4 | 13311 | 26.5713 | After | 415.673 | 4.635 | 9.92 | 2464.825 | Fish | Serranidae | Cromileptes | altivelis | 37 | 311044 | 1997.6418 |
| 6 | Remediation | mC | 1 | C1_PORT_1.MP4 | 1949 | 1.2993 | After | 612.4023 | 23.665 | 3.714 | 3902.95 | Fish | Scombridae | Scomberomorus | commerson | 37 | 441007 | 1341.3025 |
| 6 | Remediation | mC | 1 | C1_PORT_1.MP4 | 1993 | 1.3287 | After | 319.5117 | 1.38 | 3.314 | 1443.335 | Fish | Labridae | Choerodon | venustus | 37 | 384042 | 972.49896 |
| 6 | Remediation | mC | 1 | C1_PORT_1.MP4 | 2019 | 1.346 | After | 363.501 | 4.212 | 6.946 | 2073.636 | Fish | Labridae | Choerodon | venustus | 37 | 384042 | 1455.2849 |
| 6 | Remediation | mC | 1 | C1_PORT_1.MP4 | 7071 | 4.714 | After | 243.9414 | 3.673 | 6.116 | 2924.79 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 | 351018 | 323.85562 |
| 6 | Remediation | mC | 1 | C1_PORT_1.MP4 | 7074 | 4.716 | After | 278.8056 | 3.309 | 5.289 | 2216.885 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 | 351018 | 479.06702 |
| 6 | Remediation | mC | 1 | C1_PORT_1.MP4 | 7309 | 4.8727 | After | 281.3868 | 1.18 | 2.886 | 1419.127 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 | 351018 | 492.18322 |
| 6 | Remediation | mC | 1 | C1_PORT_1.MP4 | 12266 | 8.1773 | After | 571.0248 | 18.699 | 18.854 | 4457.12 | Fish | Labridae | Choerodon | schoenleinii | 37 | 384010 | 3740.6465 |
| 6 | Remediation | mC | 1 | C1_PORT_2.MP4 | 6087 | 21.7553 | After | 570.5433 | 32.625 | 3.753 | 4552.854 | Fish | Carangidae | Carangoides | fulvoguttatus | 37 | 337037 | 1525.0651 |
| 6 | Remediation | mC | 2 | C2b_PORT_1.MP4 | 14607 | 9.738 | After | 303.5781 | 2.013 | 3.157 | 1600.669 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 | 351018 | 614.82604 |
| 6 | Remediation | mC | 2 | C2b_PORT_1.MP4 | 18044 | 12.0293 | After | 262.94625 | 4.018 | 2.683 | 1729.125 | Fish | Lethrinidae | Lethrinus | miniatus | 37 | 351009 | 300.99901 |
| 6 | Remediation | mC | 2 | C2b_PORT_1.MP4 | 23266 | 15.5107 | After | 261.87105 | 4.75 | 5.619 | 2354.113 | Fish | Labridae | Choerodon | schoenleinii | 37 | 384010 | 400.47777 |
| 6 | Remediation | mC | 2 | C2b_PORT_2.MP4 | 21250 | 31.864 | After | 689.913 | 4.512 | 5.929 | 1885.108 | Fish | Echeneidae | Echeneis | naucrates | 37 | 336001 | 2229.6337 |
| 6 | NearField | mD | 1 | D1_port_1.MP4 | 7633 | 5.0887 | After | 274.896 | 22.794 | 2.345 | 4907.824 | Fish | Acanthuridae | Naso | unicornis | 37 | 437031 | 431.11012 |
| 6 | NearField | mD | 1 | D1_port_1.MP4 | 7856 | 5.2373 | After | 569.6523 | 12.785 | 7.487 | 3278.526 | Fish | Serranidae | Epinephelus | tukula | 37 | 311068 | 3754.7258 |
| 6 | NearField | mD | 1 | D1_port_1.MP4 | 8392 | 5.5947 | After | 667.5111 | 79.589 | 6.371 | 7131.074 | Fish | Serranidae | Epinephelus | tukula | 37 | 311068 | 6089.2888 |
| 6 | NearField | mD | 1 | D1_port_1.MP4 | 17278 | 11.5187 | After | 308.1015 | 23.072 | 4.698 | 5626.196 | Fish | Labridae | Choerodon | venustus | 37 | 384042 | 868.03286 |
| 6 | NearField | mD | 1 | D1_port_1.MP4 | 18874 | 12.5827 | After | 203.4909 | 2.825 | 5.655 | 3350.915 | Fish | Pomacanthidae | Chaetodontoplus | meredithi | 37 | 365065 | 144.08477 |
