



## Shoalwater and Corio Bays Ramsar Information Sheet: additional reports and documents under Section 6.1.2

### Boundary Description (additional information)

The boundary of the Broome Head section of the site commences at:

- A. The southern end of Broome Head on HAT at or about latitude 22°15'43" south, longitude 150°09' east;
- B. From there it continues southerly along the foreshore to its intersection at or about latitude 22°19'22" south, longitude 150°11'23" east;
- C. From there it continues northerly along HAT, including into Shoalwater Bay Regional Park, to its intersection back with the starting point, at A.

The boundary of the Shoalwater Bay section of the site commences:

- D. Near West Bight on HAT at or about latitude 22°19'29" south, longitude 150°11'31" east;
- E. From there it continues northerly to its intersection with the boundary of the SWBTA at or about latitude 22°16'55" south, longitude 150°12'07" east;
- F. From there it continues north easterly along the boundary of the SWBTA to its intersection at or about latitude 22°14'56" south, longitude 150°20'02" east;
- G. From there it continues north easterly along the boundary of the SWBTA to its intersection at or about latitude 22°09'53" south, longitude 150°30'03" east;
- H. From there it continues south easterly along the boundary of the SWBTA to its intersection at or about latitude 22°19'58" south, longitude 150°45'10" east;
- I. From there it continues south easterly along the boundary of the SWBTA to its intersection, east of Cape Clinton, at or about latitude 22°32'16" south, longitude 150°51'25" east;
- J. From there it continues east to its intersection with the six meter depth contour at or about latitude 22°32'16" south, longitude 150°47'41" east;
- K. From there it continues to follow the six meter depth contour in Freshwater Bay and around Cape Manifold to its intersection with the boundary of the SWBTA, east of Five Rocks, at or about latitude 22°46'29" south, longitude 150°49'26" east;
- L. From there it continues easterly along the boundary of the SWBTA to its intersection with the boundary of the Water Park Creek Catchment at or about latitude 22°49'51" south, longitude 150°36'57" east;
- M. From there it continues northerly along the boundary of the Water Park Creek Catchment to its intersection with the boundary of the Great Barrier Reef Catchment at or about latitude 22°39'07" south, longitude 150°41'34" east;
- N. From there it continues northerly to its intersection with HAT in the Clinton Low Lands at or about latitude 22°37'58" south, longitude 150°42'14" east;
- O. From there it continues northerly along HAT around the peninsula and into Shoalwater Bay to its intersection near West Bight back with the starting point, at D.

The boundary of Corio Bay section of the site commences at:

- P. The FHA-067 (Corio Bay) at the northern entrance to Corio Bay at or about latitude 22°56'38" south, longitude 150°47'34" east;



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- Q. From there it continues east to its intersection with the six meter depth contour at or about latitude 22°56'38" south, longitude 150°48'57" east;
- R. From there it continues southerly along the six meter depth contour to its intersection at or about with Latitude 22°59'54" south, longitude 150°48'36" east;
- S. From there it continues west to its intersection with the coastal boundary of Byfield National Park, at or about latitude 22°59'54" south, longitude 150°46'30" east;
- T. From there it continues south easterly along the boundary of Byfield National Park to its intersection with FHA-067 (Corio Bay) at or about latitude 23°00'28" south, longitude 150°46'04" east;

From there it continues along the boundary of FHA-067 (Corio Bay) in Corio Bay, including into Fishing Creek and Water Park Creek, to its intersection back with the starting point, at P.



## Geographical coordinates

	Degrees ( ° )	Minutes ( ' )	Seconds ( '' )	N or S; E or W
<b>Latitude</b>	22°	39'	30''	S
<b>Longitude</b>	150°	28'	00''	E

If the site is composed of more than one separate area, also provide central coordinates for each of these sub-areas:

<b><i>Sub-area name:</i></b> Broome Head section	Degrees ( ° )	Minutes ( ' )	Seconds ( '' )	N or S; E or W
<b>Latitude</b>	22°	17'	49''	S
<b>Longitude</b>	150°	09'	39''	E

<b><i>Sub-area name:</i></b> Shoalwater Bay section	Degrees ( ° )	Minutes ( ' )	Seconds ( '' )	N or S; E or W
<b>Latitude</b>	22°	25'	33''	S
<b>Longitude</b>	150°	28'	26''	E

<b><i>Sub-area name:</i></b> Corio Bay section	Degrees ( ° )	Minutes ( ' )	Seconds ( '' )	N or S; E or W
<b>Latitude</b>	22°	56'	45''	S
<b>Longitude</b>	150°	45'	39''	E



References and additional information for Criteria 5 and 6

5	>20,000 waterbirds	<input checked="" type="checkbox"/>	Please give details of relevant bird species in field 12c and information on total numbers and data period below:								
			<p><b>Overall waterbird numbers:</b> &gt;23,000 migratory shorebirds and small numbers of other waterbirds were counted at Shoalwater Bay Training Area in December 1995 and, by extrapolation, the total numbers were estimated to be 20,000 to 25,000 in each of three surveys in 2007. Recent surveys by AECOM (2016) estimated a waterbird population of 21, 232 at Shoalwater Bay Training Area.</p>								
			<p><b>Period data relates to:</b></p>								
			<table border="1"> <tr> <td>Start year: December 1995</td> <td>End year: 2016</td> </tr> </table>	Start year: December 1995	End year: 2016						
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			<table border="1"> <tr> <td>Source of data: Jaensch, R. 2008a. A condition assessment of wetlands and waterbirds in the Shoalwater Bay Training Area. Part 4: numbers of migratory shorebirds. Report prepared by Wetlands International Oceania for the Department of Defence. AECOM (2016) Shorebird Assessment, Shoalwater Bay Training Area.</td> <td></td> </tr> </table>	Source of data: Jaensch, R. 2008a. A condition assessment of wetlands and waterbirds in the Shoalwater Bay Training Area. Part 4: numbers of migratory shorebirds. Report prepared by Wetlands International Oceania for the Department of Defence. AECOM (2016) Shorebird Assessment, Shoalwater Bay Training Area.							
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6	>1% waterbird population	<input checked="" type="checkbox"/>	Please give details of relevant bird species in field 12c								
			<p>Six species are recorded as occurring in numbers greater than 1% of their estimated population in the Ramsar site, these are outlined in the table below- threshold reference is the Wetland International's periodic publication Waterbird Estimates for 2012..</p>								
			<table border="1"> <thead> <tr> <th>Common name</th> <th>Scientific name</th> <th>Counts</th> <th>1% Threshold<sup>1</sup></th> </tr> </thead> <tbody> <tr> <td>grey-tailed tattler</td> <td><i>Tringa brevipes</i></td> <td>3,014 in 1995 (Driscoll 1996, Driscoll 1997);</td> <td>440</td> </tr> </tbody> </table>	Common name	Scientific name	Counts	1% Threshold <sup>1</sup>	grey-tailed tattler	<i>Tringa brevipes</i>	3,014 in 1995 (Driscoll 1996, Driscoll 1997);	440
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grey-tailed tattler	<i>Tringa brevipes</i>	3,014 in 1995 (Driscoll 1996, Driscoll 1997);	440								



			Highest mean number 2,768 and lowest mean 1,931 for three surveys in 2007 (Jan, Mar, Sept) (Jaensch 2008a); AECOM (2016) mean count data for February and April at 1657 and 2349 respectively.		
	bar-tailed godwit	<i>Limosa lapponica (ssp. baueri)</i>	5,077 in 1995 (Driscoll 1996) 5,151 in 1995 (Driscoll 1997) Highest mean number 3,336 and lowest mean 1,860 for three surveys in 2007 (Jan, Mar, Sept) (Jaensch 2008a) AECOM (2016) mean count data for February at 605.	1,300	
	eastern curlew	<i>Numenius madagascariensis</i>	2,844 in 1995 (Driscoll 1996) 2,986 in 1995 (Driscoll 1997) Highest mean number 1,020 and lowest mean 346 for three surveys in 2007 (Jan, Mar, Sept) (Jaensch 2008a). AECOM (2016) mean count data for February at 518.	320	
	whimbrel	<i>Numenius phaeopus (ssp. variegatus)</i>	7,089 in 1995 (Driscoll 1996) 7,124 in 1995 (Driscoll 1997) Highest mean number 2,097 and lowest mean 999 for three surveys in 2007 (Jan, Mar, Sept) (Jaensch 2008a)	550	



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			AECOM (2016) mean count data for February and April at 789 and 280 respectively.		
	terek sandpiper	<i>Xenus cinereus</i>	3,410 in 1995 (Driscoll 1996, Driscoll 1997); Highest mean number 1,275 and lowest mean 539 over three surveys in 2007 (Jan, Mar, Sept) (Jaensch 2008a). AECOM (2016) mean count data for February and April at 1149 and 164 respectively.	500	
	Australian pied oystercatcher	<i>Haematopus longirostris</i>	376 birds in 1995 (Driscoll 1996) 381 in 1995 (Driscoll, 1997) Greater than 110 in all three surveys in 2007 (highest count in this time was 307) (Jaensch 2008a)	110	



## Additional Information

### What is the Site Like?

#### Physical Components

##### 4.4.3– Soil

The landforms of the Shoalwater Bay and Broome Head sections are low mountains and hills, low hills and rises, alluvial plains and fans, mudflats and beaches and coastal sand dunes. Geological units show igneous, sedimentary and metamorphic geologic processes have occurred on the site. Accordingly, surface geological materials are diverse but principally relate to either weathered in-situ rock or material that has been transported and deposited elsewhere in the landscape through wind, wave and other coastal processes.

The Ramsar site includes excellent and rare examples of unmodified, relict, cliff-top parabolic dunes dating from the Pleistocene age represented at Townsend Island, Mount Gibraltar-Pearl Bay region, Freshwater Bay and the Dismal Swamp sector seaward south to Byfield National Park. Most of the dunes are elongate at a maximum length as much as four kilometres. These dunes contain mostly well sorted fine to medium sands and quantities of other materials (e.g. rock fragments, heavy minerals, clay). The parabolic and parallel sand dune formations in the Ramsar site are highly significant in a national context and considered to be of ‘outstanding universal value’ for the purpose of the Great Barrier Reef World Heritage listing (Geoscience Australia 2013).

Numerous sinkholes of various sizes occur in the eastern sand dunes of the site. They are conical with sandy surfaces sloping up to 20 degrees, up to 30 m deep and 20 m across. The sinkholes are likely to be depressions caused by the collapse of iron-rich units within the weathered soil profile. The larger sinkholes have permanent freshwater springs emanating from their floors and support rainforest communities. Sinkholes with significant infilling of sand, like those in elevated dune terrain of site, appear to be rare features worldwide (DoD 2009).

Terrestrial soils in the Shoalwater Bay and Broome Head sections are mostly infertile and unstructured with clay sub-soils that are often saline and impervious to water. The large particle size, poor structure of surface soils and vegetated nature of the site limits natural soil erosion processes, but the subsoils are erodible especially due to their high salinity content. Soils in the eastern areas are wetter due to higher rainfall and have both sandy loams over heavy clays and podzols on the older sand dunes. Sand dune areas are an exception to this, with podzols unable to form because of active re-working. The sand dunes also contain numerous freshwater wetlands on soils that vary from sand with high organic matter to peat layers over one metre thick.

Shoalwater and Corio Bays are in a region that experiences the highest tidal range on the eastern Australian coastal margin, with up to 5–6 metres observed in Port Clinton. This is a result of several factors including an offshore break in the Great Barrier Reef, which reduces its normal sheltering effect, the convergence of regional tidal systems, and the broad continental shelf of the region that accentuates the effects of bottom interference.

The effect of the large tidal range produces alternating conditions of strong currents that transport sand and slack water, thereby enabling the deposition of finer muds. The tidal processes also repeatedly flood and expose large areas of coastline leading to the formation of an extensive intertidal zone, which is characterised by a succession of ecosystems controlled by the frequency and length of tidal inundation and other related factors such as the degree of exposure and protection from wave action.

Freshwater flows into Shoalwater Bay, Port Clinton and Corio Bay are highly variable over seasonal and inter-annual time scales in response to highly variable rainfall patterns. The Ramsar site is characterised by three main catchment sub-basins. The Shoalwater catchment consists of short streams and creeks that drain directly to Shoalwater Bay from the higher ranges across tidal flats and mangroves. In the Water Park Creek catchment the northern area within the SWBTA flows west to the Dismal Swamp and the southern area flows west and south to Corio Bay via Sandy Creek and Water Park Creek. The eastern of this catchment includes the narrow estuary and



coastal plains associated with the Island Head Creek system, Port Clinton, and the eastern beach systems of the SWBTA from Cape Manifold to Five Rocks that drains directly to the coast without flowing in a major recognised waterway catchment. A small area in the south of the Dismal Swamp sector flows into the Fitzroy River catchment that drains into sea south of Rockhampton.

Most freshwater creeks in the Shoalwater Bay and Broome Head sections of the site are ephemeral, with flows occurring during the summer wet season from December to March. Sandy Creek and Water Park Creek maintain high levels of base flow throughout the year due to flow from Dismal Swamp and groundwater input from associated sand dunes. Freshwater inflow into the Corio Bay area is thought to be present through most years.

The movement of groundwater through the landscape is a critical process that sustains the wetlands of the Ramsar site. The groundwater resources of the Ramsar site are characterised by a mixture of fractured rock and primary porosity aquifers with flows that closely follow topography within the Shoalwater, Water Park Creek and Fitzroy River catchments.

