



Managing Research in the Great Barrier Reef Marine Park

(Revision 0) Effective from 04 October 2017

Objective: To guide the consistent and effective management of scientific and other research in the Great Barrier Reef Marine Park.

Target audience: Great Barrier Reef Marine Park Authority officers assessing applications for permission, applicants for Marine Park permissions, researchers from accredited institutions, and interested members of the public.

Purpose

1. To outline the Great Barrier Reef Marine Park Authority's (GBRMPA) approach to managing research activities in the Marine Park and specify key considerations and limitations in relation to research activities.
2. To guide development and assessment of applications for research permissions and institutional accreditations for limited impact research activities.

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Related legislation / standards / policy

3. [Great Barrier Reef Marine Park Act 1975](#) (the Act)
4. [Great Barrier Reef Marine Park Regulations 1983](#) (the Regulations)
5. [Great Barrier Reef Marine Park Zoning Plan 2003](#) (the Zoning Plan)
6. GBRMPA's
 - [Permission System Policy](#)
 - [Application Guidelines](#)
 - [Assessment Guidelines](#)
 - [Location specific assessment guidelines](#)
 - [Maritime Cultural Heritage Protection SMA assessment guidelines](#)
 - [Recording activity assessment guidelines](#)
 - Guidelines for impact assessment of various values (multiple documents) (Values Guidelines)
 - [Policy: Managing Activities that Include the Direct Take of a Protected Species from the Great Barrier Reef Marine Park](#) (Protected Species Policy)
 - [Guidelines for Managing Visitation to Seabird Breeding Islands](#)
 - [Position Statement on Managing Access to the Restricted Access Special Management Areas Surrounding Raine Island, Moulter Cay and Maclennan Cay](#)
 - [Position Statement on the Translocation of Species in the Great Barrier Reef Marine Park](#)
 - [Risk Assessment Procedure](#)
 - [Responsible Reef Practices](#)
 - [Science Strategy and Information Needs 2014-2019](#)

Context

7. GBRMPA is responsible for managing research in the Great Barrier Reef Marine Park (Marine Park) so that it is conducted appropriately. Permissions are a key tool to manage risks from a range of activities including research.
8. The 'Conducting research' section of the [Application Guidelines](#) provides pointers on determining whether an activity is considered research.
9. 'Research' generally includes biophysical, social and economic, and Indigenous cultural and historic heritage research. For decades, research in the Marine Park has concentrated on the Reef's natural values and processes (biophysical research). Biophysical research is therefore already a focus of specific requirements and allowances in the [Act](#), [Regulations](#) and [Zoning Plan](#), and of these Research Guidelines. More recently, strong growth has begun in other types of research, and management legislation and guidance is evolving in response.
10. The Zoning Plan and Regulations set out the way in which research activities are managed in the Marine Park. Limited impact research may be conducted by accredited research or educational institutions without the need for permission from GBRMPA. All other research requires permission.
11. The matters relating to joint permissions with Queensland described in GBRMPA's [Permission System Policy](#) apply to consideration of research activities. They enable complementarity and efficiency in permission consideration processes.
12. GBRMPA's [Risk Assessment Procedure](#) explains how risk is considered in decision-making on permissions.
13. A comprehensive and up-to-date understanding of the Great Barrier Reef (the Reef), its values, the processes that support it and the pressures affecting it is fundamental to its protection and restoration. Research of many kinds contributes greatly to this understanding and helps managers and the community make informed decisions on avoiding, mitigating and offsetting the pressures affecting the Reef.

14. GBRMPA takes a proactive approach to setting the research agenda for management of the Marine Park. GBRMPA's [Science Strategy and Information Needs 2014-2019](#)¹ document summarises the science information needs of GBRMPA, and is designed to be adaptive to accommodate emerging issues. The management context outlines why each theme is important and how the scientific information generated will be applied. A [register of detailed knowledge needs](#)² complements the themes and key science questions outlined in the strategy. The register will be regularly updated to address emerging issues and critical information needs for management. Insight is also provided by the [Reef 2050 Long-term Sustainability Plan](#)³ and five-yearly Great Barrier Reef Outlook Reports ([2009](#), [2014](#) and beyond)⁴.

General principles

15. **Valuing research** — GBRMPA:
- Is committed to ensuring that management decisions are based on the best scientific and other research information available.
 - Recognises that research may be commercial or non-commercial in nature.
 - Appreciates that most research, and the people who conduct it, contribute to the public good through building society's knowledge base.
 - Recognises the need to consider the research community's requirements in the context of a multiple-use Marine Park.
 - Expects the results from research activities in the Marine Park are either published or made available to management agencies through other mechanisms.
 - Engages with research by accessing relevant publications and datasets and by liaising with providers such as universities, research institutions and agencies, consultants, industries, Traditional Owners and the community.
16. **Ecologically sustainable use** — GBRMPA conducts environmental assessment of research proposals in accordance with the Regulations and based on the precautionary principle¹.
17. **Cooperative approach** — GBRMPA will continue to support cooperative approaches between Marine Park managers and the research community in relation to effective management of research.

All research activities

Where research can occur

18. The Zoning Plan defines where research activities may be allowed with or without permission depending on the zone type and the research's characteristics. [Table 1](#) summarises the research permission requirements for each zone within the Marine Park.
- Permissions are provided to researchers in the form of 'permit' documents.
 - Only research institutions that [are accredited](#) by GBRMPA can conduct limited impact research. Definitions of *extractive* and *non-extractive limited impact research* can be found in regulations 19 and 20 of the [Regulations](#). The meaning of 'take' is discussed further in these Research Guidelines.

¹ Under the Intergovernmental Agreement on the Environment (1992), the application of **the precautionary principle** in public and private decisions should be guided by (i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and (ii) an assessment of the risk-weighted consequences of various options. Similarly, under the *Great Barrier Reef Marine Park Act 1975* subsection 3(1) the precautionary principle means *that lack of full scientific certainty should not be used as a reason for postponing a measure to prevent degradation of the environment where there are threats of serious or irreversible environmental damage*.

Table 1: Permission (permit) requirements by zone

Research activity	Zone							
	General Use	Habitat Protection	Conservation Park	Scientific Research	Buffer	Marine National Park	Preservation	Commonwealth Island
Limited impact research (non-extractive)	No permit required	No permit required	No permit required	No permit required*	No permit required	No permit required	Permit required	Permit required
Limited impact research (extractive)	No permit required	No permit required	No permit required	No permit required*	Permit required	Permit required	Permit required	Permit required
All other research	Permit required	Permit required	Permit required	Permit required	Permit required	Permit required	Permit required	Permit required

* If an approved Environmental Management Plan (EMP) is in place then research must be conducted in accordance with the relevant EMP.

- Some locations have specific limitations and objectives relevant to research activities, as outlined in these Research Guidelines (e.g. see the ‘Research under permission’ section), GBRMPA’s [Location Guidelines](#), and other documents.

Research with associated education or tourism

- Although the activities of a researcher and their staff are usually considered to be research, in certain situations other people helping conduct those activities are considered to be participating in education or tourism. In these cases, the researcher is conducting (i) research and (ii) tourism /education activities and needs to seek permission from GBRMPA for both aspects. Refer to the [Application Guidelines](#) for additional information.
- Limited impact research may be conducted by institutions accredited for research under regulation 7 of the [Regulations](#).

Non-commercial, commercial, and government research

- Non-commercial and commercial research are treated the same way in terms of assessing risk to the values of the Marine Park. The only difference is that commercial research, including for the purpose of biodiscovery, attracts a cost recovery assessment fee. For more guidance on whether a research project is commercial refer to the [Application Guidelines](#).
- The GBRMPA website provides guidance on [accessing biological resources for the purposes of biodiscovery](#). The *Environment Protection and Biodiversity Conservation Regulations 2000* (EPBC Regulations) require a permit for access to biological resources. Permissions issued by GBRMPA suffice for the purpose of the EPBC Regulations to the effect that access to biological resources is exempt from requiring a permit under those regulations. However, applicants wishing to use biological resources for biodiscovery purposes will need to negotiate their own benefit sharing agreements with either the relevant Queensland department or the Commonwealth Department of the Environment and Energy, depending on sampling location.
- All applicants for permissions will need to declare whether samples will be used for biodiscovery purposes.
- Specimens collected under research permissions cannot be sold.
- Cost recovery arrangements are reviewed periodically. GBRMPA may revise permission application and assessment fees for research in the future, subject to Australian Government policy. GBRMPA will consult with the research community prior to changing fees.