| 6 | NearField | mD | 1 | D1_port_1.MP4 | 24000 | 16 | After | 219.5424 | 30.429 | 7.85 | 5113.827 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 | 351018 | 237.79792 |
| 6 | NearField | mD | 1 | D1_port_1.MP4 | 24192 | 16.128 | After | 257.2398 | 10.24 | 2.195 | 3562.063 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 | 351018 | 378.3718 |
| 6 | NearField | mD | 1 | D1_port_1.MP4 | 24237 | 16.158 | After | 264.4524 | 0.978 | 2.522 | 1263.223 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 | 351018 | 410.31572 |
| 6 | NearField | mD | 1 | D1_port_2.MP4 | 1701 | 18.8313 | After | 330.1659 | 64.595 | 5.839 | 7179.581 | Fish | Pomacanthidae | Pomacanthus | semicirculatus | 37 | 365080 | 594.16623 |
| 6 | NearField | mD | 1 | D1_port_2.MP4 | 3371 | 19.9447 | After | 381.411 | 5.254 | 11.903 | 4149.244 | Fish | Labridae | Choerodon | schoenleinii | 37 | 384010 | 1176.6003 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | NearField | mD | 1 | D1_port_2.MP4 | 3575 | 20.0807 | After | 278.2458 | 4.155 | 1.446 | 1778.004 | Fish | Labridae | Choerodon | schoenleinii | 37 384010 | 476.51296 |
| 6 | NearField | mD | 2 | D2_port_1.MP4 | 2422 | 1.6147 | After | 210.82635 | 3.452 | 54.194 | 1836.313 | Fish | Labridae | Choerodon | schoenleinii | 37 384010 | 215.12901 |
| 6 | NearField | mD | 2 | D2_port_1.MP4 | 21548 | 14.3653 | After | 216.16035 | 4.668 | 63.188 | 2418.317 | Fish | Labridae | Choerodon | venustus | 37 384042 | 286.7762 |
| 6 | NearField | mD | 2 | D2_port_2.MP4 | 11919 | 25.6433 | After | 504.22575 | 16.95 | 132.688 | 4661.397 | Fish | Lutjanidae | Symphorus | nametophorus | 37 346017 | 3226.2943 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 3348 | 2.232 | After | 405.861 | 13.272 | 5.465 | 3013.445 | Fish | Pomacanthidae | Pomacanthus | semicirculatus | 37 365080 | 1076.6781 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 4537 | 3.0247 | After | 389.052 | 10.883 | 21.432 | 8248.408 | Fish | Acanthuridae | Naso | unicornis | 37 437031 | 1217.0147 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 4537 | 3.0247 | After | 419.712 | 36.56 | 3.445 | 7483.208 | Fish | Acanthuridae | Naso | unicornis | 37 437031 | 1526.6227 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 4537 | 3.0247 | After | 347.668 | 13.628 | 8.518 | 6459.544 | Fish | Acanthuridae | Naso | unicornis | 37 437031 | 869.66733 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 4537 | 3.0247 | After | 397.806 | 68.88 | 11.198 | 7551.733 | Fish | Acanthuridae | Naso | unicornis | 37 437031 | 1300.6813 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 4537 | 3.0247 | After | 372.177 | 18.066 | 10.491 | 6054.134 | Fish | Acanthuridae | Naso | unicornis | 37 437031 | 1065.9886 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 4537 | 3.0247 | After | 459.305 | 79.843 | 20.359 | 7864.807 | Fish | Acanthuridae | Naso | unicornis | 37 437031 | 1998.5328 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 4537 | 3.0247 | After | 423.84 | 60.751 | 6.915 | 6677.615 | Fish | Acanthuridae | Naso | unicornis | 37 437031 | 1571.927 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 4561 | 3.0407 | After | 464.747 | 46.519 | 9.747 | 5540.038 | Fish | Acanthuridae | Naso | annulatus | 37 437024 | 1869.336 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 4847 | 3.2313 | After | 365.582 | 8.479 | 5.8 | 3972.789 | Fish | Acanthuridae | Acanthurus | blochii | 37 437007 | 940.54657 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 4847 | 3.2313 | After | 296.525 | 8.557 | 6.195 | 4239.89 | Fish | Acanthuridae | Acanthurus | blochii | 37 437007 | 502.94335 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 4847 | 3.2313 | After | 346.288 | 55.987 | 9.059 | 6318.117 | Fish | Acanthuridae | Acanthurus | blochii | 37 437007 | 799.7858 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 4847 | 3.2313 | After | 306.927 | 44.626 | 6.891 | 5887.996 | Fish | Acanthuridae | Acanthurus | blochii | 37 437007 | 557.55879 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 4847 | 3.2313 | After | 280.542 | 70.118 | 15.403 | 6983.669 | Fish | Acanthuridae | Acanthurus | blochii | 37 437007 | 426.1568 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 4899 | 3.266 | After | 300.966 | 6.449 | 6.786 | 6192.546 | Fish | Acanthuridae | Acanthurus | blochii | 37 437007 | 525.80277 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 4899 | 3.266 | After | 304.71 | 41.377 | 14.858 | 7833.692 | Fish | Acanthuridae | Acanthurus | blochii | 37 437007 | 545.6033 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 6074 | 4.0493 | After | 439.441 | 4.199 | 5.321 | 2226.192 | Fish | Kyphosidae | Kyphosus | vaigiensis | 37 361014 | 1508.8063 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 9798 | 6.532 | After | 668.391 | 73.087 | 9.414 | 8085.485 | Fish | Lutjanidae | Aprion | virescens | 37 346027 | 2855.8284 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 14567 | 9.7113 | After | 358.254 | 35.569 | 15.497 | 5639.846 | Fish | Labridae | Hipposcarus | longiceps | 37 386008 | 607.70783 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 15480 | 10.32 | After | 650.793 | 48.759 | 12.64 | 5488.997 | Fish | Lutjanidae | Symphorus | nametophorus | 37 346017 | 6843.5933 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 15704 | 10.4693 | After | 701.902 | 58.389 | 8.253 | 6780.46 | Fish | Lutjanidae | Symphorus | nametophorus | 37 346017 | 8551.5498 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 18474 | 12.316 | After | 292.034 | 6.653 | 8.16 | 3444.064 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 548.7859 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 18474 | 12.316 | After | 250.739 | 18.178 | 3.01 | 5553.497 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 351.02412 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 18481 | 12.3207 | After | 287.958 | 10.984 | 7.689 | 3848.486 | Fish | Siganidae | Siganus | fuscescens | 37 438001 | 290.60964 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 18481 | 12.3207 | After | 268.581 | 7.6 | 8.376 | 4266.921 | Fish | Siganidae | Siganus | fuscescens | 37 438001 | 235.96684 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 18481 | 12.3207 | After | 270.809 | 15.048 | 13.976 | 4539.993 | Fish | Siganidae | Siganus | fuscescens | 37 438001 | 241.86806 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 18481 | 12.3207 | After | 283.228 | 13.317 | 19.656 | 4847.138 | Fish | Siganidae | Siganus | fuscescens | 37 438001 | 276.56872 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 18481 | 