



## Historic Heritage Assessment – WWII Features and Sites and Voyages and Shipwrecks

Effective from 4 October 2017

### **Objective**

To provide guidance on assessing impacts to historic heritage values within the permission system.

### **Target audience**

Primary: Great Barrier Reef Marine Park Authority officers assessing applications for permission.

Secondary: Groups and individuals applying for permission; interested members of the public.

## Purpose

1. Permission decisions contribute to maintaining and enhancing the historic heritage values of the Great Barrier Reef Marine Park.

## Context

2. As described in the [Great Barrier Reef Region Strategic Assessment: Strategic Assessment Report 2014](#) (Strategic Assessment) and the [Great Barrier Reef Outlook Report 2014](#) (Outlook Report), historic heritage:
  - a. relates to the occupation and use of an area since the arrival of European and other migrants
  - b. describes the way in which the many cultures of Australian people have modified, shaped and created the cultural environment.
3. These guidelines consider two historic heritage values of the Marine Park:
  - a. World War II features and sites and
  - b. Historic voyages and shipwrecks.
4. Two other historic heritage values of the Marine Park are [other places of significance](#) and [lightstations and other historic structures](#) and are considered in separate guidelines.

## World War II features and sites

### Description

5. During World War II (1939 to 1945), the Great Barrier Reef was a major staging arena for the Pacific Theatre and featured significant naval, air, army and medical bases. Hundreds of thousands of Australian and allied personnel served in the region.
6. The historic heritage features and sites related to World War II date from 1939 to 1948. They include shipwrecks, aircraft wrecks, unexploded ordnances and structures on islands. Most submerged sites have not been located and minimal information has been recorded for those that have been located.
7. Approximately 112 World War II aircraft wrecks are estimated to be located within the Marine Park, mostly from the Royal Australian Air Force (RAAF) and the United States Air Force (USAF). Other allied and Japanese planes may be located within the Marine Park, although none have been formally recorded.
  - a. It is difficult to put an accurate figure on the total number of aircraft wrecks within the Marine Park. The majority of wreck sites remain undiscovered. For example, a plane may have departed Townsville for Port Moresby and not been seen again. In this case the wreck could be anywhere along that transit line.
  - b. Of the known aircraft wrecks, 159 service personnel are estimated to be missing in action (MIA). Twenty-five of these men were lost on two Catalina wrecks which are now protected by the declaration of two [Maritime Cultural Heritage Protection Special Management Areas](#) around the sites.

8. Three major World War II shipwrecks are known in the Marine Park:
  - a. The Royal Australian Naval vessel HMAS *Warrnambool* (I) (1947), a 186 foot minesweeper, survived the bombing of Darwin in 1942. She then served throughout Australia, Indonesia and Papua New Guinea. She sank in 1947 while clearing mines in the northern Great Barrier Reef to restore normal shipping, with the loss of four men.<sup>1</sup>
  - b. At Cid Harbour on the western side of Whitsunday Island, a series of trials of 'X' type midget submarines were conducted. There is anecdotal evidence that one of the 'X' types surfaced and one of the two crew members leapt out. The submarine then sank, taking the other crew member with it.
  - c. The HMCS *Protector* was the only seafaring warship commissioned by the South Australian Government, in 1884, to defend against a perceived Russian threat. A 180 foot gunboat, she served in the Chinese Boxer Rebellion and World War I before being converted to civilian use. During World War II, the vessel was requisitioned by the U.S. Army. While under tow to Papua New Guinea, the vessel collided with a tug off Gladstone and was abandoned. She was towed to Heron Island in 1944 to serve as a breakwater, where she can still be viewed today.<sup>2</sup>
9. Wrecks of minor support vessels such as launches, barges and pontoons are located throughout the Marine Park but are poorly recorded.
10. A number of vessels and aircraft which survived World War II were re-purposed for civilian use after the war and eventually sank or were scuttled within the Marine Park. Although not lost during World War II, they still have significance for World War II heritage, due to their history of service.
11. A variety of World War II support structures remain in the Marine Park. These include Yanks Jetty at Orpheus Island and Catalina flying boat ramps throughout the area.
12. Large amounts of unexploded ordnance (such as cannon shells, missiles and bombs) and chemical warfare agents were deliberately dumped at sea throughout the region at the end of World War II. The largest post-war dumpsites were offshore from Cairns and Townsville. Chemical warfare agents were also dumped off Townsville, Bowen and Proserpine in the late 1940s. The Australian Defence Force has retained some records about the locations of these dumpsites, but the details of precise locations, quantities and types of materials are unreliable. These dump sites form an important part of Australia's World War II heritage. When they are identified, an assessment should be conducted to evaluate how to preserve and record this heritage while also protecting the environment and human safety.
13. Australia laid thousands of sea mines in the Great Barrier Reef during World War II. Mine sweeping activities after the war resulted in the Great Barrier Reef being declared safe for shipping by 1948, but navigational charts still note former mined areas which may be unsafe for bottom activities such as trawling or anchoring. Encounters with World War II sea mines are rare, although they occasionally wash up after cyclones. These may pose a risk to humans or the environment, so they are normally destroyed by the Australian Defence Force. Photographs taken before destruction can assist in recording and preserving this heritage.

### Importance

14. World War II features and sites are a significant part of Australia's National heritage. In the context of world wars, this was the first time that mainland Australia came under direct attack, and it became the deadliest conflict to date in world history. Over 27,000 Australians lost their lives in World War II, 65 per cent in the Pacific Theatre.
15. World War II is also credited with causing a major shift in Australia's alliances, away from reliance on the United Kingdom and towards a stronger connection with the United States. Many World War II features and sites are significant not only to Australia but also to other countries (such as the United States, Germany and Japan) so there may be international interests arising from impacts on historic heritage values.
16. The remains of some personnel have not been recovered, remaining *in situ* in planes and shipwrecks. Sites that may contain the remains of service personnel are considered highly significant and worthy of dedicated individual protection. For example, the two Catalina [Maritime Cultural Heritage Protection Special Management Areas](#) protect the remains of service personnel *in situ*.