The natural percolation of groundwater through the dune system provides a year-round supply of groundwater for the larger swamps that are fed by groundwater springs (such as Freshwater Swamp and the larger sinkholes) and higher elevation swamps such as Dismal Swamp, which are maintained by an impervious sand layer, rainfall and local runoff.

There is a general absence of estuarine or marine water quality data for the site's major waterbodies (e.g. Shoalwater Bay and Port Clinton estuaries). A comparison of the water quality data collected from several sites across the SWBTA since 2002 with the water quality objectives of the Queensland Water Quality Guidelines (2009) found that the various water quality parameters were within the bounds of natural variability (DoD 2009).

The water quality of estuarine and marine features, based on the predominantly natural catchments that flow into them, the level of usage and ecosystem condition of key indicator habitats (e.g. seagrass), are indicative of excellent water quality. Corio Bay water quality displays features of a "typical Australian estuary", with salinity increasing seaward, that is a pattern arising from freshwater input from surface water flows of Water Park Creek. There is a lack of information regarding the water quality of the site's freshwater swamps.

#### **4.4.4 – Water Regime**

Environmental Values (EV) and Water Quality Objectives (WQO) for Shoalwater Creek and Water Park Creek Basins have been published under Schedule 1, of the Queensland Environmental Protection (Water) Policy 2009 (EPP Water), Capricorn Curtis coastal waters plan (WQ1272) and groundwater zones plan (WQ1273).

#### **4.4.5 – Sediment Regime**

In the Shoalwater Bay and Broome Head sections, beach sediments along the eastern seaboard are influenced by coastal sediment transport processes, with rivers supplying almost no sediment to the coastline. These beaches have medium to fine sand that is subject to minor erosion and local blow outs. The beaches are typically of Holocene age, backed by a foredune formed by vegetation trapping sand that is eroded by wind from the exposed beach. A notable exception to this is the Clinton Lowland area within Port Clinton, which represents an older Pleistocene age beach complex formed from prograding barrier ridges.

Marine sediments found offshore within the Shoalwater Bay and Broome Head sections include very fine sand nearshore and poorly sorted muddy sand further out. Coastal processes form ridges of fine to medium sand that can be up to 10 meters higher than the surrounding sea floor. These ridges can extend 1 kilometre wide by 20 kilometres in length, forming long channels oriented northwest-southeast that are filled with thick, muddy waters on the ebb tide.





A subtidal delta occupies the mouth of Port Clinton, with the seaward part an asymmetric sand bar that is prograding seawards. The delta is composed of fine to medium sand that is migrating from the southern coastal sand dune systems. The sediments within Port Clinton form extensive flat banks to the west and south, which are incised by deep channels.

Corio Bay is a shallow estuarine inlet forming the efflux of the streams flowing east from the Coast Range and south from Shoalwater Bay. The Corio Bay area has mixed lithology. Unconsolidated sediments of the subtidal areas of the bay are surrounded by intertidal Holocene marine deposits stabilised by mangroves and other halophytic vegetation. Most sediment in Corio Bay is comprised of fine-medium sands and can include coarse sand and gravel areas. Extensive aeolian dunes of Pleistocene to Holocene age abut the intertidal deposits. To the south of the bay and to some extent the west and north, the area surrounding the intertidal zone abuts extensive, low lying areas of Pleistocene sand, gravel, soil and arkose that form coastal swamps.

The entrances of all creeks flowing into Corio Bay are marked by a series of sand banks and the predominant estuarine sediment is sandy material with low organic content excepting the mudflats within the well-defined wetland vegetation communities.

#### **4.4.8 – Dissolved or Suspended Nutrients in Water**

A brief comparison of water quality data sampled within the SWBTA against the regional Queensland Water Quality Guidelines (QWQG) found:

- Dissolved Oxygen – Dissolved oxygen levels (% saturation) range from 8.6% to 98.1%. The median and 80th percentile values are less than the lower guideline value of 85% saturation.
- Total Nitrogen – Total nitrogen concentrations range from <0.1 mg/L to 2.3 mg/L. The median, 20th and 80th percentile concentrations all exceed the QWQG guideline value of 0.50 mg/L.
- Total Phosphorous – The median and maximum total phosphorous concentrations range exceed the QWQG guideline value of 0.05 mg/L.
- Chlorophyll-a – Chlorophyll-a concentrations range from 0.001 µg/L to 12 µg/L. The 80th percentile and maximum concentrations exceed the guideline value of 5 µg/L.

While some exceedances of QWQG values for nutrients have been recorded in the above, these are considered to be well within the bounds of natural variability with natural high levels of organic nitrogen and phosphorus derived from the breakdown of plant material in streams and lagoons.

Water quality data has also been collected in Water Park Creek including in the downstream reaches of the creek near Corio Bay found:

- Dissolved Oxygen – Median dissolved oxygen levels (% saturation) are within the recommended guideline range of 85-110% saturation. The maximum recorded level is greater than the 110% saturation upper value.
- Total Nitrogen – Concentrations of total nitrogen are all less than the QWQG of 0.5 mg/L. The median total nitrogen concentration is 0.15 mg/L.
- Total Phosphorous – Total phosphorous concentrations within Corio Bay range from 0.003 mg/L to 0.038 mg/L. The median concentration is 0.011 mg/L. All recorded concentrations are compliant with the QWQG value of 0.05 mg/L.



Chlorophyll-a – The maximum recorded concentration of chlorophyll-a exceeds the QWQG value of 5 µg/L. The median value of 1.3µg/L is compliant with this value.

## **Part 3.2 Ecological Processes**

### **Primary Production**

The main primary producers within the site include phytoplankton, benthic microalgae (microphytobenthos), seagrass, mangroves, saltmarshes, and transitional habitats such as *Melaleuca* forest. The relative contribution of each of these components to total primary productivity will vary from place to place and across a range of spatial (and possibly temporal) scales.

### **Nutrient Cycling**

As vegetative and animal matter begins to senesce and die, microbes invade the tissues and transform the organic material into more bio-available forms of carbon and other nutrients. While microalgae, mangroves and seagrasses are mainly responsible for primary productivity within estuarine and marine waters of the site, microbial breakdown is a key pathway for plant material entering the food-web in these ecosystems (Alongi 1990). This is especially true for marine, estuarine and freshwater macrophytes (seagrass, mangroves, saltmarshes, freshwater marshes), which with few notable exceptions (e.g. some invertebrates, fish and birds) are generally not directly grazed, but instead enter food-webs following microbial conversion of organic matter (Day *et al.* 1989).

Grazing of phytoplankton by zooplankton is likely to represent an important link in the chain of nutrient flux and energy flow in the marine and estuarine waters of the site. Furthermore, the planktonic phase forms part of the life-cycle of most benthic and marine demersal fauna (meroplankton), including most species of direct fisheries significance. Little is known about the relationships between nutrient levels, phytoplankton dynamics and zooplankton composition, grazing and production within the wetland.

The direct consumption of macrophytes by grazers also represents a pathway for energy flow through the ecosystem. Macrophytes generally form a direct food source for only a limited number of species, including sea urchins, some amphipods, gastropod snails, some fish species (e.g. garfish, luderick and leatherjackets), together with black swan, ducks and geese. From an energy flow perspective, perhaps the most important linkage between macrophytes and higher trophic levels is through the decomposition of dead plant material by bacteria and fungi. This is likely to be particularly the case in detritus-based foodwebs that characterise saltmarsh and freshwater wetland systems.

### **Notable Species Interactions**

Numerous studies have examined the roles of competition, predation, larval supply, food supply and disturbance in structure in soft-sediment benthic macroinvertebrate communities. Like estuarine fish communities, it is unlikely that any single factor controls patterns in community structure; rather the relative importance of density dependent and density-independent controls is expected to vary across a range of temporal and spatial scales (Seitz 1998).

While there is a large body of work examining population controls and processes for reef fish (Hixon 1998; Levin 1998), with few exceptions there is comparatively little information describing the ultimate population controls for estuarine and coastal fish species. It is likely that density-dependent controls (e.g. competition for food and space) and density independent factors (e.g. disturbance) both exert an influence of fish communities, with the relative importance of these processes varying across multiple spatial and temporal scales. These factors may operate both within and external to the Ramsar site.



The availability of food sources will affect the frequency and intensity of use of Shoalwater and Corio Bays as a feeding habitat by waterbirds, noting a broad range of feeding techniques are used by the array of waterbirds that use the site. These feeding adaptations range from shorebirds feeding on macroinvertebrates in the tidal and lake flats to pelagic fish feeders such as the little tern and raptors.

#### Part 4.1 Summary of Critical Services, Components and Processes of the Shoalwater and Corio Bays Area Ramsar site

Ecosystem services/benefits	Ecosystem components	Ecosystem processes
<p><b>1:</b> The site contains marine, estuarine and freshwater landscapes and ecosystems that are representative of the biogeographic region and are rare in the context of a large coastal system that remains in a near natural state</p> <p><b>2:</b> The site has wetland types (notably the peat swamps in the Dismal Sector and the Clinton Lowlands) that are rare, unusual and noteworthy for the biogeographic region and at greater spatial scales.</p> <p><b>3:</b> The site supports national and internationally threatened wetland species.</p> <p><b>4:</b> The habitat diversity present within the site supports outstanding biodiversity values including several notable vegetation communities.</p>	<p><b>Wetland habitats</b>, including the following Ramsar types:</p> <p><i>Coastal/Marine</i></p> <ul style="list-style-type: none"><li>• 9 Types</li></ul> <p><i>Inland</i></p> <ul style="list-style-type: none"><li>• 9 Types</li></ul> <p><b>Populations of wetland-dependent fauna and flora species of national or international conservation significance</b>, including populations of:</p> <ul style="list-style-type: none"><li>• Aquatic animals (marine): Sea turtles and dugong</li><li>• Aquatic animals (freshwater): honey blue eye</li><li>• Wetland-dependent terrestrial fauna species: water mouse</li><li>• Wetland-dependent flora: lesser swamp orchid</li></ul>	<p><b>Physical coastal processes.</b> Hydrologic and hydrodynamic controls on habitats through tides, currents, waves, wind and associated erosion and accretion processes.</p> <p><b>Surface freshwater inflows</b></p> <p>Freshwater inflows from creeks and surface run-off most notably into Corio Bay and into Shoalwater Bay.</p> <p><b>Groundwater.</b> Groundwater dynamics and interaction with freshwater wetland systems.</p> <p><b>Water quality.</b> Water quality that provides aquatic ecosystem values within wetland habitats.</p> <p><b>Geomorphology.</b> Key geomorphologic/ topographic features of the site.</p>



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<p><b>5:</b> The site supports substantial numbers of wetland species during a critical life stage (e.g. breeding, nesting, roosting, feeding, and/or refugia).</p> <p><b>6:</b> The site supports substantial numbers of resident and migratory waterbirds.</p> <p><b>7:</b> The site supports a high diversity of fish species reflecting the diversity of habitats of the site and a biogeographical overlap zone.</p> <p><b>8:</b> The site supports nursery habitat of critical importance to regional commercial and recreational fisheries.</p> <p><b>9:</b> The site supports a range of pristine/near natural wetland environments that are important for scientific research and assessing the future impacts of climate change.</p> <p><b>10:</b> The site provides a significant regional asset in terms of water supply to the Capricorn Coast and will provide a strategic reserve for freshwater in the future.</p> <p><b>11:</b> The site and its values are a major part of a broader 'wilderness area'.</p>	<p><b>Wetland vegetation communities</b> reliant on the site for conservation security</p> <p><b>Populations</b> of migratory and resident waterbirds</p> <p><b>Populations</b> of fish and invertebrates that are of recreational and commercial significance</p>	<p><b>Energy and nutrient dynamics.</b> Primary productivity and the natural functioning of carbon and nutrient cycling processes.</p> <p><b>Biological processes.</b> Important biological processes such as growth, reproduction, recruitment, migration and dispersal.</p> <p><b>Climate.</b> Patterns of temperature, rainfall, and evaporation.</p>
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Table 0-1 **Critical services/benefits of the Shoalwater and Corio Bays Area Ramsar site**

Critical service/benefit	Aspect/attribute of the service
<b>1:</b> The Ramsar site contains marine, estuarine and freshwater landscapes and ecosystems that are representative of the biogeographic region and are rare in the context of a large coastal system that remains in a near natural state with relatively undisturbed catchments.	Habitat extent of representative wetland types
	Habitat condition of representative wetland types
<b>2:</b> The Ramsar site has wetland types (notably the peat swamps in the Dismal Sector and the Clinton Lowlands) that are rare, unusual and noteworthy for the biogeographic region and greater spatial scales.	Extent and condition of peat swamps
<b>3:</b> The Ramsar site supports vulnerable/ endangered wetland species.	The population viability of those threatened species relevant to Criterion 2
<b>4:</b> The habitat diversity contained within the Ramsar site supports outstanding biodiversity values including several notable vegetation communities.	Diversity of wetland types
	Habitat extent and condition Abundance and diversity of wetland dependent species and populations
<b>5:</b> The site supports several important wetland species during a critical life stage (e.g. breeding, nesting, roosting, feeding, migration and/or refugia).	Maintenance of critical life stage functions
<b>6:</b> Supports substantial numbers of resident and migratory waterbirds	Abundance of migratory waterbirds
	Maintenance of usage of the site by key migratory and resident shorebird species
<b>7:</b> Supports a high diversity of fish species reflecting the diversity of habitats and a biogeographical overlap zone.	Diversity of fish species
<b>8:</b> Supports critical nursery habitat for regional commercial and recreational fisheries.	Populations of key commercial and recreational fishery species
<b>9:</b> Supports a range of pristine/near natural wetland environments that are important for scientific research and assessing the future impacts of climate change.	Relies on the above.
<b>10:</b> The Ramsar site provides a significant regional asset in terms of water supply to the Capricorn Coast and will provide a strategic reserve for freshwater in the future.	Relies on the above.
<b>11:</b> The Ramsar site and its values are part of a broader 'wilderness area'.	Relies on the above.