12.3207 | After | 245.192 | 10.768 | 9.373 | 6891.085 | Fish | Siganidae | Siganus | fuscescens | 37 438001 | 179.69653 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 19473 | 12.982 | After | 384.902 | 12.967 | 14.323 | 3012.448 | Fish | Lutjanidae | Lutjanus | carponotatus | 37 346011 | 664.66785 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 20316 | 13.544 | After | 564.778 | 47.203 | 16.813 | 5591.143 | Fish | Serranidae | Plectropomus | leopardus | 37 311078 | 2532.0327 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 20390 | 13.5933 | After | 543.285 | 56.225 | 12.22 | 6442.872 | Fish | Serranidae | Plectropomus | leopardus | 37 311078 | 2265.6293 |
| 6 | NearField | mD | 3 | D3_port_1.MP4 | 20452 | 13.6347 | After | 553.529 | 50.743 | 9.163 | 5716.247 | Fish | Serranidae | Plectropomus | leopardus | 37 311078 | 2390.199 |
| 6 | NearField | mD | 3 | D3_port_2.MP4 | 5988 | 21.6893 | After | 679.565 | 53.895 | 11.331 | 5934.703 | Fish | Acanthuridae | Naso | tonganus | 37 437047 | 8414.6286 |
| 6 | NearField | mD | 3 | D3_port_2.MP4 | 6996 | 22.3613 | After | 560.201 | 11.091 | 1.769 | 3782.468 | Fish | Labridae | Choerodon | schoenleinii | 37 384010 | 3541.0026 |
| 6 | Remediation | mE | 1 | E1_port_1.MP4 | 12694 | 8.4627 | After | 273.2625 | 2.439 | 1.456 | 1544.215 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 451.68294 |
| 6 | Remediation | mE | 1 | E1_port_1.MP4 | 12755 | 8.5033 | After | 285.7005 | 1.906 | 5.275 | 1538.967 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 514.62721 |
| 6 | Remediation | mE | 1 | E1_port_1.MP4 | 12798 | 8.532 | After | 245.3292 | 2.281 | 5.475 | 1703.797 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 329.28552 |
| 6 | Remediation | mE | 1 | E1_port_1.MP4 | 19297 | 12.8647 | After | 491.2767 | 1.946 | 5.782 | 1737.755 | Fish | Lutjanidae | Lutjanus | sebae | 37 346004 | 2017.7179 |
| 6 | Remediation | mE | 1 | E1_port_2.MP4 | 6813 | 22.2393 | After | 507.0501 | 19.382 | 8.181 | 3847.147 | Fish | Labridae | Choerodon | schoenleinii | 37 384010 | 2660.9956 |
| 6 | Remediation | mE | 1 | E1_port_2.MP4 | 11948 | 25.6627 | After | 533.6577 | 71.32 | 4.637 | 6827.011 | Fish | Carangidae | Carangoides | fulvoguttatus | 37 337037 | 1256.3582 |
| 6 | Remediation | mE | 1 | E1_port_2.MP4 | 11977 | 25.682 | After | 520.4763 | 4.092 | 5.532 | 3358.563 | Fish | Carangidae | Carangoides | fulvoguttatus | 37 337037 | 1168.4609 |
| 6 | Remediation | mE | 1 | E1_port_2.MP4 | 11987 | 25.6887 | After | 487.0908 | 52.004 | 9.046 | 5993.403 | Fish | Carangidae | Carangoides | fulvoguttatus | 37 337037 | 964.09583 |
| 6 | Remediation | mE | 1 | E1_port_2.MP4 | 12036 | 25.7213 | After | 483.6933 | 47.441 | 3.183 | 5820.909 | Fish | Carangidae | Carangoides | fulvoguttatus | 37 337037 | 944.7233 |
| 6 | Remediation | mE | 1 | E1_port_2.MP4 | 12037 | 25.722 | After | 506.3634 | 34.245 | 7.526 | 4654.415 | Fish | Carangidae | Carangoides | fulvoguttatus | 37 337037 | 1078.9271 |
| 6 | Remediation | mE | 2 | E2_port_1.MP4 | 8066 | 5.3773 | After | 720.08055 | 57.283 | 27.962 | 6126.715 | Fish | Labridae | Choerodon | schoenleinii | 37 384010 | 7271.7305 |
| 6 | Remediation | mE | 2 | E2_port_2.MP4 | 16671 | 28.8113 | After | 1973.4845 | 26.5 | 35.842 | 5676.793 | Fish | Carcharhinidae | Carcharhinus | leucas | 37018021 | 60220.963 |