## Historic voyages and shipwrecks

### Description

17. Historic voyages such as early European exploratory voyages, shipwreck survivor journeys and expeditions to chart safe passages through the Great Barrier Reef left their mark through shipwreck, misadventure and the bestowing of place names and experiences to both marine and terrestrial sites. Certain places, including reefs and islands, within the Region are considered more significant through their association with these early historic voyages.
18. Some of the voyages of great significance to Australia's early colonial history which are closely associated with the Great Barrier Reef were:
  - a. Louis de Bougainville (1768)
  - b. Lieutenant James Cook (1770)
  - c. Lieutenant William Bligh (1789)
  - d. Captain Edward Edwards (1791)
  - e. Lieutenant Matthew Flinders (1801)
  - f. Lieutenant Phillip Parker King (1817-1822).
19. Some of this exploration and commerce ended in shipwreck. Shipwrecks and their associated relics older than 75 years (termed 'historic shipwrecks') are protected through the Commonwealth's [Historic Shipwrecks Act 1976](#), regardless of whether their location is known or not. More recent shipwrecks may also be declared as historic and protected under the Historic Shipwrecks Act if they are considered significant. Historic shipwrecks are protected for their heritage values and maintained for recreational, scientific and educational purposes.
20. It is estimated that there are more than 800 located historic shipwrecks in the Marine Park (refer to [Figure 1](#) for known historic shipwrecks in Queensland). Known wrecks have been systematically recorded in the [Australian National Shipwrecks Database](#).<sup>3</sup> However, the majority of shipwrecks are poorly recorded, and some shipwrecks that have been physically located have not yet been identified with certainty. In other cases, the general location of suspected shipwrecks may be deduced based on their course or last known coordinates, but the actual resting place is unknown.
21. Of the 800 located shipwrecks in the Marine Park, only six have legislated, mapped protective zones under the Historic Shipwrecks Act. The six shipwrecks are HMS *Pandora* (1791), HMCS *Mermaid* (1829), *Foam* (1893), SS *Yongala* (1911), SS *Gothenburg* (1875) and SS *Llewellyn* (1919) (refer to [Figure 2: Six historic shipwrecks in the Marine Park with extra protection through the Historic Shipwrecks Act and the specified protection radius.](#)).
22. There are also examples where ships have wrecked outside the Marine Park but the survivors drifted to the Queensland coast and taken in and cared for by local Aboriginal communities. One such example is described in the biography of James Morrill<sup>4</sup>. Morrill was born in England in 1824 and was the only long-term survivor of the Peruvian (1846) shipwreck, which wrecked in the Coral Sea on its voyage from Sydney to China. Following the wreck, 21 people drifted at sea on a makeshift raft and after 42 days only seven people had survived the journey when the raft landed near Cape Cleveland, Townsville. Four died soon after making land leaving the Captain George Pitkethly, his wife, and Morrill as the remaining survivors. The three of them were adopted by the local Aboriginals. Pitkethly and his wife joined a band in the region but both died within two years. Morrill continued to live with the local Aboriginal communities for 17 years. Morrill was an effective interpreter and known to promote peaceful conciliation. He accompanied George Dalrymple on an expedition to open the port of Cardwell in 1865 and was on the Ariel when the first cargo of goods was delivered into a settlement of Cleveland Bay, now known as Townsville. He married Eliza Ann Ross and had one son. Morrill died on 30 October 1865.
23. The value of historic voyages and shipwrecks includes tangible and intangible aspects. This value encompasses not only the physical shipwrecks and tracks of voyages, but all related cultural, political, environmental, technological, and physical elements. The intangible aspects include people, past and present, and their experiences and stories associated with the Reef's historic heritage.