Table 0-2: Critical components and processes of the Shoalwater and Corio Bays Area Ramsar site - Limits of Acceptable Change

Ramsar criteria	Critical components and processes	Baseline/Supporting Evidence	Limit of acceptable change	Confidence
Criteria 1	Wetland habitats (Marine) – Seagrass (Wetland Type A, B, F)	Mapped extent in 1995-1996 (post Ramsar listing) ~13,000 ± 800-890 ha (Lee Long <i>et al.</i> 1997). For late spring (seasonal maximum) monitoring, aerial extent is likely to be relatively stable.	Presence of habitat	Moderate
	Wetland habitats (Marine) – Mangroves (Wetland Type F, G, H, I)	While broad-scale mapping of wetland and vegetation community types exists (e.g. RE mapping), there are no data describing the range of natural temporal variability in extent of different vegetation communities and the controls on these changes.	Presence of habitat	Moderate
	Wetland habitats (Marine) – Saltmarsh (Wetland Type G, H, I)	See Wetland habitats (Marine) - Mangroves.	Presence of habitat	Moderate
	Wetland habitats (Marine) – Rocky reef coral communities (Wetland Type C, D)	There is very coarse mapping available for rocky reefs in the site. Broad community structure and species is available but not at a site or community scale. This needs to be updated to form a baseline for the LAC.	Presence of habitat	Moderate
	Wetland habitats (Marine) – Sandy shores (Wetland Type E, G)	Aerial photography could be used to establish a baseline extent for beach and dune features. Literature reviewed indicates that these habitats are fairly stable in the SWTBA area. There is likely a combination and natural and anthropogenic impacts on beaches at Sandy Point in Corio Bay.	Presence of habitat	Moderate
	Wetland habitat (Freshwater) – marshes, Peat swamps (Wetland Type M, N, Tp, Ts, U, W, Xf, Y)	While broad-scale mapping of wetland and vegetation community types exists (e.g. RE mapping), there are no data describing the range of natural temporal variability in extent of different vegetation communities and the controls on these changes. It should be noted that a mapping layer specifically for the extent of peat swamps has not been derived.	Presence of habitats	Moderate
	Hydrology – freshwater flows (e.g. Waterpark Creek, Peat swamps, saltmarsh) (Wetland Type M, N, Tp, Ts, U, W, Xf, Y)	Annual volumes (ML) at Water Park Creek gauging station (1957-1996):  Range = 24,278 to 429,030; Mean = 156,135.9; Median = 109,157; CoV = 73.6%.  There are no available baseline data to determine ranges of natural variability under different flow conditions. Until such time as site specific flow duration curves are developed for each wetland type, no LAC is proposed. Changes in LAC for wetland habitats could be used as surrogate measures for this process.	No direct LAC has been developed and instead the critical process will be assessed indirectly through changes in wetland habitats and threatened species.	



	Hydrology – groundwater dynamics (e.g. Freshwater wetlands, Peat swamps) (Wetland Type M, N, Tp, Ts, U, W, Xf, Y)	There are no available baseline data to determine ranges of natural variability under different flow conditions. Until such time as site specific flow duration curves are developed for each wetland type, no LAC is proposed. Changes in LAC for wetland habitats could be used as surrogate measures for this process.	No direct LAC has been developed and instead the critical process will be assessed indirectly through changes in wetland habitats and threatened species.	
Criteria 2	Threatened species – water mouse	There is insufficient site data for this species which is typically regarded as occurring in potentially low population densities and patchy occurrence.	Presence of water mouse in the site	Low
	Threatened species – dugong	Population numbers outlined in GBRMPA (1997): 765 ± 161 S.E. in 1987; 406 ± 78 S.E. in 1994.  However, there is insufficient available information on the population dynamics and genetics of dugongs to develop a definitive LAC.	Information presently insufficient for proposing any LACs	
	Threatened species – flatback turtle	Wild Duck Island to the north of Shoalwater Bay is one of the two major flatback rookeries in eastern Australia, with several hundred females nesting annually.  Low density or sporadic nesting occurs on many other beaches and islands in the vicinity of Shoalwater Bay (Limpus <i>et al.</i> 2005). The area encompassing SWBTA south of the Percy Islands south to Stockyard Point and the Duke Island Group between Wild Duck Island and the Marble Group remains unsurveyed. It is expected that this unsurveyed area will contain <i>N. depressus</i> and <i>C. mydas</i> rookeries.	The loss or prolonged absence (>5 successive years) of flatback nesting within the beaches of the site	Moderate
	Threatened species – green turtle	Specific feeding areas, prey types and prey densities required to support turtles unknown. Limpus <i>et al.</i> (2005) suggests that seagrass represents ~86% of turtle volume of turtle diet, followed by red algae (~10% by volume). Presently no data on red algae distribution and abundance.  Limpus <i>et al.</i> (2005) found over an 18 year monitoring period the following breeding rates: ♂ Mean = 0.119 ± 0.026 S.E.; ♀ Mean = 0.34 ± 0.072 S.E.	Information presently insufficient for proposing any LACs	



		<p>There is comparatively fewer pre-listing data (n = 7-11 years): ♀ Mean = 0.118 ± 0.032 S.E.; ♂ Mean = 0.39 ± 0.010 S.E.</p> <p>Insufficient empirical data to derive definitive LACs. There is a need to develop baseline data describing variability in key turtle food resources within and adjacent to the site in order to develop empirical LACs. It is not possible at this stage to provide guidance on these limits as, to a large extent, these will be dependent on the adopted sampling methodology and levels of natural variability. There is also insufficient empirical data to derive empirical, threshold-based LACs that are meaningful in the context of maintaining turtle populations.</p>		
	Threatened species – Honey blue-eye	This species typically has low population densities hence empirical population estimated have not been determined. There is insufficient empirical data to derive definitive LAC.	Presence of Honey blue-eye	Moderate
	Threatened species – lesser swamp orchid	<p>There are no available data on water requirements of the lesser swamp orchid, nor are there suitable baseline data describing water regimes/water levels at particular locations supporting the threatened plant species. No information is available regarding the population sizes, dynamics and viability of the threatened plant species within the site.</p> <p>Should an adequate baseline be established, such as watering requirements of each species, LACs could be calculated based on the range of variability at representative sites. It is not possible at this stage to provide guidance on these limits as, to a large extent, these will be dependent on the adopted sampling methodology and levels of natural variability, and will vary across locations.</p>	Presence of lesser swamp orchid	Moderate
Criteria 3	Biodiversity	<p>The site supports 18 Ramsar wetland types (9 coastal/marine; 9 inland). In terms of wetland dependent species, the site supports 22 frog species, 77 waterbird species and 32 shorebird species. Surveys have recorded 428 estuarine and marine fishes and 17 freshwater fishes, not including records of the Honey blue-eye. The Queensland State Government WildNet database records 909 species of native plants. Changes in LAC for wetland habitats and threatened species could be used as surrogate measures for this component.</p>	<p>No direct LAC has been developed and instead the critical component will be assessed indirectly through changes in wetland habitats and threatened species. See LAC above.</p>	





Criteria 4	Habitat for critical life stages	<p>The site provides the following critical life stage processes:</p> <ul style="list-style-type: none"><li>• Feeding and roosting habitat for 77 waterbird species;</li><li>• Non-breeding, feeding and roost habitat for 26 migratory shorebird species including 26 and 27 species protected under the JAMBA and CAMBA agreements respectively;</li><li>• Habitat for 22 frog species;</li><li>• Feeding and breeding habitat for wetland-dependent raptor species;</li><li>• Habitat for honey blue-eye freshwater fish (entire life-cycle); and</li><li>• Nesting habitat for flatback turtles.</li></ul> <p>While an ecological condition assessment was done by Wetlands International (refer Jaensch 2008a) for the SWBTA, there is no analogous ecological condition assessment across the site. Changes in LAC for wetland habitats and threatened species could be used as surrogate measures for this component.</p> <p>The ecological condition assessment by Wetlands International (refer Jaensch 2008a) provides the baseline for assessment of this LAC at SWBTA. There is no analogous ecological condition assessment for Corio Bay. Changes in LAC for wetland habitats and threatened species could be used as surrogate measures for this component.</p>	No direct LAC has been developed and instead the critical component will be assessed indirectly through changes in wetland habitats and threatened species.	
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Criteria 5 and Criteria 6	Waterbirds – numbers of species	<p>Key shorebird species include grey-tailed tattler, bar-tailed godwit, eastern curlew, whimbrel, terek sandpiper and Australian pied oystercatcher. There is insufficient time series sequence to assess natural population variability of resident shorebird breeding success (pied oystercatcher only).</p> <p>Interpretation of changes in abundance for migratory species need to be assessed against potential external factors (potential variability in breeding success) and in particular, anthropogenic impacts to key sites within other parts of the flyway.</p> <p>As a result there is insufficient empirical data to derive definitive LACs. There is a need to develop a sequence of population estimates and measures of breeding success within site in order to develop empirical LACs.</p>	Information presently insufficient for proposing any LACs	
Criteria 7	Fish	<p>There are currently no recent baseline data (collected using systematic sampling techniques) to determine patterns in fish assemblages at representative locations and habitats in the site. Until such time as these data become available, this LAC cannot be directly assessed.</p> <p>Undertaking a marine and freshwater fish survey in similar locations and using a similar methodology to Trnski <i>et al.</i> (1993) may provide an adequate baseline from which to derive a LAC for this component. Refer survey by Trnski <i>et al.</i> (1993) as the baseline for fish diversity at the time of listing in 1996 which noted 428 marine species were present and 17 freshwater species.</p>	Information presently insufficient for proposing any LACs	



### Additional information links

Taxonomic lists of plant and animal species occurring in the site: <a href="https://wetlandinfo.ehp.qld.gov.au/wetlands/facts-maps/wildlife/?AreaID=ramsar-wetland-shoalwater-and-corio-bays-area&amp;SpeciesFilter=WetlandIndicator">https://wetlandinfo.ehp.qld.gov.au/wetlands/facts-maps/wildlife/?AreaID=ramsar-wetland-shoalwater-and-corio-bays-area&amp;SpeciesFilter=WetlandIndicator</a>
Description of the site in a national or regional wetland inventory <ul style="list-style-type: none"><li>• <a href="http://wetlandinfo.ehp.qld.gov.au/wetlands/facts-maps/ramsar-wetland-shoalwater-and-corio-bays-area/">http://wetlandinfo.ehp.qld.gov.au/wetlands/facts-maps/ramsar-wetland-shoalwater-and-corio-bays-area/</a></li><li>• <a href="http://www.environment.gov.au/cgi-bin/wetlands/ramsardetails.pl?refcode=44">http://www.environment.gov.au/cgi-bin/wetlands/ramsardetails.pl?refcode=44</a></li></ul>
Site management plan <ul style="list-style-type: none"><li>• Byfield Area Management Plan 2010 (QPWS): <a href="http://www.nprsr.qld.gov.au/managing/plans-strategies/pdf/mp003-byfield-area-mgmt-plan.pdf">www.nprsr.qld.gov.au/managing/plans-strategies/pdf/mp003-byfield-area-mgmt-plan.pdf</a></li></ul>
Other published literature <ul style="list-style-type: none"><li>• Department of Defence, Shoalwater Bay Training Area (Military), State of the Environment Report 2008: <a href="http://www.defence.gov.au/environment/swbta_report.htm">www.defence.gov.au/environment/swbta_report.htm</a></li></ul>



**Australian Government**  
**Department of Agriculture,**  
**Water and the Environment**

[Aboriginal Cultural Values: Description, Risks and Management](#)

## **Shoalwater and Corio Bays Ramsar Area**

### **Aboriginal Cultural Values: Description, Risks and Management**

**Report prepared for Fitzroy  
Basin Association**

**Report prepared by Darumbal  
Enterprises Pty Ltd with the assistance  
of Central Queensland Cultural  
Heritage Management Pty Ltd**

**November 2015**



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## **Summary**

The Shoalwater and Corio Bays Ramsar Area (hereafter referred to as SW&CBRA) has a range of Aboriginal cultural values. These are:

The Darumbal People have accessed the SW&CBRA for a period of more than 5,000 years and over that time have continuously used the marine resources found therein;

The Darumbal People have continued to use the SW&CBRA and the resources found therein in the recent past, and wish to continue using and managing them into the future;

The Darumbal People have a registered native title claim that will be settled in June 2015 and the SW&CBRA represents a core area within that claim;

There are a series of highly significant cultural sites within the SW&CBRA;

There are a series of highly significant cultural sites in close proximity to the SW&CBRA.

The primary Darumbal management objective is to ensure that the current generation, and all future generations, of Darumbal people can give practical effect to the rights that they as Darumbal people have asserted in their native title claim. This includes accessing and using resources, managing and conserving cultural heritage sites among the other rights specified in their native title claim (see below).