| 6 | Remediation | mE | 3 | E3_port_1.MP4 | 16690 | 11.1267 | After | 272.594 | 7.629 | 4.871 | 2916.648 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 448.45188 |
| 6 | Remediation | mE | 3 | E3_port_1.MP4 | 16802 | 11.2013 | After | 290.044 | 4.063 | 5.201 | 3114.732 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 537.89716 |
| 6 | Remediation | mE | 3 | E3_port_1.MP4 | 16802 | 11.2013 | After | 208.008 | 6.621 | 4.419 | 3418.328 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 351018 | 203.00662 |
| 6 | Remediation | mE | 3 | E3_port_1.MP4 | 18167 | 12.1113 | After | 1439.691 | 138.88 | 11.381 | 9882.634 | Fish | Carcharhinidae | Galeocerdo | cuvier | 37 018022 | 33754.514 |
| 6 | Remediation | mE | 3 | E3_port_2.MP4 | 5800 | 21.564 | After | 2082.383 | 84.211 | 29.417 | 7611.51 | Fish | Mobulidae | Mobula | spp | | 122581.31 |
| 6 | Remediation | mE | 3 | E3_port_2.MP4 | 13026 | 26.3813 | After | 551.051 | 38.82 | 5.718 | 5118.058 | Fish | Carangidae | Carangoides | fulvoguttatus | 37 337037 | 1378.8202 |
| 6 | Remediation | mE | 3 | E3_port_2.MP4 | 13026 | 26.3813 | After | 468.086 | 56.874 | 16.811 | 6219.654 | Fish | Carangidae | Carangoides | fulvoguttatus | 37 337037 | 859.00523 |
| 6 | Remediation | mE | 3 | E3_port_2.MP4 | 13038 | 26.3893 | After | 655.894 | 36.666 | 19.08 | 4814.26 | Fish | Carangidae | Carangoides | fulvoguttatus | 37 337037 | 2284.9096 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | NearField | mG | 1 | G1_port_1.MP4 | 6411 | 4.274 | After | 305.2998 | 2.794 | 1.875 | 1640.898 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 | 351018 | 625.1022 |
| 6 | NearField | mG | 1 | G1_port_1.MP4 | 6445 | 4.2967 | After | 234.7902 | 5.865 | 5.603 | 2553.788 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 | 351018 | 289.52134 |
| 6 | NearField | mG | 1 | G1_port_1.MP4 | 8105 | 5.4033 | After | 258.0246 | 3.978 | 4.641 | 2369.36 | Fish | Labridae | Choerodon | schoenleinii | 37 | 384010 | 383.84844 |
| 6 | NearField | mG | 1 | G1_port_2.MP4 | 17830 | 29.584 | After | 242.6544 | 11.882 | 11.836 | 3703.849 | Fish | Acanthuridae | Naso | tonganus | 37 | 437047 | 379.17005 |
| 6 | NearField | mG | 1 | G1_port_2.MP4 | 17830 | 29.584 | After | 260.0433 | 17.615 | 4.277 | 3789.95 | Fish | Acanthuridae | Naso | tonganus | 37 | 437047 | 466.98948 |
| 6 | NearField | mG | 1 | G1_port_2.MP4 | 17851 | 29.598 | After | 283.4289 | 3.099 | 5.233 | 2252.873 | Fish | Acanthuridae | Naso | tonganus | 37 | 437047 | 605.16872 |
| 6 | NearField | mG | 2 | G2_port_1.MP4 | 1241 | 0.8273 | After | 509.9682 | 50.662 | 33.69 | 6440.32 | Fish | Ephippidae | Platax | pinnatus | 37 | 362006 | 2456.1323 |
| 6 | NearField | mG | 2 | G2_port_1.MP4 | 2035 | 1.3567 | After | 323.5932 | 2.932 | 8.593 | 1589.868 | Fish | Labridae | Choerodon | venustus | 37 | 384042 | 1011.8499 |
| 6 | NearField | mG | 2 | G2_port_1.MP4 | 4296 | 2.864 | After | 313.9731 | 3.709 | 9.272 | 2026.074 | Fish | Labridae | Choerodon | schoenleinii | 37 | 384010 | 673.66081 |
| 6 | NearField | mG | 2 | G2_port_1.MP4 | 8141 | 5.4273 | After | 736.8207 | 1.817 | 14.455 | 1475.021 | Fish | Carangidae | Carangoides | fulvoguttatus | 37 | 337037 | 3201.8479 |