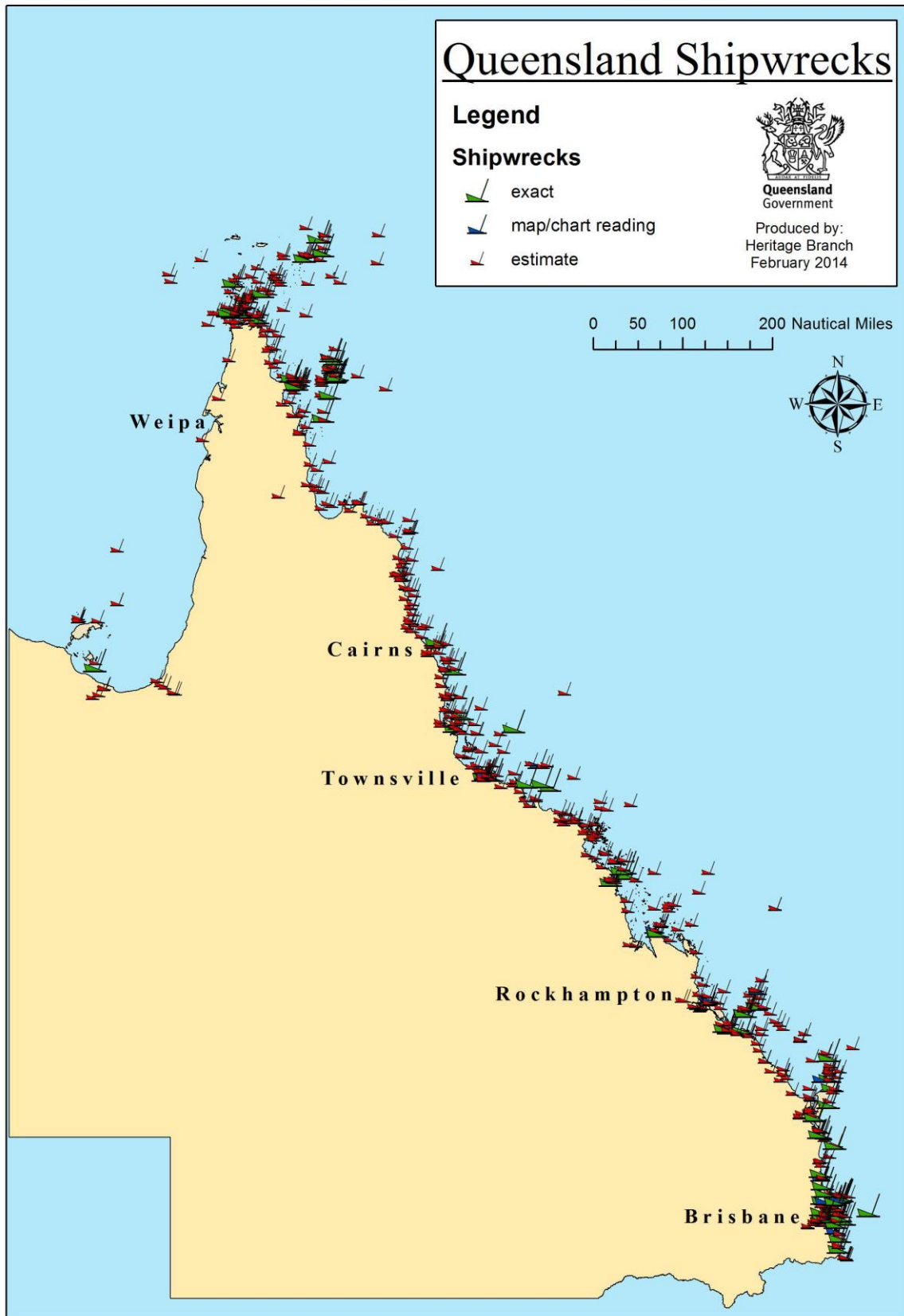
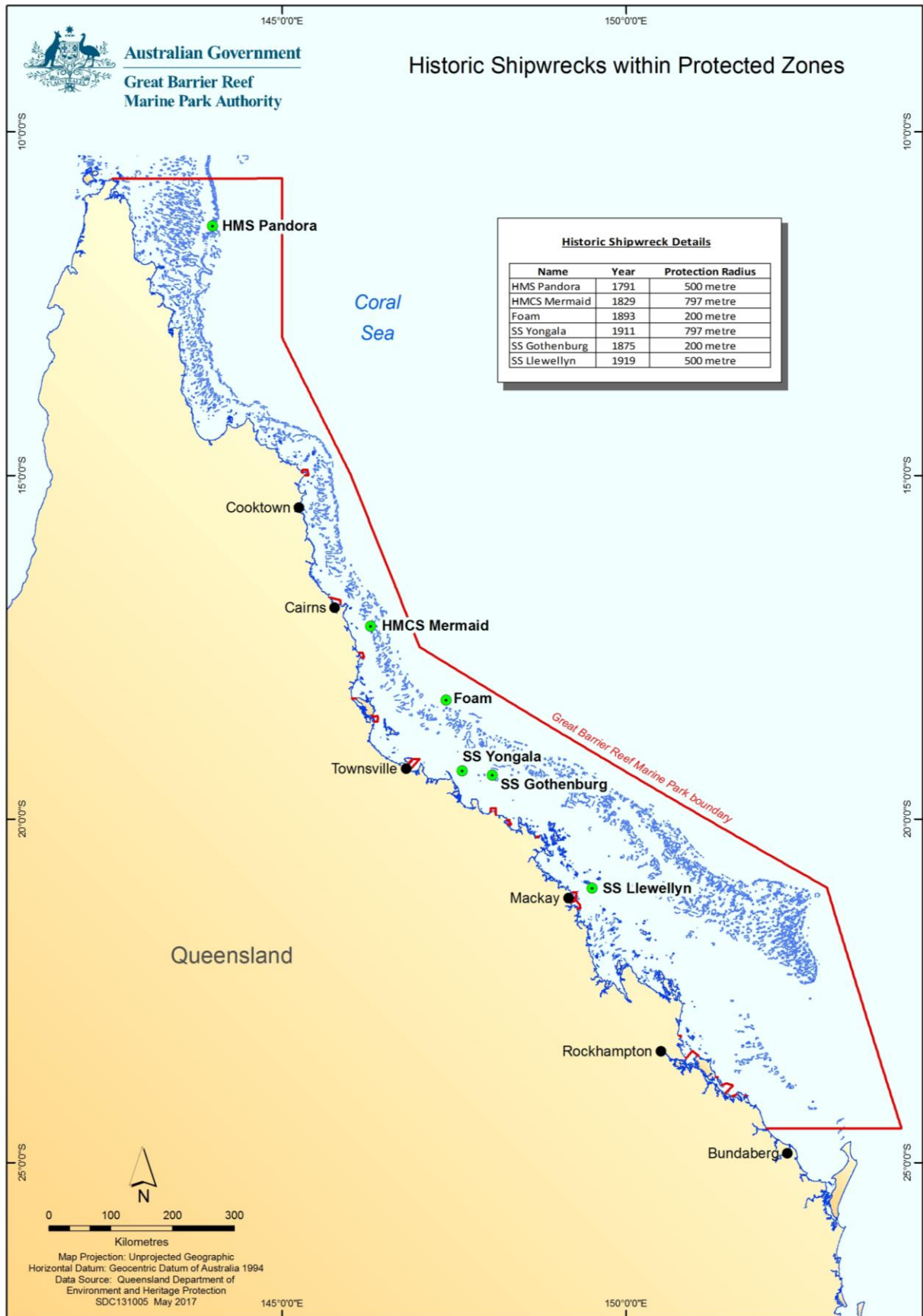


Figure 1: Queensland shipwrecks map (courtesy of Queensland Department of Environment and Heritage Protection) also refer to the [Australian National Shipwrecks Database](#)





**Figure 2:** Six historic shipwrecks in the Marine Park with extra protection through the Historic Shipwrecks Act and the specified protection radius.

## Importance

24. As an island nation, the value of historic voyages and shipwrecks is considered of national significance. The north-east coast is an unavoidable part of the route between Australia's north eastern ports and much of the rest of the world, forcing ships to travel either inside or outside the Great Barrier Reef. The hazards of operating ships through the maze of reefs have amplified the historical maritime significance of the Marine Park. Lieutenant Phillip Parker King aboard *Mermaid* was the first to chart the inner passage through the Great Barrier Reef, a passage which is still used today.<sup>5</sup>
25. The skeletal remains of ship's crew and passengers may remain *in situ* on some shipwrecks – these sites are considered more significant compared to a similar shipwreck where there has been no loss of life. Many current residents have a personal connection through their ancestors to these voyages and shipwrecks.

## Management

28. This section explains the most commonly used legislation, policies and management plans in managing historic heritage values of WWII features and sites, and voyages and shipwrecks. Also refer to the [Permission system policy](#) for a list of legislation, standards and policies used through the permission system.