Responsibility of permissions holder(s)

27. The research permission holder is responsible for all conduct that occurs under their permit (permission). Standard permit conditions require the permission holder to inform any participants, employees, volunteers or sub-contractors of the limits and conditions that apply. Accredited institutions are likewise responsible in relation to all limited impact research activities conducted under their accreditation.
28. GBRMPA expects researchers to provide information about the ongoing storage location of data collected by the project within permit reports or institutional accreditation reports. For example, information (including metadata, datasets or GIS layers) might be held by a particular person or organisation or lodged in certain online repositories. Having a record of where data is held increases the likelihood that GBRMPA can use these data for future management purposes.

Considering environmental conditions

29. Researchers operating under an institutional accreditation or permit are expected to consider the condition of, and current risk to, species and habitats in the design and day-to-day conduct of their research. This means staying aware of chronic and acute events and avoiding stressed or at-risk locations and species as much as possible. We recognise some research is specifically designed to examine impact levels and responses, but even in these situations researchers should consider ways to limit the impact of their research.
30. The risk posed by collection or interference to species, habitats and the ecosystem can be increased if the system has received a recent impact or is in poor health generally. For example, elevated vulnerability can result from extreme weather, disease outbreaks, and cumulative impacts. Similarly, when coral habitats are stressed additional consideration must be given to the appropriateness of collecting or interfering with algal grazers and coral-associated species (particularly fish), and other activities such as boat anchoring.
31. Research may not be given permission if the location or species is at elevated risk of stress due to recent or cumulative impacts in or near the study area — for example, if there has been extreme weather, coral bleaching, a crown-of-thorns starfish outbreak, or a marine pollution incident. Assessors will take a conservative approach when considering whether to recommend permission be granted for research and in formulating permit conditions. This includes considering the cumulative impact of all activities occurring in an area. In some circumstances it may be appropriate to allow research activities that specifically measure impact or recovery and therefore cannot be conducted elsewhere. However, take should still be minimised as much as possible.

For example,

- David wishes to conduct laboratory experiments on coral samples from reefs near Lizard Island. As this section of the Reef experienced significant bleaching in recent years reef recovery processes are of critical importance. GBRMPA may decide to grant to David a permission that (i) precludes collection during, and one month prior to, the annual coral spawning event and (ii) tightly limits total collection amounts and boat anchoring activity in bleaching-affected areas.
- Maria plans to do an extensive light shading experiment on a seagrass meadow that forms core feeding habitat for a large number of dugongs. The meadow is close to the mouth of a large river known for its chronic poor water quality and recent major flooding. Disturbance from vessels occurs from time to time. Several existing research programs have permission to extract large numbers of seagrass samples from the area. Given the stress already experienced by the seagrass in this meadow, GBRMPA may decide not to grant Maria permission.
- Hayley is coordinating a program of rapid impact assessment and recovery monitoring after a severe cyclone. Although the coral and seagrass habitats in the research locations are expected to be badly damaged, GBRMPA may decide to grant Hayley permission because the work logically needs to be located where the impact occurred and will inform decisions on management actions to support recovery of the system.

32. Permissions may include conditions that refer to threshold values or impact types and provide specific limits or required actions that are triggered when thresholds are exceeded or an impact of a particular type occurs.
33. GBRMPA may modify the conditions of existing permissions to further restrict collections or activities if it believes, on reasonable grounds, that it is necessary to do so to protect the environment, or the living resources, of the Marine Park (regulation 88ZP of the [Regulations](#)).

Take, sampling intent, and secondary use of research specimens

34. For the purposes of the Zoning Plan, ‘taking’ an animal, plant or marine product has the meaning given by section 1.5 of the [Great Barrier Reef Marine Park Zoning Plan 2003](#) and encompasses, among other things, ‘interfering with’. GBRMPA generally considers ‘interfering with’ an animal or plant to include actions such as touching, injuring, and (for animals) significantly influencing behaviour (even where no physical contact takes place).
35. Where research involves the temporary removal of specimens from the Marine Park, researchers and GBRMPA should consider the likelihood of disease or contamination exposure and the risk of specimens being used for purposes other than those intended. Specimens being returned to the Marine Park must be placed back as close as possible to the location where they were taken from and always within their accepted distribution, within the same genetic population, and not to areas with poorer parasite or disease status. The [Position Statement on the Translocation of Species in the Great Barrier Reef Marine Park](#) contains additional guidance.
36. It is an offence under the *Criminal Code Act 1995* to provide false information as part of an application or dealings with GBRMPA in relation to permissions. Researchers should not artificially inflate the number or type of samples needed for their research project simply to service the sampling desires of a researcher working on a different project. The purposes of collection need to be consistent with the stated scope of the research.

For example,

- Neville and Kelly work in different departments at a university on unrelated research programs. Neville asks Kelly to collect some damselfish for his physiology project when she is out collecting for her anemone fish behavioural project, as he doesn’t want the bother of applying for his own permission from GBRMPA. Kelly may be committing fraud if she told GBRMPA in her application for permission that she needed to collect damsel fish for her own project.
- Neville decides to switch his study animal to anemonefish. He asks Kelly to collect an extra 100 anemone fish so that he does not need to apply for his own permission from GBRMPA. If Neville’s research does not have the same objectives as Kelly’s then Kelly could be committing fraud if she allocates him 100 of her own fish or simply bumps up the sample figure in her application for permission to ask for an extra 100 fish without further explanation.
- However, if Neville and Kelly coordinate with each other before Kelly applies then she can ask for a permit that covers the needs of both of their projects. They must ensure that the objectives, methods and sampling needs of both projects are explained in the application to GBRMPA.
Note: if the permission is issued only to Kelly then she is wholly responsible for all activities and sampling conducted under the permission and she should be prepared to accept responsibility for Neville’s conduct in the Marine Park.
- Neville and Kelly decide to jointly apply for permission that covers both their personal anemone fish projects. As they each also supervise a number of research students, GBRMPA suggests they request an ‘umbrella’ style permit that can also cover the predicted sampling needs of the students over the next five years.

37. GBRMPA recognises collections of research specimens obtained from the Marine Park provide a valuable resource to the scientific community when made available to secondary research projects. Deposition of such specimens into public museum collections where they will be available to other researchers is encouraged. GBRMPA considers additional research uses to be appropriate when the specimens were collected for the primary purpose of the original research project (under a permission or institutional accreditation) and:
 - The specimens are not required to be returned to the Marine Park; and
 - The secondary uses will contribute to publically available research findings; and
 - Specimens will be used for non-commercial purposes; and
 - Specimens are not sold (no commercial transaction occurs).

Protected species

38. Researchers are expected to report interactions with 'protected species' in accordance with the [Policy: Managing activities that include the direct take of a protected species from the Great Barrier Reef Marine Park](#) and the requirements of institutional agreements or permission-related conditions and requirements. For instance, permission conditions generally specify that the permission holder must notify GBRMPA within 72 hours if a protected species is adversely impacted, injured or killed during the permitted activities (other than where the permission allows that take). An 'institutional agreement' means an agreement (such as a Memorandum of Understanding) entered into between the GBRMPA and a research institution in order to satisfy the GBRMPA that the institution has adopted practices and standards described in subregulation 7(1) of the [Regulations](#) and has a commitment described in that subregulation.
39. Research proposals that wish to 'take' protected species must apply for permission from GBRMPA.

Methods, equipment, and best environmental practice expectations

40. In these Research Guidelines, a requirement for equipment to be 'attended at all times' means the researcher must actively monitor the equipment (including keeping it within sight) and remain close enough to be able to take control of it within a few minutes. Additionally, the equipment cannot be left in place if the researcher leaves the water or moves to another site.
41. In general, extractive research should be avoided within a 50m radius of a permitted mooring unless the researcher receives written support from the mooring owner.
42. Marine debris and microplastic pollution are of growing concern worldwide. The use in research of plastic items that may easily be lost or disintegrate over time is discouraged in the Marine Park.
43. GBRMPA expects all researchers conducting research activities in the Marine Park to adopt best environmental practices in recognition of the area's environmental significance and World Heritage status.
44. '[Responsible Reef Practices](#)' guidance has been prepared for a range of activities (e.g. anchoring and mooring, collecting, outboard engines, visiting islands and cays, fishing, snorkelling, waste, reef walking) and also apply to research activities.