| 6 | NearField | mG | 2 | G2_port_1.MP4 | 8149 | 5.4327 | After | 732.32775 | 2.706 | 22.821 | 2016.875 | Fish | Carangidae | Carangoides | fulvoguttatus | 37 | 337037 | 3145.5554 |
| 6 | NearField | mG | 2 | G2_port_1.MP4 | 8149 | 5.4327 | After | 763.21245 | 2.393 | 12.668 | 1915.147 | Fish | Carangidae | Carangoides | fulvoguttatus | 37 | 337037 | 3545.8733 |
| 6 | NearField | mG | 2 | G2_port_1.MP4 | 8149 | 5.4327 | After | 746.76945 | 1.801 | 14.064 | 1753.14 | Fish | Carangidae | Carangoides | fulvoguttatus | 37 | 337037 | 3328.8359 |
| 6 | NearField | mG | 2 | G2_port_1.MP4 | 8162 | 5.4413 | After | 766.0506 | 2.173 | 18.794 | 1902.139 | Fish | Carangidae | Carangoides | fulvoguttatus | 37 | 337037 | 3584.2479 |
| 6 | NearField | mG | 2 | G2_port_1.MP4 | 8173 | 5.4487 | After | 732.1356 | 3.958 | 19.323 | 1840.428 | Fish | Carangidae | Carangoides | fulvoguttatus | 37 | 337037 | 3143.1625 |
| 6 | NearField | mG | 2 | G2_port_1.MP4 | 8207 | 5.4713 | After | 722.799 | 3.567 | 15.973 | 1689.47 | Fish | Carangidae | Carangoides | fulvoguttatus | 37 | 337037 | 3028.3237 |
| 6 | NearField | mG | 2 | G2_port_1.MP4 | 14783 | 9.8553 | After | 837.4758 | 8.313 | 15.798 | 2289.894 | Fish | Hemiscylliidae | Chiloscyllium | punctatum | 37 | 013008 | 5350.0922 |
| 6 | NearField | mG | 2 | G2_port_1.MP4 | 14902 | 9.9347 | After | 809.40615 | 12.491 | 24.563 | 3060.021 | Fish | Hemiscylliidae | Chiloscyllium | punctatum | 37 | 013008 | 4806.9672 |
| 6 | NearField | mG | 2 | G2_port_2.MP4 | 1698 | 18.8293 | After | 685.3686 | 3.341 | 21.446 | 2840.252 | Fish | Echeneidae | Echeneis | naucrates | 37 | 336001 | 2181.6787 |
| 6 | NearField | mG | 2 | G2_port_2.MP4 | 1887 | 18.9553 | After | 3358.2066 | 162.981 | 99.76 | 10023.263 | Fish | Carcharhinidae | Carcharhinus | leucas | | 37018021 | 309626.91 |
| 6 | NearField | mG | 2 | G2_port_2.MP4 | 1919 | 18.9767 | After | 642.51705 | 69.397 | 55.561 | 8764.955 | Fish | Echeneidae | Echeneis | naucrates | 37 | 336001 | 1764.1711 |
| 6 | NearField | mG | 2 | G2_port_2.MP4 | 8934 | 23.6533 | After | 1417.1567 | 79.433 | 88.9 | 7921.75 | Fish | Scombridae | Scomberomorus | commerson | 37 | 441007 | 16962.423 |
| 6 | NearField | mG | 3 | G3_PORT_1.MP4 | 9745 | 6.4967 | After | 206.1756 | 6.832 | 6.05 | 3373.843 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 | 351018 | 467.40411 |
| 6 | NearField | mG | 3 | G3_PORT_1.MP4 | 9764 | 6.5093 | After | 673.047 | 24.094 | 5.854 | 4149.331 | Fish | Lethrinidae | Gymnocranius | audleyi | 37 | 351018 | 500.60836 |
| 6 | NearField | mG | 3 | G3_PORT_1.MP4 | 22388 | 14.9253 | After | 520.0452 | 2.844 | 3.33 | 2125.65 | Fish | Labridae | Choerodon | schoenleinii | 37 | 384010 | 1299.9807 |
| 6 | NearField | mG | 3 | G3_PORT_2.MP4 | 11138 | 25.1227 | After | 731.9637 | 90.191 | 7.898 | 7802.254 | Fish | Echeneidae | Echeneis | naucrates | 37 | 336001 | 1419.3458 |
| 6 | Reference | mH | 1 | H1_PORT_1.MP4 | 6675 | 4.45 | After | 180.4581 | 2.785 | 4.039 | 1895.59 | Fish | Mullidae | Parupeneus | multifasciatus | 37 | 355026 | 207.58373 |
| 6 | Reference | mH | 1 | H1_PORT_1.MP4 | 7959 | 5.306 | After | 287.6598 | 21.803 | 10.615 | 4030.444 | Fish | Lutjanidae | Symphorus | nametophorus | 37 | 346017 | 7556.4501 |