## Zoning and Legislation

29. The [Great Barrier Reef Marine Park Act 1975](#) (GBRMP Act) specifically includes providing for the long term protection and conservation of the heritage values of the Great Barrier Reef Region in its main object. A secondary object of the GBRMP Act is to allow ecologically sustainable use of the Great Barrier Reef Region for purposes which include public enjoyment and appreciation, and research in relation to social and economic systems and value of the Great Barrier Reef Region.
30. The *Great Barrier Reef Marine Park Regulations 2019* (GBRMP Regulations) establish Maritime Cultural Heritage Protection Special Management Areas and place limits on what activities can be permitted in these areas. See the separate [Guidelines: Maritime cultural heritage protection special management area permit application and assessment](#) (Maritime cultural heritage protection SMA guidelines) for more information.
31. The six sites that have extra protection through the Historic Shipwrecks Act and as part of their management have conservation management plans. Three of these sites, namely SS *Gothenburg* (1875)<sup>6</sup>; SS *Yongala* (1911)<sup>7</sup> and SS *Llewellyn* (1919)<sup>8</sup> have existing plans that are currently being updated. Conservation management plans for the remaining three sites (HMS *Pandora* (1791), HMCS *Mermaid* (1829)<sup>5</sup>, and *Foam* (1893)) are currently being prepared. The conservation management plans are identified as an action in the Reef 2050 Long-term Sustainability Plan ([Reef 2050 Plan](#)) and are being developed collaboratively between the Authority and the Queensland Department of Environment and Heritage Protection.
32. Under the Commonwealth's Historic Shipwrecks Act, the [Queensland Department of Environment and Heritage Protection](#) on behalf of the Commonwealth, is delegated to administer permits to access the six sites. The protected zones around these wrecks can be up to 200 hectares (or 2 km<sup>2</sup>) in area.

## Policy

33. The Authority's [Heritage Strategy](#) outlines actions to identify, assess and monitor the Marine Park's heritage values, including historic heritage. This includes developing a heritage register and heritage management plans for individual sites.

## Management Objectives

34. The Reef 2050 Plan explains how the Authority and the Queensland Government will respond to the challenges facing the Great Barrier Reef and contains a number of actions relevant to historic heritage (refer to [Reef 2050 Plan](#) pages 40-41).
35. The values of the Marine Park, their integrity and their current condition are described in the [Outlook Report 2014](#) and the [Great Barrier Reef Region Strategic Assessment Report 2014](#) (Strategic Assessment). Refer to Table 1 for summary assessment of historic heritage values.

**Table 1:** Summary assessment of historic heritage condition, trend and overall management objective based on the Outlook Report 2014 and the Strategic Assessment.

Historic heritage value	Area	Current condition	Trend	Management objective
WWII features and sites	Reef-wide	Poor	Improving	Improve
Historic voyages and shipwrecks	Reef-wide	Poor	Improving	Improve

## Common assessment considerations

### Pre-disturbance surveys

36. As many historic heritage sites and artefacts are unknown or poorly recorded, any person proposing to carry out an activity that may impact on these values should conduct a pre-disturbance survey. The survey should identify the possible impact area (including indirect or flow-on impacts) and evaluate the likelihood of the site holding historic heritage significance. This is most commonly done through archival research investigating whether:
  - a. archival records, local stories or historic news articles highlight any significant events or
  - b. any artefacts have been found in the area.
37. Sources of information about historic heritage include:
  - a. [National Library of Australia for archival records](#)
  - b. [Australian National Maritime Museum](#)
  - c. [Queensland Historical Atlas](#)
38. If this research identifies that historic heritage is likely to be present and may be impacted, then a field-based survey should be conducted by a qualified maritime archaeologist using appropriate methods. UNESCO has published a [manual relating to activities directed at managing and protecting underwater heritage](#).<sup>9</sup>
39. For activities that are likely to disturb the seabed (such as dredging, laying of pipelines or cables, marina development or installing significant moorings, or research involving the disturbance of the seabed) in any area, an in-depth site survey should be conducted. Visual, sonar and magnetometer surveys are recommended.
40. The [Australasian Institute for Maritime Archaeology](#) is the preeminent organisation in Australia for the protection and management of maritime cultural heritage. Access to scholarly papers on managing Australia's maritime cultural heritage can be found on the Institute's site.

### Environmental Management Plan

41. If a pre-disturbance survey indicates that historic heritage values are present and may be impacted by a proposed activity, a Heritage Management Plan which forms part of an Environmental Management Plan (refer to [Assessment guidelines](#)) may need to be developed for the site and in some cases the adjacent area to provide a buffer around the site.
42. Heritage Management Plans should be developed by an appropriately qualified person (including experience in substrate stability and maritime archaeology).

### Seeking expert advice

43. The ways historic heritage sites are managed differs between sites and depends on the proposed location and the proposed activities and operation. Managing these sites requires specialist understanding of the features present and requires experts in maritime archaeology to determine the best management approach prior to disturbance of a site.

### Particularly sensitive or unique sites

44. Particularly sensitive and unique historic heritage sites require special considerations when determining the level of risk and the assessment approach required in response to an application for a permission. Such sensitive and unique sites include those which:
- May contain human remains (such as ship or plane wrecks).
  - Represent the only known example in the Marine Park (such as HMS *Pandora*, which was used to capture the mutineers, in the iconic mutiny on the *Bounty*).
  - Are linked to particularly important or famous historic events (such as the grounding of the HMS *Endeavour* at Endeavour Reef).

### Common impacts

45. Visiting a site of historic heritage value may result in impacts if not conducted correctly. Damage most commonly occurs from anchoring, diving and snorkelling.
- Anchoring
    - Anchoring a vessel directly on or over a site is likely to physically damage the fabric and artefacts.
    - Poor anchoring skills, poor anchoring systems and weather may result in a vessel's anchor dragging across a site, causing physical damage.
  - Diving and snorkelling
    - Kicking or bumping may fragment the protective layer of marine growth, exposing the fabric to corrosion. Inexperienced divers with poor buoyancy control are a particular concern.
    - Attaching swim lines and mooring lines to the wreck will likely dislodge the protective layer or put undue stress on the structure and may cause irreparable damage to the site.
    - Divers that enter an overhead environment, such as inside a ship or plane wreck, can unknowingly increase corrosion of the fabric through exhaled air being captured within the structure. These pockets of air within the wreck accelerate deterioration by creating a moist aerobic atmosphere, which is conducive to corrosion. Bubbles may also physically dislodge encrusting marine growth that protects the wreck.
    - Regular handling of artefacts by recreational divers and snorkelers is likely to degrade the site's values over time.

## Links to other values

### Social values

46. Historic heritage sites are significant to people and therefore have social value, aesthetic value, historic value and/or scientific value (such as its archaeological attributes). The degree of significance may be influenced by its uniqueness or how rare it is, if it involves an influential or significant event or person/people and its importance on a local, state, national or international scale. Also see [Guidelines: Social impact assessment in the permission system \(Social value assessment guidelines\)](#) for more information.
47. Some examples of interactions between social values and historic heritage values include:
- Personal connection – A WWII battle site may hold special emotional significance to the relative of a service person who served there. Consider whether the proposed activity is compatible with the social values of the site. For example, waste discharge into the site may be considered disrespectful by some people.  
In another example, many of the SS *Yongala*'s 122 passengers were from North Queensland, and the wreck holds significance for their living relatives as a gravesite.<sup>7</sup>
  - Aesthetics – A WWII site of significance may have aesthetic values that need to be considered. For example HMAS *Warrnambool* the aesthetic value of the wreck is closely linked to people's historic connections to WWII events. Therefore, any change in the physical appearance of *Warrnambool* could impact on the intangible WWII values and associated social values of the site.  
Like many wrecks, the SS *Yongala* also has aesthetic value that is sustained by the wreck itself but also the biodiversity in which the wreck now supports, including many fish and marine mammal species.