## **Introduction**

The Shoalwater and Corio Bays Ramsar Area (hereafter referred to as SW&CBRA) - lies wholly within the bounds of the Darumbal People's native title claim. This claim has been registered since 2012 (QC2012/008). While currently still the applicant the Darumbal claim is moving to consent determination in the near future (June 2016). Noting that native title has been recognised and that grant of native title is imminent, this report has been framed in terms of the native title rights that have been recognised and which will be given formal assent in 2016.

The SW&CBRA lies within an area over which the Darumbal people have asserted a native title claim: indeed the SW&CBRA falls within the core of their claim area (i.e. it has always been an element of their claim area even after major reductions to the claim area for strategic reasons). As recognised marine specialists the Darumbal have, for at least 5,000 years, exploited the SW&CBRA for the marine and island-based resources found there. This included long distance voyaging to the outer islands of their territory to access resources and for ceremonial purposes. It also included the hunting, fishing and collection of a wide range of food stuffs within the SW&CBRA. The use of these resources continued into the historical period. There are cultural sites within the SW&CBRA that are likely increase sites designed to ensure the continued availability of these resources. Over the last 20 years the Darumbal people have taken proactive steps to ensure that those resources continue to prosper in the SW&CBRA, that there is greater understanding of Darumbal use of the SW&CBRA and that important cultural sites are preserved for the future. This has included participating in various inquiries on the management of portions of the SW&CBRA, negotiating agreements to assist in the long term viability of culturally-important resources and sponsoring cultural heritage research programs that have contributed to an understanding of the long-term Darumbal use of the SW&CBRA. The latter have also made major contributions to Australian archaeology that have fundamentally



altered understanding of off-shore islands and the earliest marine voyaging in the greater Pacific region.

It should be noted that the detailed information on cultural heritage places and cultural heritage values presented in this report draws heavily on examples associated with Shoalwater Bay. The implications of these data apply by extension to all marine areas within the Darumbal native title claim, including Corio Bay. This perspective has, therefore, been applied to the risks/threats reviewed, and management strategies recommended, in this report.

## **Vision**

The Darumbal vision for the management of the SW&CBRA subject of this study is that management give the greatest possible effect to Darumbal aspirations expressed through their native title claim. In summary, these include but are not limited to:

Continued access to, and use of, of the SW&CBRA, and the cultural sites and culturally-important resources found there that are central to Darumbal views of themselves as marine specialists;

The ability to protect, conserve and manage these cultural sites and culturally-important resources and to teach future generations about these cultural sites and resources and thereby ensure they contribute to the ongoing maintenance of a distinctive Darumbal culture that future generations can continue to pass on;

As legally-recognised holders of rights in land and sea management, the Darumbal must have a meaningful input into all management decisions that could affect their legally-recognised rights, and it is essential that management decisions be structured so as those rights are not impinged in the future.

## **Management Objectives**

While recognising that others have interests in the Ramsar area and while they may share some of the interests of others, the primary Darumbal management objective is to ensure that the current generation, and all future generations, of Darumbal people can give practical effect to the rights that they as Darumbal people have asserted in their native title claim, limited only to the extent of those rights recognised by the Federal Court in the grant of their native title.

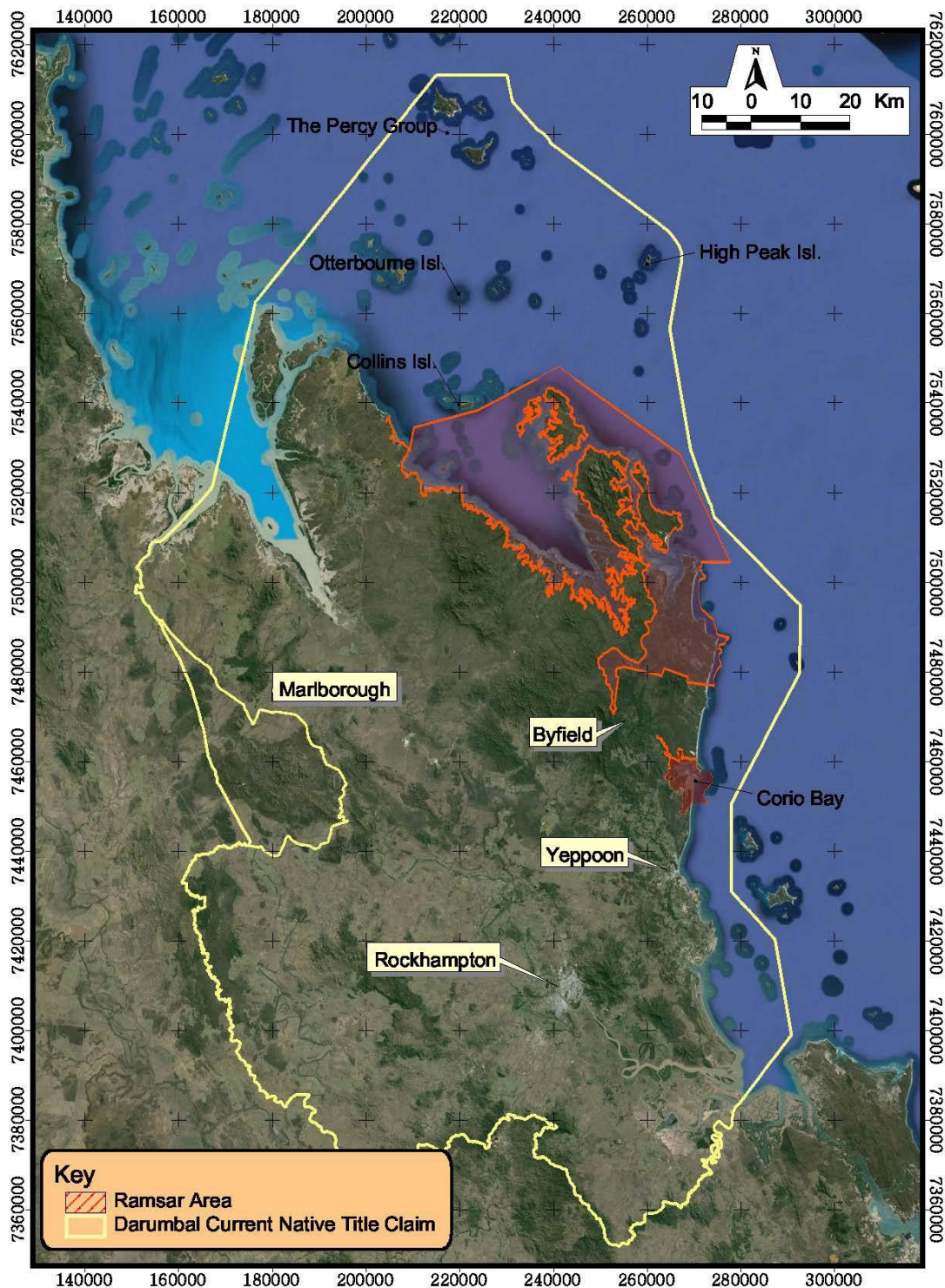
## **Site Description: Cultural Heritage**

The Darumbal People have had a registered native title claim (QC 2012/008; QUD 6131/1998) over the SW&CBRA since 1998. The current claim configuration dates from 2012 when the Darumbal People modified their claim boundaries to remove overlaps and otherwise reduce their claim to align with precedent established by outcomes in other native title claims. Notably, this reduced the area of marine portion of their claim. Importantly, however, this did not see their claim to the SW&CBRA





Figure 1 : Location of Shoalwater and Corio Bays Ramsar Area Within Registered Darumbal Native Title Claim







or the outer islands modified in any way. It did provide for the removal of the Keppel group of Islands from the Darumbal claim to allow the Woppaburra people to lodge a separate native title claim to these islands without creating any overlap. (While it is true that linguistic evidence shows the Woppaburra people speak a dialect of Darumbal they have chosen to assert a social and cultural interest separate to the Darumbal – a view respected by the Darumbal people). The removal of the Keppel group of islands from the Darumbal claim does not affect in any way the Darumbal native title claim over the SW&CBRA subject of this study.

The bounds of the currently authorised and registered Darumbal native title claim are included in schedule 1 of this report. The formally asserted and authorised claims of the Darumbal native title claimants are included schedule 2 of this report.

While early historical data created some confusion regarding linguistic and land owning groups in the greater area within which the SW&CBRA lie, recent anthropological analysis has clarified this (Memmott 1993; Terrill 2002; Seton and Hagan 2009). It is now clear that was a defined area within which Darumbal as a single language was spoken. The technical definitions of what constitutes a language are provided in Dixon (1983), but typically the cognate index is lower than 50% when compared with another language (i.e. each language shares no more than 50% of its vocabulary with another language - other important structural differences may also be evident). Within the Darumbal area four separate dialects of Darumbal were spoken. These dialects were: Kuinmurbara, Ningebul, Darambal and Warrabul (orthography after Memmott 1993). Woppaburra was also a dialect of Darumbal but has been excluded from consideration here as the Woppaburra have elected to separately pursue their native title interests, something to which the Darumbal have agreed. (Dialects are defined as deriving from a common language where typically more than 70% of the vocabulary of each dialect is shared with other dialects of that language). Each of these dialects was then composed of between 5 and 7 patrilclans. These patrilclans constituted the base land-owning units within Darumbal society (and for greater parts of Australia as well). Patrilclans are formed of those persons who trace their ancestry back to a common male ancestor (what is referred to as patrilineal descent). Notably, these patrilclans all shared key terms for culturally significant markers of the moiety and section systems that were critical to marriage, descent and land-ownership. These indicate that they not only spoke a common language but also had a range of common cultural attributes. Historical evidence further indicates that members of these various dialect groups and patrilclans regularly met with each other. Due to historical circumstances Darumbal people, as is the case with many other Aboriginal groups, have now adopted what is called a cognatic descent – a legally recognised cultural development arising from historical circumstances that recognises a common ancestry that can be traced back to a set of apical ancestors who were all Darumbal people. This cognitively defined group amended its claim boundaries in 2012 in response to anthropological evidence to ensure that only definitively Darumbal country (including marine areas) was included within the claim boundary they sought to have registered. This claim has been registered and forms the basis of a native title claim uncontested by any other indigenous group, and which is now moving rapidly towards a consent determination in the Federal Court. Accordingly, we can speak of a single Darumbal people who inhabited the area of their registered native title claim, that this claim area includes the SW&CBRA, and that this association is uncontested by any other indigenous group.

In speaking of a group that is moving towards consent determination of their native title claim, we are referring to a group that has established their connection to country such that a range of interested parties have determined they have no interest in pursuing competing interests through use of the adversarial option available under the *Native Title Act*. Those interested parties, therefore, are satisfied that a body of law and practice has been maintained from before sovereignty until the present such that they are of the view that a claim of native title to areas within the claim area can be sustained by the Darumbal people. This is the fundamental test of native title and only where this test



of connection has been met can a group have its claim to native title recognised. The Darumbal people are now negotiating a series of ILUAs with various of those interested parties that settle how native title will be managed in the context of future acts (as that term is defined in the *Native Title Act*) proposed by those interested parties. Darumbal's interests in the SW&CBRA arising from their native title claim and the asserted rights will, on the formal recognition of the native title claim by the Federal Court in June 2016, will be legally enforceable to a level consistent with the rights recognised by the Federal Court.

## Social and Cultural Values of the Ramsar area

The SW&CBRA constitutes a core area within the Darumbal native title claim. The recognition of native title carries with it important psychological and legal dimensions. On the psychological front the Darumbal people have always known that they were the owners of a tract of country (including the marine areas) that was their traditional homeland. Until 1993, and the passage of the *Native Title Act*, they were denied an opportunity to have that ownership formally recognised and thus have a long-standing legal injustice righted. Despite their knowledge that they were the original owners of that tract of land they were therefore unable to assert their interests and legal rights. This inflicted deep hurts on the Darumbal people deriving from the knowledge that they were the original owners of the tract of land but being legally ignored and unable to have the rights emanating from that ownership translate into real recognition and involvement in decision-making for that tract of country. The Darumbal people sought to redress this situation, soon lodging a claim over a tract of land that included their current native title claim area. It then saw them address the further legal challenge arising from amendments to the *Native Title Act* in 1998. The Darumbal people were the first group, not only in the region of Central Queensland but in Australia as a whole, to meet the heightened requirements of the 'registration test' and have their claim registered under the amended Act. Having met the 'registration test' the Darumbal people faced numerous other obstacles in pursuing their claim to a point where they now are moving to a consent determination, with the legal rights that arise from that. Their pursuit of native title over a period of 20 years, with success now in close sight, and a series of legally recognised rights to country that will devolve to them contingent on that, demonstrates the importance they attach to receiving recognition of their native title. In the context of the legal rights that will arise from the recognition of their native title, the Darumbal people will seek opportunities to assert their native title rights in the Ramsar area, as well as elsewhere. These rights include:

- A right to use and enjoy the natural resources of the claim area for customary and traditional purposes.
- A right of access to the claim area.
- A right to manage and conserve the claim area.
- A right to manage and conserve the natural resources of the claim area.
- A right to maintain and protect places and sites of cultural importance under traditional laws and custom.
- A right to utilise all natural resources in the claim area.
- A right to conduct burials on the claim area in accordance with custom and tradition.

The opportunity to participate in management of the SW&CBRA so as give effect to these asserted rights will constitute an important cultural value of the SW&CBRA. Indeed, this report itself represents an opportunity to give meaningful consequence to this value.