Environmental Management Plans

45. Accredited institutions operating research stations facilitating research within parts of the Scientific Research Zone (SRZ) are encouraged to prepare Environmental Management Plans (EMPs) that provide site-based guidelines and codes of conduct for research. Incorporation of consideration of changing environmental conditions and risks is encouraged. The [Assessment Guidelines](#) contain information about the content and requirements of EMPs generally. [Appendix 1](#) provides additional guidance in relation to EMPs for research stations.
46. Under legislation (regulations 19(1)(c) and 20(1)(c) of the [Regulations](#)) all researchers conducting limited impact research field work in Scientific Research Zones must abide by GBRMPA approved EMPs where they are relevant. Researchers operating under permissions are subject to conditions around liaison with research stations and abiding by resulting guidance on work within the local SRZ.
47. Research station operators are encouraged to liaise with users accessing areas adjacent to the local SRZ.

Communicating with other users

48. The Marine Park is a multiple use marine park and as such a number of varied and potentially conflicting uses may occur side-by-side.
49. GBRMPA encourages researchers to maximise opportunities to liaise and communicate with other users of the Marine Park in the areas in which they are undertaking field work, and more broadly. Good communication can minimise the potential for conflicts to occur, build greater public awareness and promote the outcomes of research relevant to the Marine Park.
50. Depending on the nature (sensitivity or risk) and scale of the research, it may be necessary for a researcher or research institution to submit a communication plan to GBRMPA outlining how the research program and activities will be communicated with other users of the Marine Park.

Understanding and respecting Aboriginal and Torres Strait Islander connections and sites

51. Researchers should have regard to the rights and interests of Aboriginal and Torres Strait Islander people who use, and live adjacent to, the Marine Park.
52. GBRMPA strongly encourages researchers working in the Marine Park to make contact and discuss their research with relevant registered native title claimant groups, Traditional Owners, and/or Native Title Representative Bodies. Recommended guidance for involving Traditional Owners includes Indigenous engagement and participation documents issued by the [National Environmental Science Programme](#) and its [Tropical Water Quality Hub](#).
Note: Prior to the granting of permissions for use or entry of the Marine Park, GBRMPA conducts Native Title Notification (see the [Assessment Guidelines](#)). Research activities that require a Public Environment Report or Environmental Impact Statement assessment approaches may be required to undertake targeted Traditional Owner consultation with details outlined in the Terms of Reference.
53. GBRMPA encourages researchers to continue to build their own knowledge about the cultural heritage of Aboriginal and Torres Strait Islander people, and to respect the values and many special sites of Traditional Owners throughout the Marine Park.

Research under accreditation

Limited impact research

54. The Zoning Plan provides for limited impact research to be conducted in certain zones of the Marine Park without written permission of GBRMPA provided certain conditions are satisfied. One condition is that the research being undertaken is a component of a research project conducted by a research institution accredited under regulation 7.
55. In accordance with regulation 7 of the [Regulations](#), GBRMPA may accredit a research institution to conduct one or more of the following under an institutional agreement:
 - limited impact research (extractive) as defined within regulation 19 of the [Regulations](#);
 - limited impact research (non-extractive) as defined within regulation 20 of the [Regulations](#);if it is satisfied that the institution:
 - has adopted appropriate environmental practices and standards (including instruction and training of personnel); and
 - has an ongoing commitment to improve those practices and standards.
56. These Research Guidelines outline important standards, limitations and considerations regarding extractive and non-extractive limited impact research by accredited research institutions. The [Regulations](#) and [Zoning Plan](#) contain additional detail and information.
57. Non-compliance with these Research Guidelines may result in a review of the accreditation at GBRMPA's discretion. Consideration may be taken of whether the non-compliance was reported in accordance with requirements of any agreement entered into between GBRMPA and the accredited research institution.

Environmental awareness

58. Researchers undertaking limited impact research are expected to consider the state of the local environment at the time they intend to conduct their activities, and adjust them where possible to alleviate risk to stressed habitats and species.

For example,

- A hot summer brings severe coral bleaching to one of PhD student Katie's field sites. She decides to delay her sampling of herbivorous fish to support reef recovery.

Methods and equipment for non-extractive limited impact research

59. Only certain types of research are allowed under the regulation 20 definition of non-extractive limited impact research in the [Regulations](#). ‘Take’ of animals, plants or marine products is generally not allowed (see the discussion of the definition of ‘take’ in point 34).
60. GBRMPA generally considers that the use of certain research methods and equipment will fall within the definition of non-extractive limited impact research in the Regulations when applied in accordance with the limitations specified in [Table 2](#).

Table 2: Limitations and guidance for research equipment and methods used in non-extractive limited impact research (*all of these items and methods can also be used in extractive limited impact research*):

Method or equipment	Limitations on use
(a) Common low-impact data collection equipment	<p>Small, passive items that support data collection may be used as part of non-extractive limited impact research, provided they meet these conditions:</p> <ul style="list-style-type: none"> • items must be easily carried by one person with little risk of knocking into and damaging surrounding species, habitat or artefacts; and • items must be non-fixed (not attached to the substrate or a fixed structure); and • items must be carried continuously on a person’s body or attended at all times; and • items may contain a sealed battery and have small electrical or motorised parts such as timers or gears; and • items must be used in a manner that does not harm the environment. <p>Acceptable items include:</p> <ul style="list-style-type: none"> • underwater slates and pencils • taxa ID cards • watches and timers • global positioning devices (GPS) • data loggers as described in Table 3(a) excluding attachment and deployment (i.e., they must be non-fixed) • sensors that do not emit significant electrical signals, sound, or light into the environment (e.g., Secchi discs, digital thermometers, light meters, and pH, dissolved oxygen and salinity meters). • portable hydrophones • standard, low power, recreational fish-finders and depth sounders when affixed to research boats (other equipment that uses radar or sonar is not allowed). <p>The following are not allowed for non-extractive limited impact research (but may, in certain circumstances, be allowed under extractive limited impact research):</p> <ul style="list-style-type: none"> • Callipers, sediment sieves or other equipment that interferes with animals, plants or marine products when in use (and therefore involves ‘take’ of animal, plant, or marine product). • Test kits that involve mixing animal, plant, or marine product samples from the Marine Park with chemicals – as this involves ‘take’.
(b) Transect tapes and	Non-fixed transect tapes and quadrats are allowed only for use in visual surveys (as per subregulation 20(1)(a)(iii) of the Regulations) and provided they are attended at

Method or equipment	Limitations on use
quadrats	<p>all times while in use. Such tapes and quadrats must be:</p> <ul style="list-style-type: none"> • only used if they can easily be carried by one person with little risk of knocking into and damaging surrounding species, habitat or artefacts; • removed from the Marine Park following each use; and • used in a manner that does not harm the environment. <p>There is no limit to the dimensions or quantities of quadrats that can be used at a single site or location, provided the above conditions are met.</p>
(c) Cameras	<p>Small still and video cameras may be used provided they are:</p> <ul style="list-style-type: none"> • used in accordance with the ‘low impact recording’ and other limits in the Recording Guidelines (including the section on ‘Recording for the purpose of research’); and • non-fixed (not attached to the substrate or a fixed structure); and • attended at all times; and • removed from the Marine Park following each use; and • used in a manner which does not harm the environment.
(d) Visual and passive acoustic survey methods	<p>Towboards may be used to assist observers to move through the water during visual surveys.</p> <p>Visual surveys of cetaceans are to be carried out in accordance with Part 4A of the Regulations.</p> <p>Remotely piloted aircraft (e.g., drones) and remotely operated vehicles (ROVs) can be used for visual surveys and passive acoustic surveys as long as researchers:</p> <ul style="list-style-type: none"> • abide by the ‘low impact recording’ and other limits in the Recording Guidelines (including the section on ‘Recording for the purpose of research’); and • abide by the access limitations for areas identified in the Location Guidelines; and • do not use acoustic positioning beacons. <p>A drone flying according to a pre-programmed route may be considered to be an autonomous vehicle. Despite the limitations on ‘autonomous vehicles’ in the Recording Guidelines, researchers may use pre-programming functions for drones and ROVs during limited impact research if the researcher has the ability (equipment and skill) to take back immediate and direct control of the vehicle at any given time.</p> <p>For example, If an easily disturbed species enters an area where the drone is working, the researcher must be able to override the automatic flight path and adjust or abort the flight to reduce the risk of impacting the animal(s).</p> <p>Autonomous underwater vehicles (AUVs) are not allowed.</p>

Methods and equipment for extractive limited impact research

61. Sampling may be limited research sampling if taking is done, in accordance with these Research Guidelines:
- by hand; or
 - by the use of a hand-held implement that is not motorised and not pneumatically or hydraulically operated; or
 - by the use of a ‘minor research aid’.

Examples of hand-held implements considered to be acceptable for extractive limited impact research include measuring callipers, weighing scales, small dip nets, and sediment sieves.