- c. **Access** – Historic sites may have access limited in order to protect artefacts or to protect people from potentially unstable sites. This might impact on people who wish to visit the site. Consider how to maximise access while maintaining personal safety and site security. For example, two World War II Catalina plane wrecks were declared Maritime Cultural Heritage Protection Special Management Areas to restrict access and protect the sites.
- d. **Enjoyment, appreciation and understanding** – understanding historic events is important to current and future generations, both nationally and internationally. World War II features and sites provide a deeper appreciation of the human suffering and sacrifice endured during world conflicts.  
In another example, SS *Yongala* is not only an historic shipwreck but is also popular for recreational diving and economically important to the tourism industry, providing broader benefits to the community.
- e. **Equity** – referring to both intra- and inter-generational equity, the value of historic heritage should be considered within each generation, as well as between generations. The loss or damage to historic heritage is likely to erode social equity. Equity is maintained through sustainable use.

#### **Traditional Owner heritage values**

- 48. Places of historic heritage are often associated also with Traditional Owner heritage values. The historic heritage significance for Traditional Owners may include how they were impacted by colonisation, or their personal involvement in the Australian armed forces, or the interactions with armed forces throughout the Great Barrier Reef during World War II, or more recently Aboriginal and Torres Strait Islander recognition and rights. See the Guidelines: [Traditional Owner value impact assessment in the permission system \(Traditional Owner heritage value assessment guidelines\)](#) for more information.
- 49. There are examples of Aboriginal people taking in survivors of shipwrecks within the Great Barrier Reef Region, such as the example of James Morrill who was taken in by local Aboriginal communities near Townsville and continued to live with them for 17 years.<sup>4</sup>

#### **Biodiversity values**

- 50. Many historic heritage sites and features became important because of their biodiversity values, such as the SS *Yongala*, where plants and animals colonise it and use it as habitat.
- 51. In some cases, plants and animals provide a protective encrusting layer over the fabric of a site or artefact which can stop or at least slow the rate of corrosion.
- 52. Historic heritage artefacts in the Marine Park may have been colonised by various marine organisms. If an artefact is proposed to be retrieved and conserved, consider the proposed fate of corals and other marine organisms colonising the artefact. The Authority expects that recovery of artefacts is done with minimal impact on plants and animals. In many cases, the organisms can be successfully relocated to suitable habitat near the site.

#### **Hazards**

- 53. The [Risk assessment procedure](#) lists the most common potential hazards to the values of the Marine Park, as well as permission types able to be granted under the Zoning Plan. The hazards associated with permitted activities that are most likely to impact directly on historic heritage values, as well as possible avoidance, mitigation and monitoring measures are listed in Table 2.

**Table 2:** Summary of possible hazards, related permission types, possible impacts, and avoidance and mitigation measures for historic heritage values – WWII features and sites, and voyages and shipwrecks.

Hazard	Related permission types (generally)	Possible Impact (effect on value)	Possible avoidance, mitigation and monitoring measures
<p><b>Change in current and future human use pattern</b></p>	<ul style="list-style-type: none"> <li>• Operating a facility</li> <li>• Conducting a tourism program</li> <li>• Conducting a vessel or aircraft charter operation</li> <li>• Conducting an educational program</li> </ul>	<ul style="list-style-type: none"> <li>• Restricting access may limit people’s ability to learn about and appreciate historic heritage values.</li> <li>• Increasing recreational use may have positive impact by increasing the understanding and appreciation of historic heritage of a location or site.</li> <li>• Access and use is likely to be of particular interest for people who have a close personal connection to the historic events associated with the site.</li> <li>• Increasing access may lead to unintentional or intentional damage such as the removal of artefacts (looting).</li> <li>• Impacts on other social values, such as personal connection, equity (considerations for a particular generation or future generations), or employment and income.</li> <li>• Impact on aesthetics (environmental and experiential attributes) may change the beauty, naturalness, solitude, tranquillity, remoteness, for example. Impacts to aesthetics maybe felt through different senses such as sight, sound, smell, taste or touch.</li> <li>• For example, installing new facilities may impact on the aesthetics by changing the visual appearance and reducing the naturalness of the area, increased clutter, interrupt views of historic significance, or increase noise and air pollution.</li> </ul>	<ul style="list-style-type: none"> <li>• Consult with the public to determine the appropriate access arrangements to protect the site while encouraging appreciation of historic heritage.</li> <li>• Record the site’s values and present these publicly, such as in a documentary, museum exhibit, website or book.</li> <li>• Install interpretive signage to educate people about the site’s values and low impact visitation principles.</li> <li>• Use an aesthetic evaluation tool to evaluate options for minimising impacts.</li> <li>• Consult with the public and historians to determine which types of aesthetic changes may impact on historic heritage values.</li> </ul>
<p><b>Change in hydrodynamics</b></p>	<ul style="list-style-type: none"> <li>• Carrying out works (dredging, dumping of spoil, harbour works, reclamation)</li> <li>• Operating a facility</li> <li>• Navigating a managed vessel, aircraft or ship</li> </ul>	<ul style="list-style-type: none"> <li>• Altered waves, water currents and sedimentation patterns may bury, destabilise or erode sites, wrecks and artefacts. Artefacts and human remains (if present) may be dispersed.</li> <li>• Erosion can cause the protective sediment to slough off from the heritage site and expose the site to decay.</li> <li>• Construction of a new facility, dredging or spoil disposal shifts, navigating a vessel, aircraft or ship, may alter local currents or waves leading to erosion, destabilisation or burial of sites.</li> </ul>	<ul style="list-style-type: none"> <li>• Identify the social significance of a historic heritage site to determine impacts to intangible values.</li> <li>• Use hydrodynamic or sediment transport modelling to predict potential impacts including indirect impacts and test options to minimising these changes. Refer to the <a href="#">Authority hydrodynamic modelling guidelines</a>.</li> </ul>