An additional aspect arising from the registration of their native title claim is the standing of the



Darumbal People as the exclusive Aboriginal Party for their native title claim area. With passage of the *Aboriginal Cultural Heritage Act 2003* (Qld) (ACHA), and notably the provisions of ss34-35 of that Act, the Darumbal people became the exclusive Aboriginal Party for the area covered by their native title claim. This means that they have an exclusive role in implementation of the procedural rights that arise from this Act. This pertains to those things that meet the definition of Aboriginal cultural heritage and thus fall to the purposes of that Act, notably the protection and management of significant cultural heritage objects and places. There are some places within the SW&CBRA, notably within the Shoalwater Bay area, that meet the definition of Aboriginal cultural heritage and concerning which the Darumbal have exclusive rights of management as the Aboriginal Party. These will be discussed further below. This exclusivity is an important cultural value for the Darumbal People, and is one reason for their insistence on it in the agreement settled with FBA that preceded preparation of this report.

In the meantime the Darumbal people, using those opportunities that presented to them, pursued their interests in the SW&CBRA as best they could, and in a manner consistent with their asserted native title. In this, there were three landmark events. The first of these was the Shoalwater Bay Commission of Inquiry. Established by the Commonwealth Government in 1993, the Inquiry appointed an anthropologist (Paul Memmott) to examine which indigenous group was the appropriate party with whom the Inquiry should engage in relation to issues falling to the Terms of Reference. Memmott's (1993) report presented a clear case that the Darumbal people were the traditional owners of the area – which included portions of the Shoalwater Bay Ramsar area. The Inquiry accepted the conclusions of Memmott's report and, on that basis, made a series of recommendations that were designed to recognise Darumbal peoples' traditional ownership. These included access to specified areas within the Shoalwater Bay Training Area that include some of the Ramsar area, a position on consultative committees established to assist in the management of this area (including marine areas), and provision of resources (including financial resources) to enable the Darumbal to sponsor additional cultural heritage assessments of the Inquiry area. The latter recommendation was also heavily influenced by the report of Border (1993) on the cultural values of the Inquiry area, which noted that there were significant cultural heritage sites within the Inquiry area but that these had not been fully documented and many more were likely to exist.

Darumbal took up each of these opportunities and they constitute historically-important cultural values. The opportunity to access portions of the Inquiry area, including areas within the SW&CBRA, allowed the Darumbal to confirm their connection to country, to visit it with large numbers of Darumbal people, teach Darumbal youth about their country and to extract resources, including the hunting of green turtles (L. Godwin pers ob 1995). These visits, and the activities undertaken during them, are at the heart of three of the asserted rights of the Darumbal People's native title claim. The claim rights include:

- A right to use and enjoy the natural resources of the claim area for customary and traditional purposes.
- A right of access to the claim area
- A right to utilise all natural resources in the claim area

These are thus critical cultural values for the Darumbal people in the SW&CBRA.

A second landmark event were a series of studies sponsored by the Darumbal (reported in McNiven and Russell 1997; McNiven 1999; McNiven et al 2014). These used resources arising directly from the committee's recommendations or otherwise secured in large measure due to the recognition that the Darumbal were unequivocally the exclusive traditional owners of the Inquiry area included areasthat are immediately adjacent to the SW&CBRA. They throw considerable light on the historical use, and cultural values, of the SW&CBRA, and their centrality and importance to Darumbal people. These will



be described further below.

The third landmark event which arose as a consequence of the findings of the Shoalwater Bay Commission of Inquiry was the settlement in 1996 of a formal agreement between the Darumbal and the Great Barrier Reef Marine Park Authority (GBRMPA). This focused on Darumbal use of dugong and their agreement to limit their hunting of the species in the interests of conservation. While in one sense this was a constraint on Darumbal's rights to hunt this species it was also a recognition that the Darumbal constituted the appropriate people with whom to conclude such an agreement. This recognition was given further weight when GBRMPA also concluded the Dharumbal (sic) Traditional Use of Marine Resources Agreement (commonly referred to as TUMRA) in 2007.

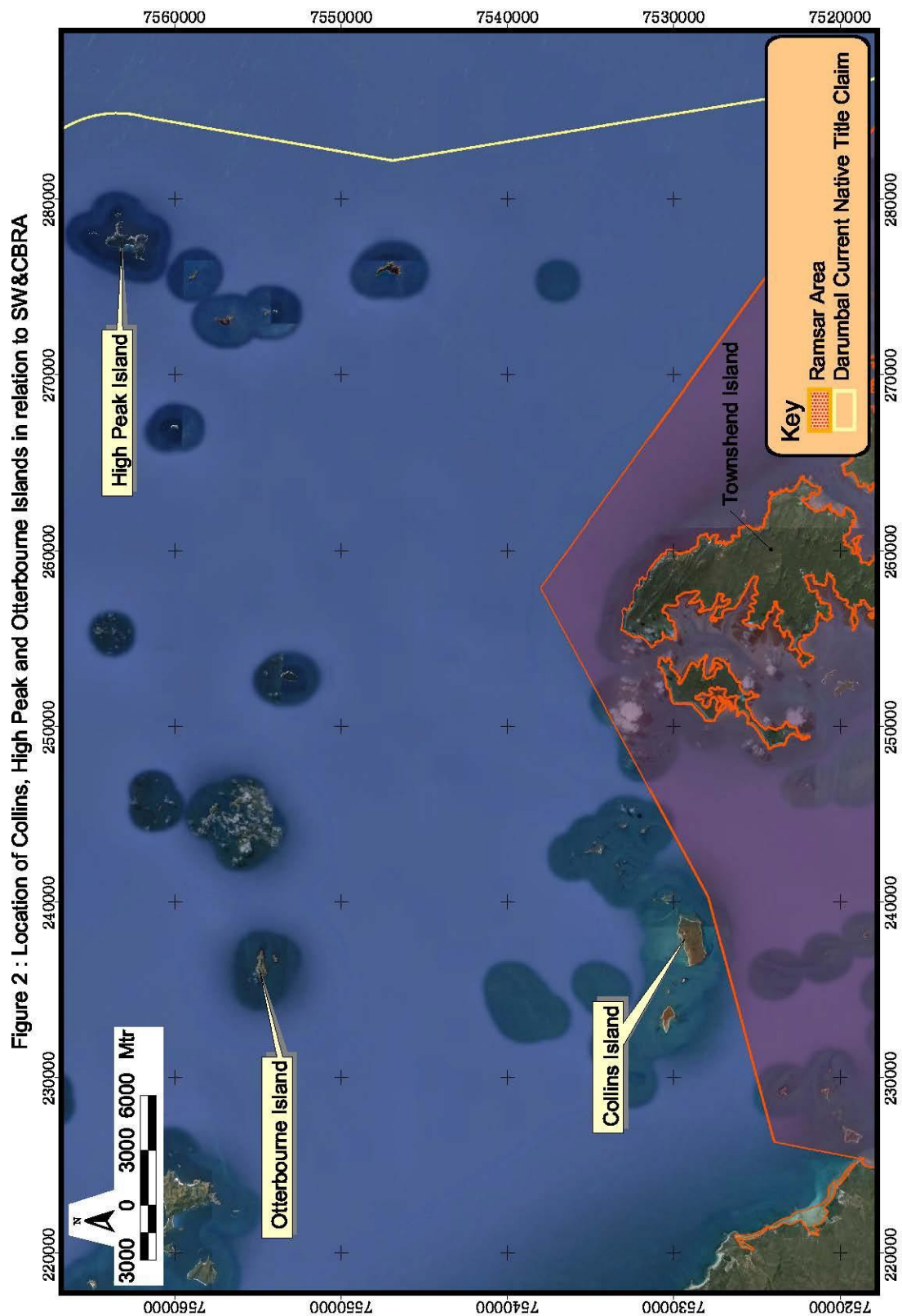
The studies that the Darumbal People have sponsored since 1996 into the cultural heritage of their native title claim area have yielded two separate and important outcomes. The first relates to the history of use of the marine areas within their claim, including the SW&CBRA. The second relates to the presence of particular cultural sites within the SW&CBRA, notably Shoalwater Bay, and what these say about Darumbal associations with the SW&CBRA.

Over a period of three years in the late 1990s and early 2000s, the Darumbal sponsored and participated in a series of surveys and excavation of archaeological sites on the mainland bordering the Ramsar area of Shoalwater Bay and various island groups both that lie within and at some distance from the SW&CBRA (McNiven and Russell 1997; McNiven 1999; McNiven et al 2014). Notwithstanding that these sites are not always within the SW&CBRA themselves, they throw a great light on Darumbal use of the SW&CBRA and the marine resources found therein, and on the history of that use. Surveys and excavations were undertaken on most of the islands of the Cannibal and Skull groups and on Townshend Island and along sections of the mainland coast. Dugong bone was noted on many sites during these surveys. Following this, excavations were undertaken on a selection of the sites found on those islands. Attention was given during the excavation phase to sites on Collins Island, part of the inner group of islands that immediately border or fall within the Shoalwater Ramsar area and to those on Otterbourne and High Peak Islands, lying 25-40km off shore.

The Shoalwater Bay archipelago developed approximately 12,000 to 8,000 years ago when sea level rose following the cessation of the Last Glacial Maximum. Sea level rose and fell by 1.5 to 2m over the last 8,000 years meaning that the marine area and the size of the islands have varied over that time and that configuration of the coast of the mainland also changed. Current conditions date from about 2,000 years ago. The base point of this observation is that the islands have existed for at least 8,000 years. We may also note that Shoalwater Bay has the second largest concentration of Green Turtles on the east coast, with upwards of 500 turtles per km of coast. It also has the largest dugong population of the southern Barrier Reef. The most productive areas for these population of dugong and turtle are the inter-tidal zone of the more protected areas.

Excavations on Otterbourne Island were conducted on a shell midden called OI4. Radiocarbon dates of 4,580BP were secured from charcoal samples recovered from towards the base of the midden. Occupation deposit continued below this level and a date of 5,200bp was calculated on sedimentation rate. A dated sequence through to the historical period was developed showing continued use of the island over this period of time, with a possible hiatus in use between about 3,000bp and 1,500bp. Turtle bone was recovered from throughout the archaeological sequence, indicating use of this resource dating back 5,000 years. Fish bones were also present, dominated by wrasse (92% of remains) but eels, emperor fish, parrot fish and shark were also recovered. The marine invertebrates included nerites, turbo, oyster and chiton as the main species.

On High Peak Island excavation were carried out at CI10, another shell midden. Limited cultural







material was recovered but a series of dates demonstrated use of the island from 3,250BP to 200BP. Oyster dominated the shellfish species recovered from the site.

On Collins Island, a shell midden (site 24) was excavated. The earliest date here was 550BP. Chitons and oyster dominated the marine invertebrates. Numerous fragments of turtle bone were recovered. Fish bone also was present but it was highly fragmented and species could not be identified. It was also apparent that cobbles from the nearby beach had been collected and brought to the site, where they provided raw material for artefact manufacture.

We know from historical accounts that people used the islands and those people were from the mainland. In this regards Port Clinton is specifically mentioned. Logic lies with this observation: the outer islands could only be visited by island hopping, with distances across open water of more than 20km still required. This strategy is only feasible for those people who occupied the Shoalwater area. These would have been members of the patrilineal groups of two of the Darumbal dialect groups, Kuinmurbura and Ningebul, who occupied that area.

Border (1993) in assessing the mainland sites along the coast strip of Shoalwater Bay notes that they display considerable emphasis on use of marine resources: shellfish, fish, turtle and dugong. He observes that sites are situated at points close to mudflats where access to those mudflats is available without having to wade through thick stands of mangrove: typically where stony ridges run down into the flats. He refers to this as the 'corridor' model of settlement. Most of these mainland sites are undated though dates from Nine Mile Beach demonstrate that middens there date back at least 500 years.

While we have sites dating back at least 5,000BP, there is marked evidence from the excavated sites that there was an increased intensity of usage of marine resources dating to the last 1,000 years. This is a pattern seen along the entire central Queensland coast from the Keppel Islands to the Whitsundays.

Summarizing the data provided in McNiven et al (2014) we can observe that people made increasing use of marine resources over a period of more than 5,000 years in the Shoalwater Bay region. This was facilitated by use of simple bark canoe technology that, allied with remarkable skills in crossing wide expanses of open water, allowed use to be made of distant offshore islands on a seasonal basis. The expansion of coral reefs, mangroves and sea grass beds about 3,000 years ago would have been accompanied by a dramatic increase in dugong, turtle and fish populations, only serving to make these resources more attractive. They argue that the Shoalwater Bay area was occupied by people who marine specialists and whose territory and settle-subsistence strategies incorporated both the mainland coast and islands both close to it as well as those well out to sea. The clear implications of this are that people were criss-crossing these waters on their way to islands and regularly voyaging into the SW&CBRA to procure prized marine resources. Indeed, as McNiven et al (2014) stress, these ancestors of the Darumbal were the first marine specialists of the Pacific and were the first to undertake long voyages in fragile craft for this purpose!

The historical accounts from Cook's voyage in 1770 on through into the 1880s also attest to this reliance on marine resources and a technology to exploit them. Flinders (2014) and his companions report numerous signs of this: canoes with 'Indians' on board traversing the waters, numerous signs on mudflats of the tracks of 'natives' and tracks of turtles, campfires around which were scattered turtle bone, remains of crabs and oyster shells, specialized equipment for hunting turtles (notably stone-tipped spears with the tips manufactured of quartz – a resource found in profusion at a massive quarry site on Collins Island), evidence of turtle 'feasts', use of seine nets for fishing. The accounts of



Lumholtz (1889) and Rogers (1888) in the late 1880s separately described dugong hunts involving use of harpoons thrown into dugong calves from small canoes only 8ft to 10ft in length, manufactured of three pieces of bark. Once weakened the dugong was pulled to the side and a wooden plug inserted into its nostrils to suffocate it. It was then towed ashore and eaten 'amid high festivities'.