| 6 | Reference | mH | 1 | H1_PORT_1.MP4 | 8046 | 5.364 | After | 181.5264 | 13.249 | 13.127 | 6415.408 | Fish | Lutjanidae | Symphorus | nametophorus | 37 | 346017 | 3533.7933 |
| 6 | Reference | mH | 1 | H1_PORT_2.MP4 | 865 | 18.274 | After | 208.9665 | 2.481 | 3.506 | 1730.704 | Fish | Hemiscylliidae | Chiloscyllium | punctatum | 37 | 013008 | 3505.3026 |
| 6 | Reference | mH | 1 | H1_PORT_2.MP4 | 4322 | 20.5787 | After | 319.622 | 2.014 | 4.493 | 1623.492 | Fish | Labridae | Choerodon | venustus | 37 | 384042 | 700.4311 |
| 6 | Reference | mH | 1 | H1_PORT_2.MP4 | 4419 | 20.6433 | After | 224.343 | 1.268 | 5.788 | 1269.545 | Fish | Labridae | Choerodon | venustus | 37 | 384042 | 257.9928 |
| 6 | Reference | mH | 2 | H2_PORT_1.MP4 | 19229 | 12.8193 | After | 265.3164 | 11.659 | 33.376 | 4215.317 | Fish | Lutjanidae | Symphorus | nametophorus | 37 | 346017 | 14883.803 |
| 6 | Reference | mH | 3 | H3_PORT_1.MP4 | 22189 | 14.7927 | After | 251.7885 | 7.676 | 4.532 | 2870.052 | Fish | Labridae | Choerodon | venustus | 37 | 384042 | 314.86302 |
| 6 | Reference | mI | 1 | mI_Port_1.MP4 | 9520 | 6.3467 | After | 184.041 | 1.291 | 2.574 | 1253.105 | Fish | Hemiscylliidae | Chiloscyllium | punctatum | 37 | 013008 | 3960.4215 |
| 6 | Reference | mI | 1 | mI_Port_1.MP4 | 10302 | 6.868 | After | 235.1628 | 6.212 | 5.968 | 2234.321 | Fish | Labridae | Choerodon | venustus | 37 | 384042 | 322.08436 |
| 6 | Reference | mI | 1 | mI_Port_1.MP4 | 10302 | 6.868 | After | 216.351 | 2.896 | 3.565 | 2031.386 | Fish | Labridae | Choerodon | venustus | 37 | 384042 | 544.03996 |
| 6 | Reference | mI | 1 | mI_Port_1.MP4 | 10302 | 6.868 | After | 201.2616 | 5.883 | 5.031 | 2877.452 | Fish | Labridae | Choerodon | venustus | 37 | 384042 | 461.96084 |
| 6 | Reference | mI | 1 | mI_Port_1.MP4 | 10325 | 6.8833 | After | 245.23275 | 9.204 | 5.946 | 3412.976 | Fish | Labridae | Choerodon | venustus | 37 | 384042 | 373.15988 |
| 6 | Reference | mI | 1 | mI_Port_1.MP4 | 10605 | 7.07 | After | 797.4477 | 1.821 | 4.999 | 1603.74 | Fish | Nemipteridae | Pentapodus | paradiseus | 37 | 347028 | 145.04524 |
| 6 | Reference | mI | 1 | mI_Port_1.MP4 | 10605 | 7.07 | After | 287.89635 | 2.648 | 1.538 | 1606.66 | Fish | Nemipteridae | Pentapodus | paradiseus | 37 | 347028 | 118.42707 |
| 6 | Reference | mI | 1 | mI_Port_1.MP4 | 10645 | 7.0967 | After | 225.6387 | 1.04 | 6.875 | 1143.782 | Fish | Nemipteridae | Pentapodus | paradiseus | 37 | 347028 | 127.69085 |
| 6 | Reference | mI | 2 | I2_PORT_1.MP4 | 3989 | 2.6593 | After | 233.555 | 7.304 | 19.588 | 2199.271 | Fish | Labridae | Choerodon | venustus | 37 | 384042 | 425.40316 |
| 6 | Reference | mI | 2 | I2_PORT_2.MP4 | 16661 | 28.8047 | After | 759.474 | 2.441 | 11.602 | 1419.846 | Fish | Hemiscylliidae | Chiloscyllium | punctatum | 37 | 013008 | 4587.4706 |
| 6 | Reference | mI | 2 | I2_PORT_2.MP4 | 17836 | 29.588 | After | 274.187 | 3.329 | 14.001 | 1823.409 | Fish | Nemipteridae | Pentapodus | paradiseus | 37 | 347028 | 323.19582 |
| 6 | Reference | mI | 2 | I2_PORT_2.MP4 | 17847 | 29.5953 | After | 214.894 | 2.656 | 15.004 | 1673.443 | Fish | Nemipteridae | Pentapodus | paradiseus | 37 | 347028 | 163.19127 |



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