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Hazard	Related permission types (generally)	Possible Impact (effect on value)	Possible avoidance, mitigation and monitoring measures
		<ul style="list-style-type: none"> <li>Changing the topography of the seafloor can also physically damage or disturb sites, or make the site unstable.</li> <li>Impacts on social values may include changes to the aesthetics, appreciation and enjoyment, personal connection, and equity, as well as possible flow-on effects to employment and income.</li> </ul>	<ul style="list-style-type: none"> <li>Monitor during works and periodically over the life of the facility/works to assess any changes to the site (including substrate stability).</li> <li>Restrict works to certain seasons, times or tidal cycles to reduce the impacts.</li> </ul>
<b>Change in sedimentation</b>	<ul style="list-style-type: none"> <li>Carrying out works (dredging, dumping of spoil, harbour works, reclamation)</li> <li>Operating a facility</li> <li>Navigating a managed vessel, aircraft or ship</li> </ul>	<ul style="list-style-type: none"> <li>Change in the flow, dispersion, resuspension or consolidation of sediments could erode or bury wrecks and artefacts - increased sedimentation can bury a site and decreased sedimentation leads to erosion of a site.</li> <li>Disposal of dredge material on or near a historic heritage site can be detrimental to the site by causing physical damage to the fabric of the site.</li> <li>Dredging and spoil disposal may destabilise substrate remote to the actual works area, sloughing off the protective sediment from the heritage site and exposing the site to decay.</li> <li>Anchoring and increased sedimentation from propellers of ships and vessel. Also includes dredgers (even though the actual dredging may be confined to a shipping channel or pipeline trench) as the reach of the stabilising anchoring system may extend for several hundred metres around the dredge platform.</li> <li>Ships can generate significant sediment plumes when navigating in shallow waters, especially if tidal cycles are not carefully considered when plotting a course. This can directly or indirectly impact on historic heritage sites and artefacts.</li> <li>There may be impacts to social values, including aesthetics, appreciation and enjoyment, personal connection, and equity (for a particular generation or future generations), as well as possible flow-on effects to employment and income.</li> </ul>	<ul style="list-style-type: none"> <li>Identify the social significance of a historic heritage site to determine impacts to intangible values.</li> <li>Use hydrodynamic modelling to predict potential changes and test options for minimising these changes. Refer to the <a href="#">The Authority hydrodynamic modelling guidelines</a>.</li> <li>Monitor during works to assess any changes to the site (including substrate stability).</li> <li>Restrict works to certain seasons, times or tidal cycles to reduce the impacts.</li> <li>Avoid actions that may cause the direct or indirect change in coastal profiles, long-shore drift, erosion and accretion.</li> <li>In some cases, unstable exposed sites may benefit from the deposition of clean compatible spoil. It is common practise to stabilise wrecks that are eroding with stabilising mats, sand bags or loose materials such as sand or stone. (Note that Section 104 of the GBRMP Regulations prohibits the Authority from granting a permission for an activity that involves disposal of capital dredge spoil material that prior to its excavation was, in situ, more than 15 000 cubic metres in</li> </ul>

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Hazard	Related permission types (generally)	Possible Impact (effect on value)	Possible avoidance, mitigation and monitoring measures
<b>Contamination of water or sediment</b>	<ul style="list-style-type: none"> <li>Carrying out works (dredging, dumping of spoil, harbour works, reclamation)</li> <li>Operating a facility</li> <li>Conducting an aquaculture operation</li> <li>Navigating a managed vessel, aircraft or ship</li> <li>Research other than limited impact research</li> </ul>	<ul style="list-style-type: none"> <li>Potentially toxic substances entering the Marine Park (including intentional discharge of waste from a facility) could increase corrosion and damage the protective layer of marine growth.</li> <li>Accidental discharge of waste from a vessel or facility may increase corrosion or damage the protective marine growth.</li> <li>It is also likely to impact on the aesthetics, along with people's appreciation and enjoyment.</li> <li>There may also be equity (for a particular generation or future generations), as well as possible flow-on effects to employment and income.</li> </ul>	<p>volume).</p> <ul style="list-style-type: none"> <li>Determine if the discharged may increase corrosion of wrecks or artefacts.</li> <li>Limit waste discharge to concentrations or volumes that pose a low risk to historic heritage.</li> <li>Store fuel and chemicals in appropriate containers within bunded areas.</li> <li>Establish an incident response plan and carry required response equipment.</li> <li>Identify the social significance of a historic heritage site to determine impacts to intangible values.</li> </ul>
<b>Direct damage, removal or destruction of non-living things</b>	<ul style="list-style-type: none"> <li>Carrying out works (dredging, dumping of spoil, harbour works, reclamation)</li> <li>Operating a facility</li> <li>Conducting an aquaculture operation</li> <li>Navigating a managed vessel, aircraft or ship</li> <li>Research other than</li> </ul>	<p>Applies to all activities listed below:</p> <ul style="list-style-type: none"> <li>Impacts to historic heritage values will have impacts on social values including aesthetics, enjoyment and appreciation, personal connection, and equity (for a particular generation or future generations), as well as possible flow-on effects to employment and income.</li> </ul> <p><b>Anchoring and vessel activity</b></p> <ul style="list-style-type: none"> <li>Anchoring on a site damages the site or artefacts.</li> <li>Poor anchoring leads to damage when anchors drag through a site.</li> <li>Ship anchorages scour or otherwise damage historic heritage sites. It is possible for undiscovered heritage sites to be damaged from ships anchoring. If an interaction occurs, the consequences are likely to be serious and irreversible.</li> <li>Large ships create propeller wash which physically moves,</li> </ul>	<ul style="list-style-type: none"> <li>Identify the social significance of a historic heritage site to determine impacts to intangible values.</li> <li>Limit the numbers or size of vessels that can access the site.</li> <li>Prohibit anchoring within 30m of a site or wreck.</li> <li>Install temporary or permanent mooring/s to facilitate access while reducing damage.</li> <li>Restrict ship anchoring to sites that are already highly used or have been</li> </ul>