Use of these marine resources continued among the Darumbal right through to the present day. Mention has previously been made of turtle hunting and consumption during visits to Shoalwater Bay subsequent to the Commission of Inquiry, when access to the area was once again possible. The grandmother of some of the present-day native title applicants regularly fed her family traditional foods including turtle and dugong. This tradition continued into the 1950s and 1960s, when the aunty of current native title applicants regularly fished the waters of traditional Darumbal country, catching fish, crabs and marine turtles. In recent years, Darumbal people secured employment with conservation agencies, notably as marine-based conservation rangers operating largely within the bounds of their native title claim. This enabled them to identify and monitor cultural sites and important cultural resources in their country, to make important observations about the availability and location of marine animals such as the dugong (they recorded the location of a significant breeding site), and to participate in research programs on culturally important marine animals (notably on green turtles within their claim area) (B. Mann pers comm 2015).

While the archaeological sites that underpin this long-term pattern of marine specialization focused on the SW&CBRA lie outside the SW&CBRA, there are two types of cultural site actually within the SW&CBRA, and by inference another site type that is likely to exist. Firstly, there are stone arrangements that lie on mudflats within the Shoalwater Bay section of the SW&CBRA. Early observers with a less sophisticated understanding of Aboriginal society first suggested that these sites were associated with 'some sort of game'. More recent interpretation, informed by broader knowledge of Aboriginal sea-scapes and cosmology indicates that these stone arrangements are associated with important performances of ceremony, in all likelihood serving among other things as increase sites, where ceremony was designed to ensure plentiful supply of food and other resources, or to propitiate creator beings for success in completing high risk endeavours such as voyages in flimsy watercraft in rough waters subject to extreme tides both in height and rate of flood (there are accounts of failure and death by misadventure during such trips).

Four stone arrangements were identified during the surveys undertaken in the vicinity of the Shoalwater Bay section of SW&CBRA. These were all located on upper tidal mud flats in close proximity to the shore line. The most notable aspect of these is that their construction and form were inconsistent with those usually expected at fish-trapping facilities and as such were clearly not related to standard subsistence activities. These places are made from small stones (usually less than 20cm in diameter) and exhibit an array of curvilinear lines, and sometimes containing uniform stone cairns and circular arrangements within them. Importantly, these places are not terrestrial places which have succumbed to sea erosion; rather, they have been placed with purpose near the high water mark in areas only inundated with shallow water episodically (such as during large tides).

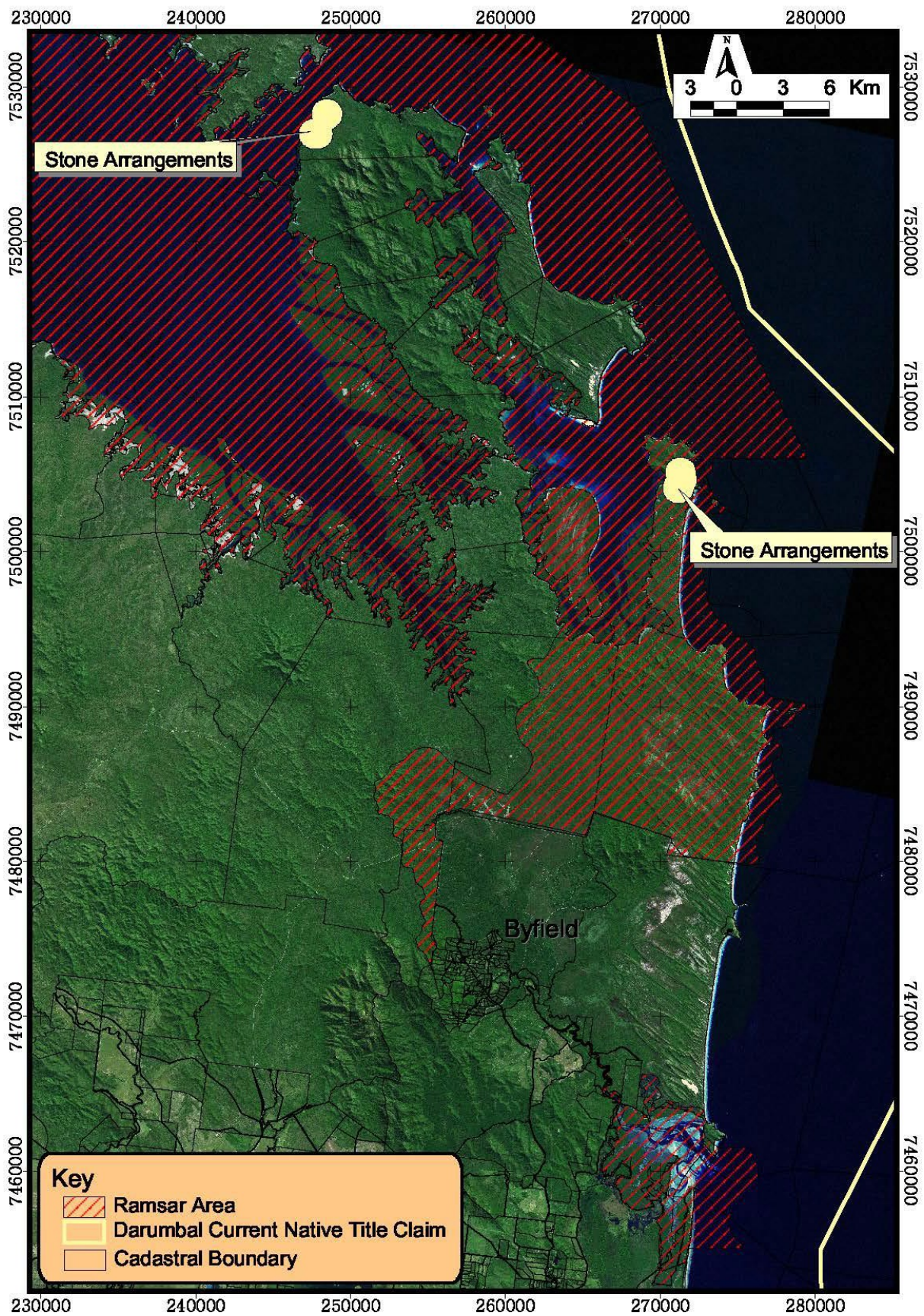
These stone arrangements have been interpreted by McNiven (2003) as the marine equivalent of the well documented and studied terrestrial stone arrangements, whose morphological features they best reflect, and as such are considered to have a ceremonial / spiritual / symbolic function.

These places would therefore represent a material manifestation of the deep spiritual connections to the sea and serve as a direct link to what McNiven (2003:344) calls the 'orchestration of seascapes', performing various purposes within the cosmologies of specialised marine peoples. These may have included:





Figure 3 : Approximate Locations of Stone Arrangements within SW&CBRA







- the maintenance and, allied to this, success in procurement of favoured subsistence species;
- providing an ability to control the elements important to the use of the area such as the wind, waves and tides; and
- an opportunity to mediate with the spirits and as such provide a tangible link between the 'living-scape' and the 'death-scape'.

The rituals performed are the social mechanism by which such maritime peoples (generally referred to as 'Saltwater Peoples') spiritually manage and control their seas and ultimately orchestrate their seascapes (McNiven 2003:329). It is notable that Darumbal people continue to perform increase ceremonies on their country. This was recorded most recently a few years ago when a senior Darumbal person undertook this ceremony (A. Meredith 2015 pers comm).

Additionally, there are several fish traps recorded within the Shoalwater Bay section of the SW&CBRA. Locations where fish traps have been recorded include Collins Island and tidal flats at the foot of Mt Flinders. The immediate purpose of such sites is obvious – fish were trapped in them as tides fell and could be collected in large number. But they also served as locations where shellfish, notably oysters, could also be easily collected. They sometimes had a ceremonial purpose as well, being places where increase ceremonies for species of fish could be performed (Radcliffe-Brown 1930).

The reference to 'death scape' mentioned earlier is noted. Roth recorded that burial at sea was practiced among the Darumbal. Examples were recorded in the Keppel Bay area just to the south of the SW&CBRA. With burial in Aboriginal society often requiring a person to be returned to an area with which they had a special affinity, often some form of totemic association perhaps from birth, and given that the Darumbal people of the coastal zones can be described as marine specialists who frequently travelled across and hunted within the SW&CBRA, it is conceivable, even likely, that some individuals were buried at sea in the SW&CBRA.

As ceremonial sites, the stone arrangements are of particular importance to the Darumbal people (something that might also apply to the fish traps). However, the significance of all archaeological sites to the Darumbal should also be set in a larger context. In line with definitions of the ACHA, the areas and objects identified in the course of this study constitute Aboriginal cultural heritage, as they are significant to the Darumbal in accordance with the terms of the Act. The Darumbal, therefore, wish to see them managed in a way consistent with their cultural requirements in such matters. This is discussed further later in this report. Some observations relating to the cultural value and the significance of the cultural places recorded follows.

It was clear during the surveys described above that the field team drew no distinction between places of traditional significance and those material manifestations of earlier cultural activity often termed 'archaeological sites'. All these places were seen as elements of the cultural landscape for which they have a responsibility as traditional custodians, a role they have sought to maintain throughout their history. Consequently, a concern to protect and effectively manage all such places was evinced during the course of discussions, and this included consideration of the question of acceptable limits of change, a matter to which we return later. It is appropriate to consider in some more detail the cultural significance of these places to Darumbal People.

Over the last 30 years the Darumbal people have had opportunity to be intimately involved in a series of substantial cultural heritage investigations in their country. This interest in matters cultural heritage is not, however, a recent interest and it can also be seen that their attitude towards these studies and the materials found during them displays a direct link with traditional processes of custodianship and management of places of cultural significance. Further, it also can be seen that the opportunity for involvement in these activities has not been one that has simply been used by them



to extract either simple economic or political advantage as part of the decision-making process. It is perhaps necessary to take something of an historical perspective on this matter to understand why there has been this recent efflorescence of involvement.

Legislation to protect Aboriginal cultural heritage is a relatively recent phenomenon. Passage of Acts to afford it protection date to only the late 1960s in most states. In Queensland, the *Relics Preservation Act* was passed in 1967. Commonwealth legislation in the same area was much more recent, with the *Aboriginal and Torres Strait Islander Heritage Protection Act* not enacted until 1984. Legislation aimed at general environmental protection, including protection of the cultural environment, was even more recent, not being developed Australia until 1974.

Moreover, none of this legislation explicitly stated that Aboriginal people had any role in the management of those places and things that these different types of legislation were designed to protect. Aboriginal people were not afforded an opportunity to assert their interests regarding cultural heritage places in which they might have had a direct interest. Over time different ways of determining significance emerged, and these included cultural significance to Aboriginal people. As a result there were some uncertain moves in different states to address this issue by involving Aboriginal people in surveys or seeking their opinion on management issues. It must be stressed, however, that there was no legal fiat for this, and the results are best described as patchy. The relevant government agencies had loose policy positions in relation to Aboriginal involvement but these were not strictly policed or particularly effective in ensuring any Aboriginal input, let alone any direct managerial role. This is, for instance, abundantly demonstrated in a recent analysis in Central Queensland showing that until the early 1990s (that is in more than 20 years of studies of Aboriginal cultural places as part of the EIS process) only one study in Central Queensland had sought direct involvement of Aboriginal people (L'Oste-Brown et al 1998:291-3). Similar patterns almost certainly could be quantified in northwest Queensland. It is clear that the predispositions of the professionals engaged to undertake, in this case, EIS studies played a crucial part in determining the extent of any involvement Aboriginal people were allowed in the process.

General changes in attitude in the mid-1990s and the recognition of Native Title wrought a tremendous change in cultural heritage management. It was recognised that there were both moral and legal imperatives to involve Aboriginal people directly in the EIS process, and this had particular force in relation to the cultural heritage component of such investigations. Aboriginal people, and particularly the Darumbal, took this opportunity to assert what they saw as their traditional responsibilities in relation to the management and custodianship of cultural places.

A review of Darumbal involvement in cultural heritage investigations leads to the following observations and conclusions. Firstly, on being presented with the opportunity to involve themselves in cultural heritage studies through legal and ethical shifts, the Darumbal immediately accepted the chance and have sought to maintain that involvement ever since. Secondly, they also sought to reinforce their rights in relation to the cultural places and information by entering into a direct contractual relationship to undertake the studies, engage any necessary technical advice, obtain the necessary permits, maintain control of the cultural information deriving from these studies, and to negotiate and control all subsequent management activities. Thirdly, they have never adopted a monolithic approach to management or simply sought to maximise any financial return from such studies. To the contrary, they have adopted a measured and graduated response guided by the results of the studies they have undertaken. It also should be noted that in each case the Darumbal ensured that suitably knowledgeable and senior Darumbal people were involved in the studies, and that the group as a whole, guided by their elders, reviewed the results and determined the appropriate management strategy to be set in place for each project.