Other limitations on limited research sampling apply in addition to the above. See subregulation 19(2) of the [Regulations](#).

62. Subregulation 19(2) of the [Regulations](#) contains a definition of the ‘minor research aids’ that can be used for extractive limited impact research. Limitations on the use of these minor research aids are specified in subregulations 19(1) and 19(2) and these Research Guidelines, including [Table 3](#).
63. Where minor research aids have the potential to impact on the amenity/aesthetics of a high-use tourism site, GBRMPA expects accredited research institutions to consult with operators who conduct activities within the proposed study area.
64. Any minor research aids left unattended (where this is allowed, see [Table 3](#)) in the Marine Park must display the institution name and unique identifier number of the relevant institutional agreement.
65. All installed minor research aids must be removed from the Marine Park as soon as is practical before or at the completion of the research project. A summary of equipment installation, losses, and removals is to be reported annually to GBRMPA by the accredited institution.

Table 3: Limitations on the use of 'minor research aids' in extractive limited impact research.

Minor research aid	Limitations on installation and use	Additional guidance
(a) Data loggers	<p>Data loggers (including any associated sensors) must be:</p> <ul style="list-style-type: none"> • continuously carried on the researcher’s body; or • attended at all times; or • attached and deployed by means described within subregulations 19(1) and (2) of the Regulations and further specified at minor research aids (i), (j) and (k) of this table. This includes when attached to an ROV or towboard. <p>To be considered minor research aids data loggers must not be greater than 500 millimetres in their longest dimension and only used with the sensors described in Table 2.</p> <p>Data loggers may contain a sealed battery and small electrical parts.</p>	Sensors may be integrated within the same outer casing as the data logger or separate and connected via leads.
(b) Water and sediment sampling devices	<p>Water and sediment sampling devices must be:</p> <ul style="list-style-type: none"> • attended at all times, or attached and deployed by means prescribed within subregulations 19(1) and (2) of the Regulations and further specified at minor research aids (i), (j) and (k) of this table; and • used in accordance with the best practice guidance in the Queensland Water Monitoring and Sampling Manual; and • not motorised or pneumatically or hydraulically 	<p>Note that in the Regulations:</p> <ul style="list-style-type: none"> • 19(2)(c) limits take of seawater to 100 litres per calendar year per research project. • 19(2)(b) limits wet sediment take to 20 litres per calendar year per research project.

Minor research aid	Limitations on installation and use	Additional guidance
	<p>operated other than they may:</p> <ul style="list-style-type: none"> o contain a sealed battery; and o have small electrical or motorised parts such as timers and gears; and o incorporate small water pumps with water flow rates of less than 25 litres per minute. <p>Water and sediment sampling devices that may spill hydraulic fluid, oil, fuel or other chemicals (e.g., if faulty or damaged) or that produce more than extremely minimal airborne and underwater noise and vibration are not allowed.</p>	<p>An example of an acceptable small water pump is a water quality auto-sampler or a passive sampler with a 12 volt bilge pump generating a 25 litres per minute flow past the sampling mechanism. Care is needed not to exceed the take limits for seawater outlined above.</p>
(c) Non-fixed plankton nets, transect tapes and quadrats	<p>Non-fixed plankton nets must:</p> <ul style="list-style-type: none"> • be attended by the researcher at all times; and • have a widest net mouth dimension of no more than 500 millimetres; and • be securely attached to a vessel while being towed, unless its widest mouth dimension is 300 millimetres or less (in which case it can be hand-held); and • only be used for tow times of 15 minutes or less. <p>Non-fixed transect tapes and quadrats must be used in accordance with the guidance in Table 2 for non-extractive limited impact research.</p>	<p>Extra care must be taken when using plankton nets in reef habitats to avoid entanglement and damage to coral and other species.</p> <p>Securing to a vessel is recommended because if the net is pulled out of the researcher's hands (e.g., by an animal hitting or entering the net) it becomes a free-floating net assembly, potentially with an entangled animal. Risks of not securing the net include difficulty or inability of the researcher to retrieve the net leading to distress/injury to animals (including drowning of air-breathers) and potential for the net to become entangled in reef habitats.</p> <p>Use of plankton nets in areas where there is a high risk of entanglement or capture of species of conservation concern is not recommended, e.g., close to turtle nesting beaches during hatchling season (particularly at night).</p>
(d) Apparatus, or equipment, authorised under Queensland fisheries legislation for recreational use	<p>Must be used in accordance with the Queensland Fisheries Regulation 2008 as defined for the Zoning Plan by the Regulations.</p>	<p>Limitations on the apparatus and equipment authorised under Queensland fisheries legislation can be found through the world wide web, at the time of publication: 'Recreational fishing rules and regulations – fishing equipment'.</p>
(e) Clove oil in solution (COS)	<p>A solution of clove oil (COS) consists of clove oil (eugenol), ethanol and/or seawater.</p> <p>Confined-aggregation collection methods using COS (e.g., enclosure tents or use in tide pools or other small enclosed areas) are not allowed.</p> <p>Use of COS to capture unconfined fish must be in accordance with the following conditions:</p>	<p>COS is a useful fish capture tool, but needs to be used carefully. Especially as it can be lethal to coral and other taxa.</p> <p>COS should be applied at approximately 10 millilitres per dose, preferably at a concentration lower</p>

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Minor research aid	Limitations on installation and use	Additional guidance
	<ul style="list-style-type: none"> • only concentrations of up to 15 per cent COS are allowed; and • the COS must be dispersed from a hand-held spray bottle, with no more than 1000 millilitres of COS to be carried on a person at a time while undertaking research sampling; and • the total amount of COS of maximum concentration allowed to be carried on a research vessel is equivalent to 2000 ml per person per planned dive; and • the person using the COS must have demonstrated underwater field experience and competency; and • researchers using COS must take into account the potential for COS-associated impacts on corals and other organisms, as well as target and non-target fish species, and minimise the risks of harm including through the use of practical controls such as: <ul style="list-style-type: none"> ○ the diver should remain in-situ for at least five minutes following application of the COS to ensure that any affected non-target species are allowed to recover and do not become exposed to predation (building time for this activity into dive planning is advised). ○ fish capture using COS should generally occur at an isolated coral colony where focus and non-focus animals are visible and the desired specimen is easy to target and capture; and ○ for coral-associated species, specimen(s) taken should, where possible, be returned to the coral colony where captured; and ○ if there has been a recent environmental perturbation in the proposed study area (e.g., high levels of thermal stress, cyclone, disease outbreak) the use of COS may need to be avoided or restricted. <p>For COS application to be considered use of a minor research aid, researchers are expected to apply the most up-to-date and currently available best-practice standards and guidelines for the use of COS in the marine environment, within the allowances of these Research Guidelines.</p> <p>Attempting to capture fish in a complex bommie habitat is not considered best practice due to the difficulty in targeting and capturing individual specimens.</p>	<p>than 15 per cent that has been determined by trials to be appropriate for the target species.</p> <p>If the application of the COS is well-planned and well-targeted, the specified quantities should allow for the anaesthetisation and capture of approximately 50 specimens per diver, with a reserve for capture of a further 100 specimens per excursion. However, this capture quantity is unlikely in practice as it would be expected that not all applications will hit their targets. In locations of high-current where the target fish are highly agile, it has been noted to take up to 500 millilitres of 10 per cent clove oil in alcohol to capture 11 target specimens (juvenile wrasse living in anemones) (Arvedlund⁵).</p> <p>The results of any new species-specific minimum concentration trials conducted are expected to be reported to GBRMPA.</p> <p>Appendix 2 contains recommendations on what might be considered best practice trials to determine appropriate use of COS in terms of species-specific minimum concentrations and dosages.</p> <p>There is some information in the literature regarding effects of COS on non-target taxa. For example, Frisch <i>et al.</i>⁶ found that in-field application of 9:1 alcohol to clove oil solution (10 per cent) had no noticeable effect on coral health unless applied in large quantities (100 millilitres) into the centre of a tight matrix of a coral colony. Boyer <i>et al.</i>⁷ noticed coral colouration and growth reduction for clove oil mixed with alcohol at concentrations greater than or equal to 14 per cent.</p> <p>Robertson and Smith-Vaniz⁸ note there are three main kinds of clove oil solution usage in the field — capture of unconfined fish, confined-aggregation capture in open water, and confined-aggregation capture in tide pools. Only the first is considered appropriate under limited impact research.</p>
(f) Tags	Tagging is considered ‘take’ and therefore must be conducted according to the regulated limits (see point 66 of these Research Guidelines for more	In general, metal tags are preferred over plastic tags to reduce the risk of plastic pollution.

