11.3. Mackay Region

The Mackay Region, for the purpose of this report, extends from Cape Upstart to the north of Bowen to Clairview in the south.

11.3.1. Upstart Bay to Proserpine

From Upstart Bay to Proserpine the coastal range is from 10-30 km from the coast so most of the creeks that drain from the range are short. The area also has significantly lower rainfall than areas to the north and south. Most creeks are estuarine with perhaps a few small semi-permanent in-stream freshwater pools; they are also sand based, further limiting surface freshwater. There are few off-stream freshwater wetlands that are significant to fish.

To the south of Cape Upstart on the east coast of the peninsula is a significant wetland and dune complex. While it is ephemeral in nature and cannot sustain fish during dry periods, it is recognised as being the best remaining example of its type in the district (Blackman *et al*, 1999). This wetland is on the Register of the National Estate and is it is presently subject to aquaculture development proposals from an adjacent landholder that may impact its integrity.

The Abbot Point-Caley Valley wetlands aggregation are some small permanent wetlands that are adjacent to Abbot Point that are of high value to migratory and local water birds (Blackman *et al*, 1999). The system is described by Blackman as containing a lake with fresh to brackish water and associated swamp. No reference is made to the use of the area by fish although during spring tides and heavy rain events, it is likely that small fish would migrate into the area but it is likely that most of them would be consumed by the rich bird life.

The largest river in the area is the Don River near Bowen. The estuarine area of this river is very small and above the tidal limits there it is a flat, sand based riverbed that has no surface water for most of the year. There may be semi-permanent or permanent freshwater pools up in the ranges however these are totally disconnected from the marine system naturally and are unlikely to be usable by marine fish.

11.3.2. Proserpine to Mackay

The Proserpine River is a heavily modified and impacted river in its upper and middle reaches. The Peter Faust Dam is in the upper reaches but there is no access by fish from downstream. The lake has been stocked with barramundi. In addition, the middle reaches of the river are flood-proofed with a large levy. The river has nutrient inputs from adjacent farms and the Proserpine sewage treatment plant which has secondary treatment levels (Hardy, 2002). In the

freshwater reaches, the Proserpine River appears to suffer from ongoing macrophyte and algal blooms although no studies are available on the use of the fresh water reaches by native fish.