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Hazard	Related permission types (generally)	Possible Impact (effect on value)	Possible avoidance, mitigation and monitoring measures
	limited impact research	<p>disturbs or damages artefacts or their protective covering.</p> <ul style="list-style-type: none"> <li>Anchoring and increased sedimentation from propellers of ships and vessel. Also includes dredgers (even though the actual dredging may be confined to a shipping channel or pipeline trench) as the reach of the stabilising anchoring system may extend for several hundred metres around the dredge platform.</li> <li>Disturbing or damaging a site, wreck or artefact is likely to degrade the historic heritage values.</li> </ul> <p><b>Diving and snorkelling</b></p> <ul style="list-style-type: none"> <li>Recreational divers intentionally handle or remove or artefacts.</li> <li>Divers unintentionally damage the site by touching, kicking, bumping, standing, entering or otherwise disturbing.</li> <li>Divers' bubbles increase corrosion or physically dislodge protective layers.</li> </ul> <p><b>Research</b></p> <ul style="list-style-type: none"> <li>Handling or removal of artefacts degrades the site, especially if they are not appropriately recorded, conserved and interpreted.</li> <li>Taking samples of wood or other materials destabilises the site, exposes the site to increased corrosion or bio-erosion or degrades the values.</li> <li>Also refer to Research – maritime archaeological (or cultural heritage research) section in these guidelines.</li> <li>Also refer to <a href="#">Maritime Cultural Heritage Protection SMA assessment guidelines</a>.</li> </ul>	<p>assessed as unlikely to contain historic heritage values.</p> <ul style="list-style-type: none"> <li>Prohibit ships from navigating into areas (or during tidal cycles) where propeller wash may impact on historic heritage.</li> <li>In some cases, in-depth site survey using visual, sonar and magnetometer survey techniques may need to be conducted.</li> </ul> <p>Supervise divers and snorkelers as part of tourism program, for example limit access to small guided tours.</p> <ul style="list-style-type: none"> <li>Prohibit or restrict divers from entering wrecks or sites.</li> <li>Ensure divers have adequate diving skills for the conditions.</li> <li>Prohibit introductory diving or beginner dive training at historic heritage sites.</li> <li>Educate divers and/or provide interpretive materials (signs, swim cards) so people are aware of the significance of the site and ways to conserve the historic heritage values.</li> </ul> <ul style="list-style-type: none"> <li>Restrict the number and size of samples taken for archaeological surveys.</li> <li>Use non-invasive, low impact survey methods (such as remote sensing) instead of traditional, hands-on (such as handling artefacts or taking wood samples).</li> <li>Limit what methods or equipment can be used based on the researcher's experience or qualifications.</li> </ul>

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Hazard	Related permission types (generally)	Possible Impact (effect on value)	Possible avoidance, mitigation and monitoring measures
		<p><b>Operating a facility</b></p> <ul style="list-style-type: none"> <li>Installing a new facility physically disturbs, damages or destroys historic heritage.</li> <li>For existing facilities, prior to any decision on major works, decommissioning or removal, consider as part of the assessment whether the site is of historic significance and how the works may impact on heritage values. If the facility is structurally unsafe and poses a threat to the environment or other users, full or partial removal may be required. However, this should be done in a manner which ensures the site's historic heritage values are preserved and interpreted for future generations. Expert advice should be sought by the applicant and in consultation with the Authority.</li> </ul> <p><b>Carrying out works</b></p> <ul style="list-style-type: none"> <li>Dredging exposes, destabilises or disturbs a site.</li> <li>Spoil disposal or beach protection works destabilise or buries a site.</li> </ul>	<ul style="list-style-type: none"> <li>Permit the removal of rubbish such as debris, fishing line, nets provided the removal of the rubbish does not impact on the values.</li> <li>Require submission of a trip report, images and/or data to provide information to assist management.</li> <li>Conduct a pre-disturbance survey to determine the likelihood that historic heritage artefacts are present at the site.</li> <li>Consider alternative infrastructure design that provides the smallest footprint to minimise disturbance the site.</li> <li>Consider structures that straddle the feature if no alternative area can be found.</li> <li>Use construction materials and methods that minimise disturbance.</li> <li>Where artefacts cannot be conserved in place, partner with a reputable institution to recover, preserve and interpret the artefacts (such as in a museum).</li> <li>Conduct a pre-disturbance survey to determine the likelihood that historic heritage artefacts are present at the site.</li> <li>Do not dredge or dump on or near a historic heritage site.</li> <li>Where artefacts cannot be conserved in place, partner with a reputable institution to recover, preserve and interpret the artefacts (such as in a museum).</li> </ul>

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### Research – maritime archaeological (or cultural heritage research)

54. Maritime archaeological research (or cultural heritage research) is a diligent and systematic inquiry or investigation into the historic heritage values, in order to discover facts or principles and improve the understanding of the place, its condition and its history. Research may involve new techniques for investigating and preserving the value. Survey methods may include recording, cataloguing, mapping, or otherwise describing the site.
55. Rescue archaeological research involves the recovery of artefacts and invasive research where an artefact at risk is removed from the site and conserved. This situation may occur after a cyclone or severe weather event where artefacts are eroded from within the site and are exposed to theft or further damage. In this situation the artefact is recorded *in situ* and then recovered and conserved for its protection. This action would be considered a positive consequence.
56. Small scale research that adds positively to the value could include sampling a vessel's timbers. This sampling poses a minor risk if conducted by competent researchers. Timber sampling should be minimised and generally not exceed four pieces of approximately 100 mm x 50 mm x 50 mm. Requests for larger samples will require more detailed justification and consideration of impacts.
57. The consequence of competent researchers picking up an artefact to aid its identification and then replacing it to its original position without damaging it could be considered a minor consequence. However, if this practise were to take place on a regular basis, the consequence is likely to be detrimental to the artefact.
58. Large scale invasive research involves the recovery of artefacts in an archaeologically rigorous manner where the artefacts are recovered, conserved and interpreted at a museum. Large scale research involving excavation and recovery of an entire ship or plane wreck may significantly contribute to the knowledge of the value. In some cases, this may be the best option to protect the site from activities, looters or extreme weather events. Considerations include:
  - a. reasons and justification for the large scale invasive research
  - b. qualifications and relevant experience of research team, including experience in maritime archaeology and diving, and experience at the particular site
  - c. methods for minimising impacts
  - d. evidence the applicant has the financial capacity to complete the project
  - e. how the research will contribute to scientific understanding or public appreciation of the site.
59. Standard methods such as SCUBA diving and transect surveys are generally low risk if conducted by competent researchers who are familiar with the site. Non-standard or new methods or equipment should be clearly explained by the applicant, including:
  - a. outlining the purpose and need for specific methods or equipment
  - b. describing how any likely impacts will be mitigated to prevent damage to site
  - c. explaining the research team's experience or qualifications in using the specific methods or equipment.
60. Also refer to [Maritime Cultural Heritage Protection SMA assessment guidelines](#).
61. The [Reef Integrated Monitoring and Reporting Program](#) is establishing a monitoring protocol for setting baseline conditions and monitoring changes to historic heritage values.