Minor research aid	Limitations on installation and use	Additional guidance
	<p>information).</p> <p>Chemical and genetic tags are not allowed as part of limited impact research.</p> <p>Plastic tags exposed to sunlight must be made of UV stabilised material.</p> <p>Acoustic tags are allowed only if they meet the conditions below, they may contain a sealed battery and small electrical parts.</p> <p>Sealed radio-frequency identification (RFID) tags (also known as passive integrated transponder tags) are allowed only if less than 50 millimetres in length.</p> <p>Tags used on marine products (e.g., on rocks) are to be removed when the research project ceases if the marine product will be returned to, or left in, the Marine Park.</p> <p>Tags used on plants must allow for growth to occur and not put the plant at risk of significant injury or death.</p> <p>Tags must be applied in accordance with best-practice standards and guidelines for the particular taxa or marine product being sampled. It is the responsibility of the researcher to be informed and aware of the most current best-practice standards and guidelines and to apply them.</p> <p>In accordance with best practice, a tag must be of appropriate size, weight and (for acoustic tags) acoustic signal properties for the species and age class it is being applied to. The attachment method and positioning must be selected so as to reduce risk to the animal or plant as far as reasonably possible.</p> <p>Attachment of tags must be done by researchers with reasonable experienced in the procedures involved in the application of tags, or under the direct supervision of such a person.</p> <p>The use of tags on animals as a minor research aid must only occur following approval by the accredited institution's ethics committee whose responsibility it is to assess and approve proposed research programs which manipulate animals.</p>	<p>Carefully consider the additional risks that external attachments of tags to soft body surfaces and internal attachments requiring surgery pose for animals. For example, external attachments can cause problems for some fish and sharks and in these cases internal placement may be more appropriate.</p> <p>Winter⁹ suggests that the weight of acoustic transmitters (acoustic tags) for fish should be less than 1.25 per cent of the fish body weight (in water) or 2 per cent in air in order to have no negative effect on growth and health. This recommendation has been subject to much debate with it being suggested that it is both species and age dependent (Thorstad¹⁰, Jepsen <i>et al.</i>¹¹).</p> <p>The American Use of Fishes in Research Committee¹² provides general guidelines for the use of fish in research that includes information on tagging.</p>
(g) Passive acoustic monitoring and survey equipment	<p>Portable hydrophones are allowed only when attended at all times (as per non-extractive limited impact research).</p> <p>Passive acoustic recorders and receivers must be attached and deployed by means prescribed within regulation 19(1) and (2), further specified at minor research aids (i), (j) and (k) of this table, in such a way that limits damage to the benthos (particularly corals).</p> <p>Acoustic recorders and receivers must not be installed less than 50 metres apart.</p> <p>Acoustic monitoring and survey equipment may contain a sealed battery and have small electrical or motorised parts such as timers or gears.</p>	<p>Although GBRMPA's Great Barrier Reef Underwater Noise Guidelines Discussion and Options Paper¹³ does not discuss acoustic locator beacons in detail, as they are generally not anticipated to pose significant risk to marine animals, the beacons are not considered appropriate equipment for limited impact research because their use and specifications can vary quite widely, some could pose risk, and new versions of the technology are being developed all the time.</p> <p>Acoustic beacons are sometimes</p>

Minor research aid	Limitations on installation and use	Additional guidance
	<p>Tag readers that use sound or particle motion (e.g., a radio signal) are not allowed because these are classed as active acoustic devices. For example, hand-held passive integrated transponder (PIT) tag readers cannot be used.</p> <p>Acoustic locator and positioning beacons are not allowed, including ultra-short baseline (USBL) beacons used with ROVs.</p>	<p>used to allow precise positioning of ROVs. Multiple beacons are laid out on the seabed and a receiver is attached to the ROV. The beacons emit a 'ping'. Many operate at high frequencies but there are also long range beacons that produce lower frequencies.</p>
(h) Equipment for conducting underwater video surveys	<p>Towed or fixed video cameras are allowed if the 'low impact recording' and other limits provided in GBRMPA's Recording Guidelines are followed.</p> <p>Where fixed, video cameras must be attached and deployed by means prescribed within subregulations 19(1) and (2) of the Regulations and further specified at minor research aids (i), (j) and (k) of this table in such a way that limits damage to the benthos (particularly corals) to an absolute minimum.</p> <p>Baited remote underwater video cameras (BRUVs) are allowed as long as:</p> <ul style="list-style-type: none"> • deployment is no longer than four hours before retrieval, and; • they are attached and deployed by means prescribed within regulation 19(1) and (2), detailed at minor research aid (k) of this table in such a way that limits damage to the benthos (particularly corals) to an absolute minimum; and • when used in an area of the Scientific Research Zone associated with a research station, site selection advice from the research station manager is sought and considered.* <p>Equipment for conducting underwater video surveys may contain a sealed battery and have small electrical or motorised parts such as timers or gears.</p> <p>Remotely operated vehicles (ROVs) are allowed if the 'low impact recording' and other limits provided in GBRMPA's Recording Guidelines are followed. However, acoustic locator beacons used for high precision positioning of ROVs (e.g., ultra-short-baseline systems) are not allowed.</p> <p>Autonomous underwater vehicles (AUVs) are not allowed.</p> <p>Equipment that uses radar or sonar is not allowed, other than recreational depth sounders as specified in Table 2(a).</p>	<p>A precautionary approach should be taken when considering installation of equipment for conducting underwater video surveys if risk is elevated due to other cumulative impacts in the study area (e.g., extreme weather, marine pollution incident).</p> <p>* Note under subregulations 19(1)(c) and 20(1)(c) of the Regulations all limited impact research occurring in an area of the Scientific Research Zone associated with a research station must be conducted in accordance with that research station's Environmental Management Plan if one is in place and has been approved by GBRMPA.</p>

Minor research aid	Limitations on installation and use	Additional guidance
(i) Equipment for fastening minor research aids	<p>Wire, bolts, screws and other fasteners are allowed as long as they are made of metals that will not create toxicity issues if they corrode.</p> <p>In keeping with efforts to reduce the risk of plastic pollution, plastic fasteners (such as cable ties) are not allowed. Researchers proposing to use plastic fasteners are required to submit a permission application to GBRMPA.</p> <p>Dive weights may be attached to minor research aids as long as the least weight necessary for submersion is used.</p> <p>A minor research aid (other than clove oil in solution and anything required to be 'non-fixed' or carried by hand) can be attached to another minor research aid where this can be done without creating a large structure, an unacceptable entanglement risk for fauna or people, or a hazard to navigation.</p> <p>Attachment of a minor research aid to a living organism is not allowed other than use of tags as specified at minor research aid (f) of this table.</p>	<p>An example of an acceptable attachment between two minor research aids is a small temperature logger tied with metal wire to a stake, dive weight or marker buoy.</p>
(j) Stakes	<p>Stakes may be used as attachment points for minor research aids (a), (b), (f), (g), and (h) of this table if the attachment is done in accordance with minor research aid (i).</p> <p>Round metal rods are allowed but must be no greater than 2400 millimetres in length and 12 millimetres in diameter.</p> <p>Metal star pickets are allowed but must be no greater than 2400 millimetres in length and 50 millimetres in diameter.</p> <p>To reduce the risk of micro and macro plastic pollution, plastic stakes (e.g. pegs) are not allowed. Researchers proposing to use plastic stakes are required to submit a permission application to GBRMPA.</p> <p>No more than 40 stakes can be used at any one site (an area of 3000 square metres) within a 'research location'.</p> <p>Stakes must only be installed on bare sand, mud or rock. As coral cannot be 'taken' under limited impact research, stakes cannot be embedded in coral colonies, including encrusting coral growing over other substrate.</p> <p>Due care and attention must be applied during the transport and installation of stakes, especially in and around coral reef habitats, so that damage to the benthos does not occur.</p>	<p>As defined in subregulation 19(2) of the Regulations a 'research location' means a discrete, identified reef; or a continuous non-reef area of up to 1,000 hectares.</p>
(k) Sub-surface	<p>Sub-surface or surface marker buoys may only have</p>	<p>As defined in subregulation 19(2) of</p>