They have also taken the position that they have an exclusive custodial responsibility for, and right with respect to, the cultural places and values found in a particular area, and the information deriving from the studies. They have effectively and forthrightly protected that exclusivity as needed. On occasion they have worked with other groups but only where there is an overlapping Native Title claim and legal requirements dictated. They have also afforded contingent rights in their country to others (e.g. those with an historical association to Darumbal country as against a traditional affiliation) but with the clear understanding that they reserve the right to withdraw those rights as they see fit. These positions are consistent with their asserted claim through Native Title to own and manage the cultural places and values in our country.

We must now confront two other questions:

1. Are the manifestations of a determination to assert a managerial role in relation to cultural heritage described above merely a recent invention?
2. Is the interest in these cultural places and values, and the method of management, part of a body of law that is consistent with the maintenance of Native Title?

In our estimation the answer to both these questions is: no and yes, respectively. We suggest that the interest and involvement in the management of cultural heritage places and values is undoubtedly undertaken within current legal and technical parameters, it is a contemporary manifestation of tradition practices and conventions of cultural custodianship.

Despite their exclusion from legally-sanctioned processes until the relatively recent past, the Darumbal sought to exercise a role in cultural heritage management where they could. There also are numerous examples that could be cited indicating that Darumbal interest in cultural heritage matters is not a recent one. It is also generally understood within Aboriginal Australia that traditional owners of country have a right and responsibility to exercise a custodial role in relation to the management of cultural places and property. The next question, however, that must be confronted is whether their interest in the range of things that are now considered to be elements of that cultural heritage is consistent with traditional interests and roles.

In this we must squarely face the challenge posed by observations made in Olney's (1999) decision in the Yorta Yorta Native Title case. In his published decision Olney noted that while taking a strong interest in the protection of certain categories of cultural places was admirable, it did not constitute a proof of the maintenance of traditional custodial role because in the past the types of places now being protected and managed were not of importance to Aboriginal people. Therefore, the current interest was a recent invention that had no links to tradition law and custom, and therefore was not a proof of Native Title. He specifically mentioned shell middens and oven mounds in his judgement. By implication, he was offering a view that an interest in what we might term archaeological sites, those material manifestations of Aboriginal occupation of an area, was not a traditional practice or right. In the present case it could then be suggested that while damaging similar sites without appropriate mitigation might be proscribed by State law, it does not constitute an issue for arbitration in Native Title because these sites and places are not part of that Native Title and so any impact on them is not a matter for consideration or compensation beyond the need to operate within the context of existing State cultural heritage legislation. It is our view that this overly reduces a very complex issue. Firstly, we want to examine the issue in a general fashion.

To suggest that the management of material cultural places is only a recent interest that has no links to traditional practice is fraught. For instance, no one denies that certain types of material cultural places such as rock art sites, carved trees and burial sites, and others could be nominated, are deeply imbued with significance, being directly associated with ritual and ceremony. It is also true that other



kinds of places, such as quarries from which lithic material used in the manufacture of various types of stone artefacts, required a deep knowledge and application of ritual to be used safely (ie. without bringing down on oneself the wrath of spirits associated with such places). Further, there were particular types of stone artefacts that had a distinct role in ceremony. Beyond this, however, there also were places that were used as camping areas, where the imprint of the inhabitants were left in the form of material culture such as hearths and grinding equipment, but which were abandoned and avoided because of the death of a person at the site.

Moreover, the significance of places could often be multivalent: it might be a camping site that also was of significance because of the presence of an important creator being, such as the rainbow serpent but many others as well. There were also general locations that were associated with major ceremonial gatherings in the course of which large numbers of people regularly congregated, and where there were designated areas for camping (which resulted in the creation of large concentrations of material culture). It is our contention, therefore, that it is extremely difficult to categorise concentrations of material culture as being simple discard that had little or no significance or as places that in various ways were the subject of, or important to, ritual and ceremonial behaviour.

It is also important to note that in traditional Aboriginal society there was no static list of places that were deemed to be culturally important. It should also be noted that in a sense the entire landscape was a cultural entity in which some places required a greater level of response but in which people had to be continually aware that the 'old people' or other spirit entities could manifest themselves. People regularly had experiences in the course of the daily round, or dreamed about places and things, that were then submitted to older, knowledgeable people for their consideration. Dependent on the outcome of that adjudication, places and events were then added to a corpus of places that were seen as important, demanding special attention and response from people: that is those places had to be managed.

We now want to consider matters in the context of the study area. As has been clearly demonstrated through the results of the survey, the area in contention possesses a range of cultural values as well as containing certain cultural sites. The Aboriginal cultural researchers involved in the inspection of this area have duly reported on this to their elders who have given the matter considerable thought. They have determined that the area is one that is of significance to them as Darumbal people: hence its continued inclusion as a central area within their native title claim. This process of identification of an area of cultural significance, and the subsequent determination made by the elders, is entirely consistent with traditional processes seen elsewhere in Aboriginal Australia and is consistent with the actions of the Darumbal in other cases. Central to their deliberations have been consideration of the what duty of care they owe to the material culture, as a manifestation of the 'old people', and to the area as a whole, recognising they are being watched by the 'old people'. Indeed, as Darumbal field researchers noted in the course of field work, they constantly were being observed by the 'old people' all the time they were in the field.

Who are these 'old people'? They are the spirits of the Darumbal's ancestors that continue to inhabit Darumbal country. They can be encountered anywhere and at any time, and they are in and on country. The 'old people' watch over the country to protect it. It is necessary to advise the 'old people' that one is on country. The 'old people' can sense when non-Darumbal people are on country. The cultural sites found in Darumbal country are, according to Darumbal people, a physical demonstration that their 'old people' have been there, and continue to be there. Contemporary Darumbal people take extremely seriously the responsibilities they have to the 'old people' and to manage and protect the cultural places they have inherited from them. The presence of 'old people' in the country, and the assumption of responsibility for country passing from them to their descendants in this way, is something that is also well documented ethnographically across Australia.



In summary:

1. Darumbal people have, for the last ten years, actively and consistently involved themselves in cultural heritage management associated with the EIS process;
2. They have set in place a series of procedures and protocols that are entirely consistent with their asserted Native Title rights in the area of cultural heritage management;
3. They have adopted a graduated response towards the impact of developments on these cultural places, ranging from agreement with mitigation through to total opposition to a development, and such responses have not been conditioned by the availability or scale of compensation;
4. Their interest in this area is a continuation of a process of cultural heritage management that has links with traditionally-sanctioned responsibilities for country;
5. The concern for cultural places that are primarily concentrations of material culture is not a recent invention and fits neatly within a general pattern of traditional belief and practice of Darumbal people;
6. The manner in which they manage such sites is entirely consistent with processes of cultural place management seen in other parts of Australia and that have been documented in detail by anthropologists throughout Australia.

To damage or destroy these sites without direct and on-going Darumbal involvement in all stages of decision-making and implementation would seriously diminish the opportunity for Darumbal people to exercise their right and responsibility to manage them in accordance with Darumbal tradition.

## Threats and Risks

Threat/Risk 1: Loss of opportunities to practice native title. There are two purposes served by pursuing native title. The first of these is the important psychological dimension with a group finally being recognised as owners of their country after 200 years of dispossession, and would exist no matter what eventuated after native title had been conferred. The second is a practical opportunity to give effect to the rights asserted in the claim. For the Darumbal these include:

- A right to use and enjoy the natural resources of the claim area for customary and traditional purposes.
- A right of access to the claim area.
- A right to manage and conserve the claim area.
- A right to manage and conserve the natural resources of the claim area.
- A right to maintain and protect places and sites of cultural importance under traditional laws and custom.
- A right to utilise all natural resources in the claim area.
- A right to conduct burials on the claim area in accordance with custom and tradition.

It should be understood that when Darumbal use terms such as 'maintain', 'protect' and 'conserve' that implicit within these terms is the need to perform the necessary traditional ceremony for these. This may include but is not limited increase and protection ceremonies.

Any action which prevented the Darumbal giving effect to one or all of these rights, noting that these rights might be granted non-exclusively or only to the extent of any inconsistency, would constitute a major loss. The likelihood of such a threat emerging should be seen as low. Any such action would inevitably invite legal action and, where a court was satisfied that the action had impinged on the



rights of the native title holders, would require remedial action possibly accompanied by damages for losses incurred while the matter was being resolved. The threat would exist for as long as the Darumbal continued to enjoy their native title rights, which would either be while ever they existed as a group or unless some sovereign act was taken that extinguished those rights in the SW&CBRA.

**Threat/Risk 2: Diminished natural resource base in the SW&CBRA.** The Darumbal have made it clear in various ways that they value the natural resources of the SW&CBRA: these include submissions to various inquiries expressing concern about the future of these resources and entering into negotiations and agreements to preserve these resources. There is excellent archaeological and historical evidence attesting to the importance of these resources to the Darumbal for more than 5,000 years. Actions that diminished these resources would also negatively affect opportunities to give effect to their native title rights. Specifically, actions that depleted fish stock either by commercial or recreational over-fishing constitute a major threat. So, too, do incidents such as boat strike or net entanglement of turtles and dugong, leading to death of individual animals. Damage to sea-grass beds from aggressive trawling techniques would likewise result in diminished food stuffs and habitat destruction for a range of species including dugong, turtle, fish and shellfish which could lead to a marked decline in numbers. The timing of these threats are immediate subject to mechanisms that either prohibit certain techniques used in fishing or require the use of less harmful measures, that limit the number of fishing events and use of moratoria or bans that set areas off limit for a specified period or permanently. The high levels of commercial and recreational fishing possible in the SW&CBRA and use of the Shoalwater Bay area during military exercises make these real moderate to high risks.

**Threat/Risk 3: Direct impact on cultural sites within the SW&CBRA.** Currently, this threat/risk is limited to those areas where the stone arrangements and fish traps have been documented. Activities such as fishing or other recreational activities in these locations could pose a threat with the possibility of displacement of portions of the stone arrangements, and even inappropriate activities could negatively affect the cultural value of these sites. The possibility of damage during military exercises is also a threat. Damage during fishing or recreational activities would emerge whenever access was granted to this area. Damage from military activities could arise whenever military exercises that involve marine activities or amphibious landings or the dropping of practice or live ordnance. Given the location of these sites and evidence collected during earlier surveys the threat quotient is low but any impact on sites of ceremonial significance is unacceptable to the Darumbal. Damage to, or loss of, these sites could have two other impact s. It would represent a loss of native title rights and the loss of sites protected under the ACHA and which are subject to the duty of care. In the former case the party who had infringed the Darumbal native title right could face legal consequences. In the latter case the party that caused the damage or loss could face penalties. A party who was shown not to have met the duty of care under the ACHA could also be liable for penalties.

**Secondary threat/risk: Increased activity in areas surrounding the SW&CBRA impacting nationally significant cultural sites.** People accessing the SW&CBRA for whatever purpose could visit sections of the mainland coast or bordering islands. Camping, recreational activities or just sight-seeing could negatively affect important cultural sites. These impacts would arise particularly during periods of good weather when marine activities are feasible. Evidence collected during previous surveys demonstrates this is a real risk that represents a moderate to high threat to these sites.





**Table 1: Possible Threats – Aboriginal cultural values SW&CBRA**

Threat	Sub-Category	Potential consequence for site components, processes and services	Likelihood	Timing
1. Loss of opportunities to practice native title	Loss of opportunities to practice native title	Loss of legal rights conferred through grant of native title to Darumbal people. Psychological impact from inability to practice native title. Loss of Aboriginal group practicing its distinctive culture. Legal consequences for party deemed responsible for acting in a manner that prevented Darumbal people from exercising their legal rights.	Low	Ongoing
	Legal rights	Loss of legal rights would include rights provided for under determined native title. These rights will be explicitly stated by Federal Court in issuing consent determination to be issued on 21 June 2016.	Low	Ongoing
2. Diminished natural resource base in the SW&CBRA		Loss of opportunity to practice native title in relation to use of culturally important resources. Legal consequences for party deemed responsible for acting in a manner that prevented Darumbal people from exercising their legal rights. Loss of continuity of 5,000 years of cultural tradition involving use of such resources.	Moderate to High	Ongoing
3. Direct impact on cultural sites within the SW&CBRA		Loss of culturally important sites that have a ceremonial aspect and that directly relate to use of SW&CBRA over a period of more than 5,000 years. Legal consequences arising from provisions of the ACHA and the duty of care.	Low	Ongoing