### Consequence

62. The consequences to historic heritage values are described in the [Risk assessment procedure](#). In addition the following consequences are to be considered by the Authority in the assessment of potential impacts to historic heritage values.

### Positive (Enhance)

63. All scales:
- a. Stabilisation of the site that adds positively to the longevity of the site.
  - b. Photographic records of the site that help with management of the value.
  - c. Removal of any foreign fouling material that is detrimental to the conservation of the site.
  - d. Historic heritage is identified (including recognition and interpretation), managed, monitored, protected and conserved.
  - e. Improved understanding, appreciation and enjoyment.
  - f. Recovery of at risk artefacts to protect them from theft or environmental threats.

### Negligible (Maintain)

64. All scales:
- a. The lifting of artefacts (without any excavation) for examination and identification by a researcher is considered negligible if the artefact is returned to the exact position it was in prior to disturbance.
  - b. No noticeable impact on people's understanding, appreciation or enjoyment of the site.

## Assessment information

65. Additional information may be required depending on the type of activity. This is outlined based on the assessment approach. Refer to the [Application guidelines](#) for more information on how assessment approaches are determined.
66. Tailored assessment approach may also require:
- a. If historic heritage values are likely to be impacted in the proposed location, an explanation and description of:
    - i. How the proposal may interact with or impact upon this value, using available information and sources of information (for example desktop study, checking historic records, discussing with locals).
    - ii. How the impacts will be avoided and/or mitigated, including material and methods used.
    - iii. Whether human remains are present and how this has been determined.
    - iv. Whether unexploded ordinance may be present and how this has been determined.
  - b. Historic heritage research applications should also explain:
    - i. Whether/how data will be made available to the Authority for management purposes (for example, a data sharing agreement).
    - ii. Qualifications of research team including experience in maritime archaeology and knowledge of the site.
67. Public Information Package assessment approach may require the same as Tailored assessment approach and also:
- a. Evidence of consultation with key stakeholders or researchers regarding potential impacts and options for avoiding, mitigating these impacts.
  - b. Any issues raised by public submissions and how the applicant has addressed these issues.
  - c. An Environmental Management Plan, including a heritage management plan (refer to [Assessment guidelines](#) – see section on *Management Plans*).
  - d. Historic heritage research applications should also explain any proposed manipulation or removal of artefacts.
68. Public Environment Report and Environmental Impact Statement assessment approaches may require the same as Public Information Package assessment approach and also:
- a. Evaluation of prudent and feasible alternatives.
  - b. Examination of potential positive and negative impacts to historic heritage values, based upon available archival research.
  - c. Pre-disturbance historic heritage survey of the area using best practice survey methods by qualified personnel (such as a qualified maritime archaeologist and remote sensing professional).
  - d. Report on consultation in accordance with the Terms of Reference for the PER or EIS (respectively) and any consultation with a community reference group (if applicable) regarding potential impacts on this value and options for avoiding, mitigating and offsetting these impacts.
  - e. If research activity, a description of how the proposal complies with the [UNESCO Manual for activities directed at underwater cultural heritage](#).

## Implementation

69. These guidelines will be reviewed and updated if required at least every three (3) years.
70. The Permission System Policy and other guidelines are available which provide further detail on how the Authority assesses, decides and manages specific aspects of the permission system and the application process.
71. For actions that are wholly or partially outside the Marine Parks, the Authority will continue to liaise with the Commonwealth Department responsible for the EPBC Act. Where a bilateral agreement exists between the Australian Government and the Queensland Government, depending on the terms of the agreement the Commonwealth Department's role may be delivered by the Queensland Government. The Authority will work with both levels of government according to agreed procedures, such as a Memorandum of Understanding, to provide advice on matters that may affect the Great Barrier Reef.

## Definitions

Refer to the [Permission System Policy](#) for a list of general definitions relating to the permission system.

### Burra Charter

Is the primary reference for managing the heritage values of historic places.<sup>10</sup>

### Fabric

Means all the physical material of the place including components, fixtures, contents, and objects (*Burra Charter*).<sup>10</sup>

### Large scale invasive research

Includes any archaeological research that involves excavation and disturbance of artefacts.

### Protective layer

Is the marine biota that includes the calcareous layer covering the fabric of a site protecting it from corrosion.

### Site

Includes the main feature of the site plus the surrounding area that is likely to include artefacts.

### Wreck

Includes flotsam, jetsam, lagan, derelict, and articles or goods of any kind that belonged to or came from a vessel or aircraft wrecked, stranded, sunk or abandoned, or in distress, or any part of the hull machinery or equipment of any such vessel or aircraft (Great Barrier Reef Zoning Plan 2003).

## Supporting Information

1. Royal Australian Navy 2016, *HMAS Warrnambool (I)* Royal Australian Navy, <<http://www.navy.gov.au/hmas-warrnambool-i>>.
2. South Australian Maritime Museum 2016, *Protector: South Australia's warship*, South Australian Maritime Museum, <<http://maritime.history.sa.gov.au/htsubsite/8>>.
3. Department of the Environment 2013, *Australian National Shipwreck Database*, Department of the Environment, Canberra, <<http://www.environment.gov.au/heritage/shipwrecks/database.html>>.
4. Bolton, G.C. published first in hardcopy 1967, *Morrill, James (1824–1865)*, Australian Dictionary of Biography, National Centre of Biography, Australian National University, <<http://adb.anu.edu.au/biography/morrill-james-2484>>.
5. Great Barrier Reef Marine Park Authority and the Department of Environment and Heritage Protection in draft, *Mermaid 1816-1829 Conservation Management Plan*, the Authority and EHP, Townsville, Queensland.
6. Moran, V. 1999, *SS Gothenburg (1854-1875): A management and conservation plan*, Queensland Museum, Brisbane, Australia.
7. Moran, V. 2001, *SS Yongala (1903-1911): A conservation management plan*, Museum of Tropical Queensland, Townsville, Australia.
8. Doyle, C. 2004, *Q.G.S.S. Llewellyn (1884-1919): A management and conservation plan*, Queensland Museum, Brisbane, Australia.

9. Maarleveld, T., Guèrin, U. and Egger, B. 2001, *UNESCO Manual for Activities directed at Underwater Cultural Heritage*, UNESCO - Secretariat of the 2001 Convention, Paris.
10. Australia International Council on Monuments and Sites (ICOMOS) 2013, *Charter for Places of Cultural Significance, The Burra Charter*, 2013 .
11. UNESCO World Heritage Convention *World heritage*, United Nations Education, Scientific and Cultural Organization, <<http://whc.unesco.org/en/about/>>.

## Further information

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