Minor research aid	Limitations on installation and use	Additional guidance
<p>marker buoys, surface marker buoys</p>	<p>minor research aids (a), (b), (f), (g), and (h) of this table attached to them if the attachment is done in accordance with minor research aid (i) of this table.</p> <p>Marker buoys, both surface and sub-surface, and mooring lines must be the smallest size possible to achieve floatation of the marker and any minor research aids being supporting.</p> <p>To reduce the risk of micro and macro plastic pollution, plastic-based marine rope used for mooring lines must be non-fraying, abrasion-resistant, and UV stabilised.</p> <p>No more than 10 surface marker buoys may be used at any one site (an area of 3000 square metres) within a ‘research location’.</p> <p>No more than 20 sub-surface marker buoys may be used at any one site (an area of 3000 square metres) within a ‘research location’.</p> <p>Surface and sub-surface marker buoys must be moored with lines by:</p> <ul style="list-style-type: none"> • fastening the line directly to the substrate only if the load will not cause loss or damage to the substrate either due to the length of exposure or due to the force of the load or both; or • fastening the line to an inverted u-shaped metal rod less than or equal to 12 millimetres in diameter driven into sand; or • fastening the line to a single weight per buoy rig of no more than dimensions 400 x 200 x 200 millimetres. Metal chain or wire of a gauge less than or equal to 8 millimetres may be used to secure the line to the weight if necessary. The chain length should be just long enough to fasten the line to the weight. <p>Where surface or subsurface marker buoys are left unattended, they must:</p> <ul style="list-style-type: none"> • display the institution name and unique identifier number of the institutional agreement (or permit) the project is operating under; and • not be in a location where they pose a hazard to regular navigation; and • not be in a location where their line poses a likely entanglement hazard to fauna (such as cetaceans, seabirds and marine turtles); and • not be likely to drag the mooring mechanism along the substrate or become tangled on rocks or reef; and • not unreasonably impact the visual amenity of areas that are under high use by other types of Marine Park users. 	<p>the Regulations a ‘research location’ means a discrete, identified reef, or a continuous non-reef area of up to 1,000 hectares.</p>

Sampling (take) limits for extractive limited impact research

66. Regulation 19 of the [Regulations](#) prescribes limitations around sampling methods and extent of take. Subregulations 19(3) and (4) restrict the number of individual animals of different species that can be sampled (taken) during limited impact research.
67. A 'limited impact' sampling limit for animal taxa that are not mentioned in subregulation 19(3) is provided in sub-regulation 19(4). Marine plants (seagrass, algae, mangroves etc.) are dealt with in subregulation 19(2)(d) and (e).
68. If a species or group is mentioned in multiple parts of subregulation 19(3) the higher level of protection always applies. Any animal that falls into the subregulation 19(3)(a) no take list is excluded from limited impact research. This includes all species that are protected species under regulation 29 of the [Regulations](#).

For example,

As soon as a species gains *Environment Biodiversity Protection and Conservation Act 1999* threatened or migratory species listing it becomes excluded from limited impact research take in the Marine Park subregulation 19(3)(a) even if the table at the end of subregulation 19(3) of the Regulations has not yet been updated.

69. Research projects involving sample numbers greater than those specified in regulation 19 are not limited impact research and a permission is required. For 'no take' taxa, including coral and protected species, permissions are always required if the research involves 'take'.
70. When determining whether a research project can be conducted under regulation 19, GBRMPA expects research institutions to consider not only the intentional or target species that will be 'taken' (e.g., caught or interfered with) but also the likelihood of non-target species being incidentally or accidentally 'taken'.
 - The maximum per calendar year sample (take) numbers in regulation 19 represent a total and must therefore encompass both target samples and any incidental 'bycatch' of non-target samples, i.e., all sexes, size classes and species taken must be included in sample number calculations.
 - Often, any incidental bycatch of non-target species or marine product that occurs during a project will be absorbable under the existing sampling allowances. However, if the research project could reasonably be expected to exceed the total take limits in subregulation 19(3) and (4) then a permission should be sought instead of conducting the project under the institution's accreditation.

For example,

- Peter is trying to capture 50 female and 50 male gobies at his project site in the first year of his project. Under the limited impact sampling limits he can collect 100 gobies in total at the site for the year. On his first field trip he catches 70 female and 20 male gobies. Even though he caught more females than he needed and let the extras go immediately, he must count all of them against the sampling limit. He can now only catch 10 more gobies for the year.
- Honours student Sonia needs burrowing crabs for her project but the capture method she's proposing to use will likely collect large numbers of molluscs at the same time. Her supervisor decides there's a very real chance she will go over the allowable 'take' of molluscs outlined in regulation 19. The supervisor knows he could apply for a research permission from GBRMPA to cover the extra take, but decides it is better to reduce the impact of the research by helping Sonia choose a capture method with lower bycatch rates.

71. GBRMPA expects researchers conducting limited impact research sampling to:
 - Take reasonable steps to minimise incidental by-catch of non-target species (such as through sampling design and selection of equipment); and
 - Return incidental by-catch to its habitat as quickly as practical and in a manner that maximises its chances for survival; and
 - Keep records of incidental by-catch that is not successfully returned to the habitat immediately (for example: killed or seriously injured during sampling or retained for a short period to photograph or measure).

Research under permission

72. A permission is required to conduct any research activities that do not meet the requirements of limited impact research under regulations 19 and 20 of the [Regulations](#). For example, a permission is required for research conducted by organisations other than a research institution accredited by GBRMPA and/or where the research will interfere with more individual animals than is allowed under the definition of limited impact research (extractive). Permission is also required to undertake research activities in certain zones (see [Table 1](#)).
73. Points below and Tables 1 and 2 in the [Assessment Guidelines](#) provide information on where research activities could be consistent with a particular zone's objectives (i.e. permission may be considered).
74. Research permission applications must:
 - include the names of proposed taxa (to the lowest relevant taxonomic level) and sampling numbers; and
 - include information on the relative abundance of the species or habitat and the species conservation status or vulnerability to over-collecting (including localised depletion); and
 - describe the level of environmental impact (see the [Risk Assessment Procedure](#) and Values Guidelines) that may result from the research activity, including in the context of the state of the environment at the proposed sites.
75. Guidance on the minimum information required for permission applications (including for research) is provided in the [Application Guidelines](#) and Application Form. Other relevant information is contained in the various guidelines that deal with impact assessment in the permission system.

'Umbrella' permits

76. Where permission is required, GBRMPA encourages researchers to consider applying for a broader permission that can be issued as an 'umbrella' style permit for an overarching research program, rather than individual permissions for individual component projects that then need to be issued as multiple individual permits. Primary investigators (supervising researchers) may find the 'umbrella' approach helpful for enabling short-term research projects, such as those for Honours students.

For example,

- Professor Hamlin runs a large research group at a university. He has multiple honours and masters students already and plans to take on several more over the next five years. He intends to focus their projects on some specific aspects of coral ecology. Professor Hamlin applies for a permission that could be issued in the form of an umbrella permit — in his application he identifies a range of coral and associated invertebrate species and explains that he is requesting sample sizes that will encompass the needs of all the student's projects. He anticipates some projects will involve genetic techniques and others will use behavioural experimentation so he makes sure he provides information on these methods in his application.

77. Assessments of 'umbrella' style permission applications that include extractive activities will consider the scale and number of research programs intended to be covered.

Permission duration

78. The GBRMPA decision maker has discretion to determine the most appropriate permission term, considering the duration of the research program and a range of other factors. In most cases research permissions will be granted for up to six (6) years.
79. GBRMPA generally grants shorter permission terms for pilot studies, the use of new research techniques, or research that may represent an unknown risk to the Marine Park. This ensures any negative impacts that eventuate do not continue unchecked for long periods of time and allows for continual improvement.
80. Some activities may be granted permission for 10 years, e.g., long-term low risk monitoring.

Permission reporting requirements

81. Reporting of the research activities is usually a permission condition. Depending on risk, this reporting may be required only at the end of a research project or regularly throughout the project (annually or more often). For examples of common reporting conditions, search our [public permit database](#) for current research permissions. See also the expectation outlined earlier in these Research Guidelines regarding data storage locations.

Research in particular zones

82. The intention of the Scientific Research Zone is to provide opportunities for scientific research to occur in relatively undisturbed areas, while also keeping the area generally free from extractive activities and providing for the protection of natural integrity and values.
- For guidance on interpreting the expression 'generally free from' refer to GBRMPA's [Assessment Guidelines](#).
 - Research is considered to be a pre-existing use of Scientific Research Zone areas.
 - Research conducted under a permission, and limited impact (extractive and non-extractive) research conducted by accredited institutions, can be conducted in the Scientific Research Zone. To support research the six major research facilities in the Marine Park each have Scientific Research Zone areas in waters within their vicinity.
 - Extractive activities that are not for research purposes are generally considered inconsistent with the objective of the Scientific Research Zone.
83. Non-extractive research that is purely observational in nature, does not significantly and detrimentally interfere with animal behaviour, and does not involve the deployment of any equipment (including quadrats or transects) may be appropriate in Buffer and Marine National Park Zone areas.