4. Increased activity in areas surrounding the SW&CBRA impacting nationally significant cultural sites.		Loss of culturally important sites documenting more than 5,000 years of traditional use of the SW&CBRA.	Moderate to High	Ongoing
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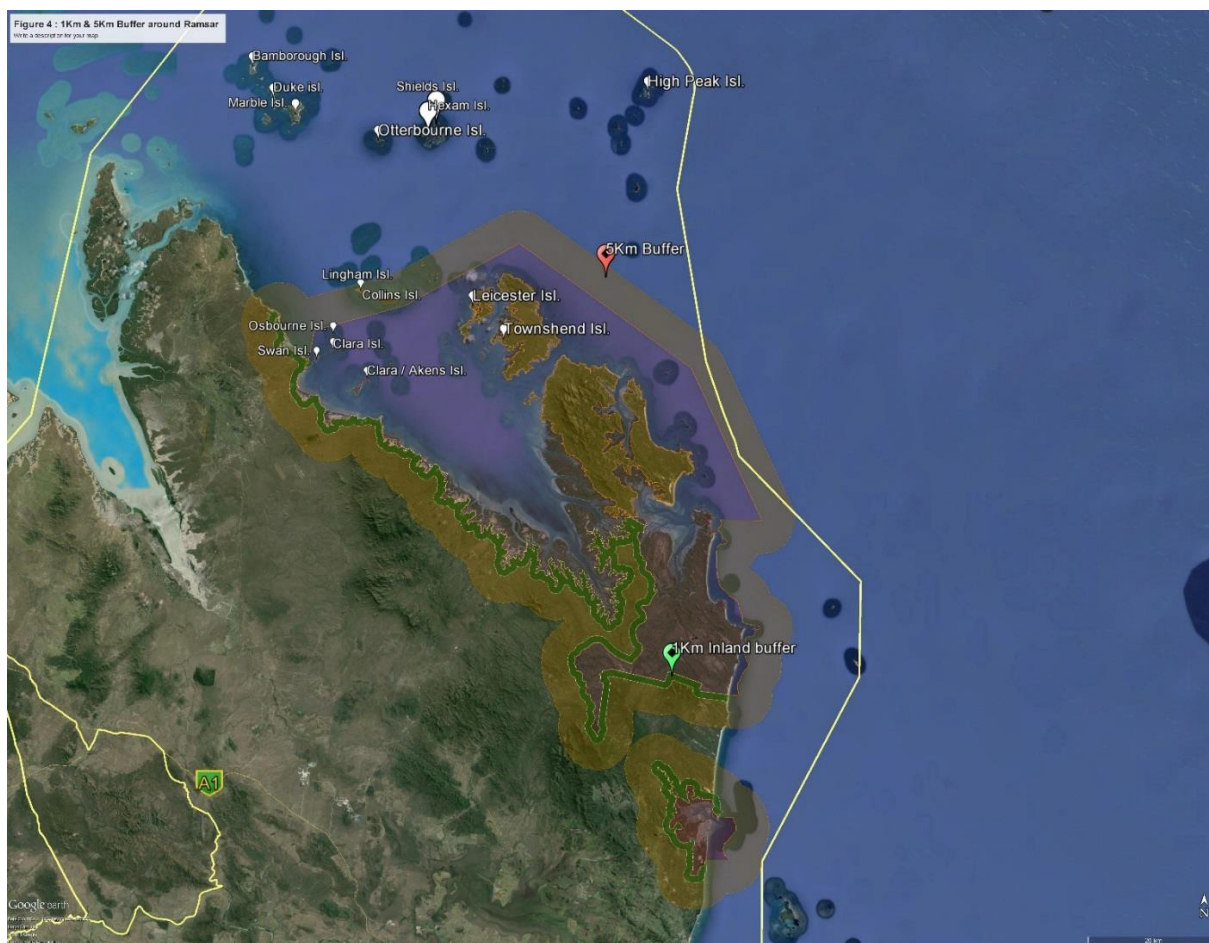


Figure 4: Proposed zone of secondary impact showing 1km buffer for mainland and marine areas within 5km of SW&CBRA



## Management Strategies and Actions

As a program statement it should be noted that the Darumbal People, through their successful native title claim, constitute a very different category of stakeholder to environmental groups, fishermen, recreational users and others. The Darumbal People have formally recognised rights to the SW&CBRA and its resources, at least to the extent granted under their native title. That is they are more than just parties with an interest in a particular value or use of the SW&CBRA. Consequently, this demands a response on a different level to that afforded to those other stakeholders. Membership of a consultative committee, while welcome, alone would not a satisfactory means of addressing Darumbal interests and concerns.

1. Threat/Risk 1: Loss of opportunities to practice native title.
  - a. Formal commitment from all relevant regulatory agencies or peak government bodies that no actions will be taken that diminish the opportunity to practice native title rights of the Darumbal People, to the extent conferred by grant of native title, without appropriate compensation, which may include offsets.
  - b. Opportunity be granted to the Darumbal, and reasonable resources be allocated to them, to independently assess the likely consequences on their native title of any planned management strategy, other proposed use of, license or permission granted for, the SW&CBRA.
  - c. On receipt of any assessment made under proposal (b), relevant parties meet with the Darumbal (with reasonable resources allocated for this purpose) to review the proposed management strategy, use, license or permission and amend the same where it poses a threat to opportunity to the Darumbal to practice their native title rights.
  - d. The agreed strategy, use, license or permission be implemented, and the consequent impacts be assessed and issues arising addressed as part of (2) below. This point will be reinforced in the area of monitoring and adaptive management.
  - e. The Darumbal People should be granted the opportunity to practice their native title rights within the SW&CBRA, to the extent allowed by grant of native title.
  - f. The Darumbal and relevant parties may enter into agreements providing for the management of the SW&CBRA and their resources as they agree are necessary but such agreements will expressly recognise Darumbal native title and, while they may suppress native title for a period of time, will neither diminish nor extinguish native title rights.
  - g. Such agreements settled under (f) must take the form required under the *Native Title Act*, and reasonable resources provided to the Darumbal to negotiate on just terms.
2. Threat/Risk 2: Diminished natural resource base in the SW&CBRA.
  - a. Baseline data on natural resources within the SW&CBRA be assembled and provided to the Darumbal.
  - b. Opportunity be granted to the Darumbal, and reasonable resources allocated to them, to assess the validity of these baseline data.
  - c. Regular assessments be undertaken of natural resources in the Ramsar area, the reasons for any material changes in these be identified and, where such effects are negative, proposed management strategies to redress any material changes be developed. This point will be reinforced in the area of monitoring and adaptive management.
  - d. The results of these regular assessments and consequent management strategies be provided to the Darumbal.
  - e. The relevant parties meet with the Darumbal, assess results and where necessary amend the management strategies.
  - f. The agreed strategy be implemented, and the consequent impacts be assessed and issues arising



- addressed. This point will be reinforced in the area of monitoring and adaptive management.
- g. Such assessments should be undertaken every two years, or otherwise at such times as agreed between the relevant parties and the Darumbal. This point will be reinforced in the area of monitoring and adaptive management.

Resources to address this issue might include a dedicated position within a relevant agency for a Darumbal representative to gather and analyse data. Appropriate training and equipment would need to be provided.

3. Threat/Risk 3: Direct impact on cultural sites within the SW&CBRA.

i. All cultural heritage sites in the SW&CBRA should be regularly monitored and their condition and form regularly assessed using details provided in the original recordings. This point will be reinforced in the area of monitoring and adaptive management.

- j. Such monitoring should be undertaken by representatives of the Darumbal People.
- k. Reasonable resources should be provided to the Darumbal People for the purpose of monitoring.
- l. Monitoring should be undertaken at least once a year. This point will be reinforced in the area of monitoring and adaptive management.
- m. An area sufficient to provide protection to these sites should be quarantined from any activity whatsoever and the quarantined areas formally gazetted as restricted access zones for all activities other than monitoring.
- n. Should they prove necessary, remedial actions may be undertaken at these sites but only with the direct and express written agreement and participation of the Darumbal People. Any remedial action would only be countenanced on basis of results of the monitoring program. This point will be reinforced in the area of monitoring and adaptive management.

4. Increased activity in areas surrounding the SW&CBRA impacting nationally significant cultural sites.

- a. A zone of secondary impact is to be defined. This is to include all sections of the mainland coast and those islands which lie within, border or lie within 5km of the SW&CBRA.
- b. It is recommended that this zone of secondary impact be 1km wide on sections of the mainland coast and 200m wide for islands or, where the island is smaller than this, the length/width of the island
- c. Cultural heritage sites within this zone of secondary impact should be subject to regular monitoring by the Darumbal People, with such monitoring to occur every two years. This point will be reinforced in the area of monitoring and adaptive management.
- d. Remedial action and additional management action may prove necessary. These would need to be agreed by the Darumbal people, would be in response to the results of monitoring and negotiations undertaken to allow such remedial action to be undertaken.
- e. Reasonable resources should be provided to the Darumbal People for the purpose of monitoring.
- f. If necessary, relevant agencies should provide material assistance to the Darumbal People to negotiate access to the zone of secondary impact where third parties own, manage or control access to sections of the zone of secondary impact.
- h.



**Table 2: Proposed Management Strategies – Aboriginal cultural values SW&CBRA**

Strategy	Threat	Action/s	Timeline	Priority	Responsibility
Protect native title rights	1.1	Formal commitment from all relevant regulatory agencies or peak government bodies that no actions will be taken that diminish the opportunity to practice native title rights of the Darumbal People	Ongoing	High	All relevant agencies involved in carrying out, issuing permits, licenses or approvals, or in approving any activities – the agencies will be determined when management authorities for the Ramsar area are fully determined. These would probably include but not be limited to GBRMPA, OEH, Defence
		Opportunity be granted to the Darumbal, and reasonable resources be allocated to them, to independently assess the likely consequences on their native title of any planned management strategy, other proposed use of, license or permission granted for, the SW&CBRA	Ongoing	High	Determined on basis of agency which has relevant authority
		The Darumbal and relevant parties may enter into agreements providing for the management of the SW&CBRA and their resources as they agree are necessary but such agreements will expressly recognise Darumbal native title and be in a form specified under the <i>Native Title Act</i> .	Ongoing as new processes and strategies are developed	High	Determined on basis of agency which has relevant authority
Reduce likelihood of loss of culturally important resources	1.2	Baseline data on natural resources within the SW&CBRA be assembled and provided to the Darumbal and opportunity be granted to the Darumbal to assess the validity of these baseline data	Short	High	Data and resources provided by relevant agencies, most likely GBRMPA and OEH
		The results of these regular assessments and consequent management strategies be provided to the Darumbal. The relevant parties meet with the Darumbal, assess results and where necessary amend the management strategies.	Short	High	Process supported by relevant agencies, most likely GBRMPA and OEH
		Monitoring and adaptive strategies to be implemented as necessary.			



Assess cultural site condition and develop management approaches (including remedial actions if required)	1.3	All cultural heritage sites in the SW&CBRA should be regularly monitored on an annual basis by Darumbal representatives.	Ongoing	High	OEH and CHU (Qld)
		An area sufficient to provide protection to these sites should be quarantined from any activity whatsoever and the quarantined areas formally gazetted as restricted access zones for all activities other than monitoring	Medium	High	GBRMPA and OEH
		Should they prove necessary, remedial actions may be undertaken at these sites but only with the direct and express written agreement and participation of the Darumbal People	Long term	High	Darumbal People with support from OEH and CHU (Qld)
Reduce possible impacts on culturally important sites in secondary impact zones	1.4	Define a zone of secondary impact that includes mainland areas bordering the SW&CBRA and that includes all islands within, bordering or within 5km of the SW&CBRA.	Medium	Medium	GBRMPA and OEH
		Cultural heritage sites within this zone of secondary impact should be subject to regular monitoring by the Darumbal People, with such monitoring to occur every two years	Ongoing	Medium	Darumbal People with support from OEH and CHU (Qld)



## **Monitoring and Adaptive Management**

1. The consequent impacts of any agreed strategy, use, license or permission granted for the SW&CBRA on Darumbal native title rights needs to be assessed and issues arising addressed on an as-required basis (i.e. prior to their being granted or awarded).
- 2(a). Regular assessments be undertaken of natural resources in the SW&CBRA, the reasons for any material changes in these be identified and, where such effects are negative, proposed management strategies to redress any material changes be developed.
- 2(b). The results of these regular assessments and consequent management strategies be provided to the Darumbal.
- 2(c). The relevant parties meet with the Darumbal, assess results and where necessary amend the management strategies.
- 2(d). The agreed strategy be implemented, and the consequent impacts be assessed and issues arising addressed.
- 2(e). Such assessments should be undertaken every two years, or otherwise at such times as agreed between the relevant parties and the Darumbal.
3. Cultural heritage sites within SW&CBRA should be regularly monitored by Darumbal representatives on an annual basis and their condition and form regularly assessed using details provided in the original recordings.
4. The zone of secondary impact needs to be monitored by Darumbal representatives every two years with remedial actions and additional management actions designed and implemented in response to the results of the monitoring.



**Table 3: Proposed Monitoring and Adaptive Strategies – Aboriginal cultural values SW&CBRA**

Attribute	Action	Location	Frequency	LACs addressed	Responsible Agency
Ensure that Darumbal native title rights are not negatively affected by any future act	Assess the impact of any proposed action on Darumbal native title rights prior to allowing, awarding or granting any strategy, license, permission, authority for the SW&CBRA	SW&CBRA	As required	N/A	Agency either implementing strategy or granting license, permission or authority for the action
Ensure that culturally important resources are maintained within the SW&CBRA	Monitor the impacts of any strategies, licenses, permissions or authorities on culturally important resources within the SW&CBRA in line with the recommendations of the relevant report on Aboriginal cultural values and amend strategies, licenses, permissions or authorities as required if negative impacts detected	SW&CBRA	Annually	N/A	TBD





<b>Attribute</b>	<b>Action</b>	<b>Location</b>	<b>Frequency</b>	<b>LACs addressed</b>	<b>Responsible Agency</b>
Ensure that culturally important sites are conserved within the SW&CBRA	Monitor the condition of culturally important sites within the SW&CBRA in line with the recommendations of the relevant report on Aboriginal cultural values and take agreed management and remedial actions if required	SW&CBRA	Annually	N/A	TBD
Ensure that culturally important sites in zone of secondary impact are protected	Monitor the condition of culturally important sites within the zone of secondary impact in line with the recommendations of the relevant report on Aboriginal cultural values and take agreed management and remedial actions if required	Defined zone of secondary impact	Every two years	N/A	TBD



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