For example,
Research conducting fish counts on snorkel, coral visual surveys on SCUBA, or non-interfering observation of animal behaviour is usually considered low risk.

84. Proximity to a research station and ease of access are not by themselves considered valid justification for use of Buffer, Marine National Park or Preservation zones.
85. For a research permission to be granted in Buffer and Marine National Park zones it must meet at least one of the following conditions; for Preservation Zone both conditions must be met in accordance with the [Zoning Plan](#).
- (i) The research is relevant to, and a priority for, the management of the Marine Park;
GBRMPA generally considers this to mean that the research:
- must, by virtue of its scientific objectives and design, logically require work in the relevant zone; and
 - should address one or more of the science questions within the [register of detailed knowledge needs](#)² that underpin GBRMPA's [Science Strategy and Information Needs 2014-2019](#)¹ or address emerging priority information needs as identified by GBRMPA; and
 - should generally have specific relevance and priority for the management of that particular type of zone.
- (ii) The research cannot reasonably be conducted elsewhere;
GBRMPA generally considers this to mean that the research:
- is part of a long-term ongoing monitoring program for which permission had been granted prior to 1 July 2004; or
 - is necessary as part of new monitoring program, incident response or emerging management information need that is considered of highest priority by GBRMPA in assessing the condition or function of a particular zone or location.
86. In Buffer, Marine National Park and Preservation zones, extractive activities are generally considered inconsistent with the objectives of the zone. However, exemptions may be considered on a case by case basis.

87. In the Preservation Zone even non-extractive activities may be considered inconsistent because the zone has been established to provide for the preservation of the natural integrity and values of areas of the Marine Park, generally undisturbed by human activities.
88. GBRMPA is unlikely to grant permission for research in the Conservation Park Zone (or more highly protected zones) that involves trawling or netting; or research in the Habitat Protection Zone that involves trawling. However, permission may be granted if the applicant can demonstrate that either condition (i) or (ii) of point 85 is satisfied.
89. Researchers should consult the [Science Strategy and Information Needs 2014-2019](#)¹, [register of detailed knowledge needs](#)² and [Reef 2050 Long-term Sustainability Plan](#)³ when determining the relevancy of their research for management of the Marine Park.

Special Management Areas and other locations with restrictions and requirements

90. Some locations have restrictions or requirements for entry and research additional to those described by the basic zoning. Refer to points below on some important Special Management Areas and to the [Location Guidelines](#) for an overview and links to additional information.
91. In Maritime Cultural Heritage Protection Special Management Areas, GBRMPA can only grant permission for cultural heritage research (regulation 88VA of the [Regulations](#)). No other types of research can be permitted in these areas. Refer to GBRMPA's [Maritime Cultural Heritage SMA Guidelines](#) for more detail.
92. Restricted Access Special Management Areas occur within the Scientific Research Zone (SRZ) at One Tree Island Reef and adjacent to the Australian Institute of Marine Science's Townsville base. The intention of these areas is to allow for research to be carried out without disturbance of experiments by other users and to provide for the ongoing protection of important research infrastructure. Entry to these areas requires written permission from GBRMPA, with some exceptions as described by regulations 53, 55 and 56 of the [Regulations](#). In considering applications for entry to these Restricted Access SMAs, permission is unlikely to be granted unless the assessment indicates the activity is of acceptably low risk to current and future research projects and infrastructure. Consultation with the relevant research station operator is advised.
93. Restricted Access Special Management Areas are also in place for the waters around Raine Island, Moulter Cay and Maclellan Cay. Specific requirements governing research access to these areas are outlined in the [Position Statement on Managing access to the Restricted Access Special Management Areas surrounding Raine Island, Moulter Cay and Maclellan Cay](#). In considering applications, permission is unlikely to be granted unless the assessment indicates the activity meets these requirements.

Research methods, equipment and sampling

94. Applications for permissions to conduct research using methods that fall within the allowances of limited impact research, but which still require a permission because they are not being conducted by an accredited institution, are likely to be considered low risk.

For example,

Hamish is a researcher who wants to conduct visual fish surveys on snorkel in an area of General Use Zone near Gladstone. Hamish's university is not an accredited research institution so he must apply to GBRMPA for permission. However, because his research methods fall within the specifications in the Regulations and GBRMPA's Research Guidelines for non-extractive limited impact research, his application is likely to be successful.

95. Video or sound recording, photography, and the use of drones is considered low risk if it complies with the [Recording Guidelines](#), including the section on 'Recording for the purpose of research', and additional guidance for drones and ROVs in [Table 2](#) and [Table 3](#) of these Research Guidelines.
96. Limits may be applied to the number of equipment items deployed per location per year. The limits may be more generous if the equipment is attended at all times by the researcher or the research is occurring in the Scientific Research Zone.

97. Although assessed on a case by case basis, the granting of a permission for use of nets for research purposes is more likely to be considered low risk where:
- Not used in dugong protection areas, net-free areas, waters where use of nets is prohibited, or other highly protected or sensitive areas; and
 - Nets are not anchored, staked or fixed; and
 - Seine nets do not exceed 16 metres in length, 3 metres in drop or have a mesh size greater than 28 millimetres and does not contain a bag, pocket or similar device; and
 - No part of a net containing fish is out of the water other than to immediately remove fish for sampling or release; and
 - Net use complies with the [Queensland Fisheries Regulation 2008](#) as defined for the Zoning Plan by the [Regulations](#), these Research Guidelines and other relevant best practice fishing documents.
98. Researchers granted permission to use nets for research purposes are expected to:
- (i) remain in attendance at the net at all times while fishing so as to minimise harm to protected species and other species of conservation concern,
 - (ii) not deploy nets if megafauna such as dugong, dolphins, crocodiles, turtles, or large rays and sharks are seen in the immediate area (unless the permission allows take of those animals),
 - (iii) ensure all non-target and/or excess specimens are carefully removed and immediately released into water deep enough to allow them to escape, and
 - (iv) report all catch (non-target and target) and any protected species incidents to GBRMPA as per the [Protected Species Policy](#).
99. Where research involves collection of coral, the GBRMPA encourages researchers to follow the process below for making sampling decisions in the field. The process aims to help researchers spread coral sampling effort, minimise the risk of local over-collection, and generally promote sustainable coral sampling practices.
- **Step 1:** Undertake a [Reef Health and Impact Survey](#) (RHIS) or conduct a similar survey of an equivalent area (~80m²):
 - If you find 30% or less live hard coral cover, you should not conduct any coral sampling in the survey area. You should move to a different area with more coral and do another survey. Continue this process until you find an area with coral cover above the 30% threshold.
 - If you find more than 30% live hard coral cover, you may conduct coral sampling within the survey area boundary.
 - **Step 2:** If you are unable to meet all of your sampling needs in the first suitable area, sample what you can and then move to a new area and start from Step 1 again.
100. GBRMPA encourages researchers to submit to GBRMPA any RHIS survey data generated through the above or other processes.
101. Take of coral for a research purpose is more likely to be considered low risk if it falls within the sampling limits and guidance in [Table 4](#). Where a proposed take of coral exceeds these parameters and/or does not use the RHIS-based guidance described above, GBRMPA is likely to ask the permission applicant to provide further justification that the research is a priority for management and more information about the condition of corals at the target locations. An application for a permission to conduct research that involves take of coral above the limits in [Table 4](#) and that is not considered a priority for management is likely to be refused.

Table 4: Coral sampling limitations and guidance. In this table, 'research location' has the same meaning as in regulation 19 of the [Regulations](#); and 'site' means an area of 3000 square metres within a research location.

Factor	Limitations and guidance
Quantity	<p>Sampling effort at each location is expected to be dispersed, as far as reasonable given the purpose of the take, to reduce the concentration of the impact and support reef recovery.</p> <p>'Temporary' is generally considered to mean no longer than 12 months, with longer-term temporary collection usually considered equivalent to retained collection.</p> <p>Retained collection of coral fragments or nubbins and small cores:</p> <ul style="list-style-type: none"> • Small coral cores (less than 5 centimetres in diameter) are considered equivalent to fragments or nubbins for corals with massive growth forms. • No more than 1000 fragments per year in total; and • Maximum of 100 per location per species per year; and • No more than 10 per cent of an individual colony can be collected as fragments and/or nubbins; and • Core holes must be capped with cement plugs. • Note: taking one or a few whole colonies may present less risk than taking fragments from many different colonies as this reduces the number of colonies with injuries that expose them to disease and require energy to repair (i.e., impacts on growth rate, reproduction etc.). However, this option will only be suitable for some kinds of research and the cumulative effects of colony removal across multiple research projects should be considered. <p>Temporary collection of fragments (expected to be returned to the Marine Park alive):</p> <ul style="list-style-type: none"> • As for retained collection of fragments; and • Guidance in the Position Statement on the Translocation of Species in the Great Barrier Reef Marine Park is complied with. <p>Retained collection of large coral cores (greater than 5 centimetres in diameter):</p> <ul style="list-style-type: none"> • No more than 500 cores per year in total; and • No more than 100 cores per species per year; and • No more than 10 cores per species per location per year; and • Maximum of one core per colony; and • Maximum core diameter no greater than 10% of the colony diameter; and • Cores must only be taken from massive growth-form corals that have a minimum diameter of 1 metre; and • Core holes must be capped with cement plugs. <p>Temporary collection of coral colonies (expected to be returned to the Marine Park alive):</p> <ul style="list-style-type: none"> • Only common species are targeted for sampling; and • No more than 200 coral colonies per species per year; and • No more than 20 coral colonies per species per location per year; and • No more than 10 per cent of the colonies of any individual coral type within a site; and • No collection of species that have less than 5 per cent abundance at that site; and • Colonies must be whole and no larger than 30 centimetres in diameter; and • Guidance in the Position Statement on the Translocation of Species in the Great Barrier Reef Marine Park is complied with. <p>Retained collection of coral colonies:</p> <ul style="list-style-type: none"> • Only common species are targeted for colony removal; and • No more than 100 coral colonies per year in total; and • No more than 10 coral colonies per species per location per year; and • No more than 10 per cent of the colonies of any individual coral type within a site; and • No collection of species that have less than 5 per cent abundance at that site; and • Colonies must be whole and no larger than 30 centimetres in diameter.

Factor	Limitations and guidance
Timing	<p>Coral sampling should be avoided in the months prior to or during the coral spawning period, e.g. during the months of October to December.</p> <p>Avoid coral sampling during the months January to April wherever this can be accommodated by the research design, as these months are when coral stress is often high and reef health incidents such as bleaching and cyclones are more likely to occur.</p>
Reef health	<p>No coral sampling from reef sites:</p> <ul style="list-style-type: none"> • Where there are existing signs of significant coral stress such as moderate to severe coral bleaching, coral disease, coral predation or coral damage (or strong indications from predictive tools that this is the case, including bleaching thresholds). Limited exemptions may be considered where the purpose of the take is to research reef health impacts or recovery. • Known to have been significantly impacted by a cyclone, flood plume, outbreak of predators or coral bleaching/disease event within the last 12 months. Exemptions may be considered for existing permitted long term studies, or where the purpose of the take is to research reef health impacts or recovery. • Where average coral cover is lower than 30 per cent. Limited exemptions may be considered where the purpose of the take is to research reef health impacts or recovery. <p>Any temporarily collected coral fragments or colonies showing signs of stress and/or disease must not be returned to the Marine Park.</p>

Implementation

102. These guidelines will be implemented, for the most part, through GBRMPA’s permission system and accreditation processes.
103. These guidelines are intended to be reviewed every five years or more frequently if needed.

Definitions

Accredited research institution

Means a research institution accredited pursuant to regulation 7 of the *Great Barrier Reef Marine Park Regulations 1983* and the *Great Barrier Reef Marine Park Zoning Plan 2003*.

Extractive limited impact research

Has the meaning given for ‘Limited impact research (non-extractive)’ in regulation 20 of the *Great Barrier Reef Marine Park Regulations 1983*.

Non-extractive limited impact research

Has the meaning given for ‘Limited impact research (non-extractive)’ in regulation 19 of the *Great Barrier Reef Marine Park Regulations 1983*.

Permit

A written document issued by the GBRMPA that contains one or more permissions and any conditions attached to such permission(s).

Research location

Has the meaning given in regulation 19 of the *Great Barrier Reef Marine Park Regulations 1983*: *research location* means a discrete, identified reef; or a continuous non-reef area of up to 1,000 hectares.

Site

‘Site’ means an area of 3,000 square metres within a *research location*.

Take

Has the meaning given in Section 3 of the *Great Barrier Reef Marine Park Act 1975* and section 1.5 of the *Great Barrier Reef Marine Park Zoning Plan 2003* and encompasses, among other things, ‘interfering with’.

Supporting information

1. Great Barrier Reef Marine Park Authority 2014, [Great Barrier Reef Marine Park Authority Science Strategy and Information Needs 2014-2019](#), GBRMPA, Townsville.
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3. Commonwealth of Australia 2015, [Reef 2050 Long-Term Sustainability Plan](#), Commonwealth of Australia, Canberra.
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13. McPherson, C., Yurk, H., McPherson, G., Racca, R., and Wulf, P. 2017, *Great Barrier Reef underwater noise guidelines: discussion and options paper*. Document 001130, Version 1.0. Technical report by JASCO Applied Sciences for the Great Barrier Reef Marine Park Authority, Townsville.
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15. Marking, L.L. and Meyer, F.P. 1985, Are better anaesthetics needed in fisheries? *Fisheries* 10(6): 2-5.

Further information

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Appendix 1 – Guidance for Research Station Environmental Management Plans

Environmental Management Plans (EMPs) for research stations should be assessed against the following elements to determine their suitability for approval by GBRMPA.

Aim

- A Research Station Environmental Management Plan is established to provide site-based guidelines and codes of conduct for research to occur in parts of the Scientific Research Zone adjacent to research facilities/stations.
- The EMP should establish roles and responsibilities and a clear reporting framework for the research facility/station manager and GBRMPA.

Environmental elements

- Site information (general description)
- Identification of surrounding uses
- Identification of potential impacts on:
 - values of the marine park (including biodiversity, heritage, social and economic values)
 - local areas or resources (overuse)
 - other users of the area (including amenity & conflict of use)
 - other researchers or research programs
 - consideration of future impacts (e.g. extreme weather) and how impacts act cumulatively to affect the area

Performance objectives and indicators

- What are the performance outcomes that the research station aims to achieve
- Criteria against which the implementation of the actions and the level of achievement of the performance objectives will be measured

Management actions and strategies

- The actions to be undertaken to achieve the performance objective, including any necessary approvals, applications and consultation
- Adaptive management actions that can appropriately respond to future impacts and the cumulative nature of multiple impacts
- Notification requirements before accessing area, who will be notified and how (e.g. email, SMS, telephone)
- Other notification requirements – in what situations will the research station notify GBRMPA (e.g., incidents or works)
- Researchers required to sign EMP, stating they understand the terms and conditions of operating in the Scientific Research Zone
- Education handouts, induction procedure at research facility

Monitoring / Reporting

- A monitoring and reporting framework must be developed to determine and report on the effectiveness of the EMP

Corrective action and review

- Compliance – who would be responsible
- Procedure for managing non-compliance
- Ensuring researchers are from an accredited institution
- Formal annual audit to allow review and modification of EMP

Appendix 2 – Determining minimum concentrations and dosages of clove oil in solution (COS)

Using Robertson and Smith-Vaniz⁸ as a guide, best practice trials to determine appropriate use of clove oil in solution (COS) should look to establish minimum concentrations for effective collecting of live unconfined fishes in the field. Research has shown these concentrations to be species specific (Griffiths¹⁴).

If there is no empirical evidence for optimal minimum concentrations with respect to the target species, this should be attempted to be established at the start of the proposed research project.

- In a study by Griffiths¹⁴ fish were applied with a solution of clove oil and then monitored continuously and induction time to anaesthesia was measured.

At the start of a project, the researcher should first employ a two per cent solution to the species and observe the response. If there is induction, the time to recovery should be estimated. If there is not, the concentration should be increased by five per cent increments until induction occurs, up to the maximum concentration of 15 per cent clove oil.

- Successful induction is when total loss of equilibrium first becomes evident (i.e. when the fish can no longer swim or maintain a vertical position in the water).
- Recovery is when the fish regains equilibrium (i.e. maintains a vertical position). A time of less than five minutes is considered desirable (Marking & Meyer¹⁵).

Concentrations and dosages that are used to collect live unconfined fish will likely vary, with small, slow species that are strongly attached to small areas requiring less and weaker COS than larger, more agile and mobile species.

Usage of the minimum concentrations and dosages should be adopted as 'best practice', based on knowledge of the behavioural characteristics and relative mobility of the target species and the objectives of the research.