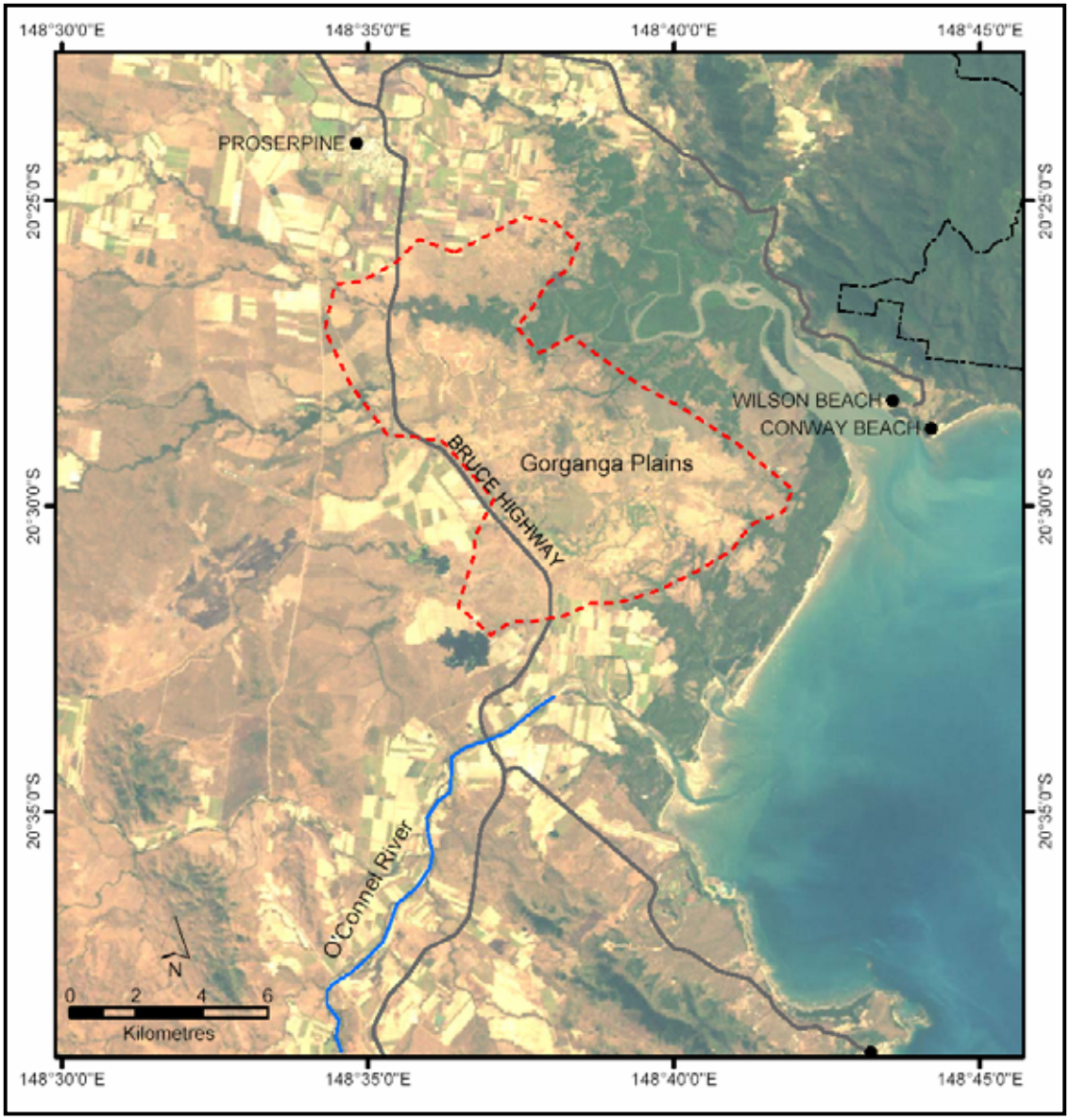

Figure 43: Gorganga Plains wetlands south of Proserpine

The Gorganga Plain to the south of Proserpine (*figure 43*) includes three creeks that are used extensively by fishery resources. The creeks include Lethe Brook, Gorganga Creek and Thompson Creek. Much of the floodplain has been cleared with some remnant riparian vegetation remaining along the waterways. Both Lethe Brook and Gorganga Creek (*figure 44*) have permanent fresh waterholes during extended dry periods. Whilst the Gorganga Plains are extensive, little

information is available on the use of the area by fishery resources other than in the main streams.

Connectivity of Gorganga Creek and Thompson Creek to estuarine habitat remains largely intact. There is a network of shallow off-stream waterholes that are also used by fish but these dry up during extended dry periods.

Figure 44: In-stream wetland of Gorganga Creek

Risks or threats to Gorganga Plains wetland:

1. Lack of knowledge of fishery resources using the wetlands.
2. Use of wetlands for ponded pastures.
3. Continued reduction of riparian zone from adjacent grazing use.
4. Nutrient runoff during rain events.

The O'Connell River and its tributaries to the south of Proserpine provides important in-stream habitat for a wide range of species with barramundi reportedly captured well above the tidal limit in permanent deep in-stream waterholes (*pers comm*. F Baxter).

South of the O'Connell River, there is a coastal range stretching from north of Bloomsbury to Yalboroo. While there are a number of creeks that drain into the Dempster Creek estuary, the only freshwater areas are small in-stream ponds that are not considered significant.

Alligator Creek and Blackrock Creek are small, narrow creeks with no remaining wetlands on their floodplain. St Helens Creek is deep-cut into the coastal

floodplain with some permanent freshwater stretches that are likely to be locally important in the absence of other remnant habitat. St Helens Creek has lost most of its riparian vegetation to adjacent cane farming (Bunn *et al*, 1997).

Murray Creek has some important freshwater in-stream habitat but is impacted by riparian clearing and adjacent farming. There is a small sand dam approximately 300 metres downstream from the Bruce Highway that is an effective barrier to fish migration except during major floods.

11.3.3. Mackay District

Figure 45: Waterways and wetlands in the Mackay district

A map of wetlands in the Mackay district is at *figure 45.* A detailed report for the Pioneer Valley Water Resource Plan is available on fish use of the Pioneer

River, Bakers Creek and Sandy Creek that includes data from a number of earlier surveys (Pusey, 2001).

Dumbleton Weir separates the estuarine and saltwater reaches of the Pioneer River and effectively prevents upstream migration of marine species. There is a fish lock on the weir but its use by marine species is limited. Pusey (2001) identified that in thepondage area above Dumbleton Weir only 11 of the expected 25 species were recorded and of these only three were marine species. Above Dumbleton Weir there are the Marion and Mirani Weirs. Marian Weir fishway is not suitable for fish passage and Mirani Weir lacks any fishway at all making fish passage only possible during major flooding (Pusey, 2001).

Figure 46: Gooseponds Creek in suburban Mackay

The Goosepond Creek system is a series of lagoons where DPI&F has worked with local community groups and Mackay City Council to redevelop fish passage by establishing fish passage devices of various designs (*figure 46*). Fish usage of these fishways has been monitored with marine and freshwater species using the fishways (Marsden *et al*, 2003a, 2003b, 2003c). As fishways on the creek are within the urban area of Mackay, they are used to educate the community on the benefits of fish passage. Maintenance remains a concern with the upstream fishway choked by weeds during our inspection in January 2004. A maintenance program is being negotiated (*pers comm*. T. Marsden).

The wetland at Andergrove in the upper reaches of McCready Creek is of limited value to fishery resources as most of the wetland has disappeared through urban development. This wetland is under threat from land-based infrastructure for port expansion. This area, if disturbed, has the potential to cause major long-term problems to downstream marine resources due to the oxidation of ASS over an extended period of time. To restore fishery values this area would require a complete rebuild however it would be a high profile site, and restoration is currently under discussion.

Sandringham Lagoons south of Sandy Creek were previously significant for fishery resources however they have been degraded by adjoining agricultural land use. Riparian vegetation is poor to non-existent and they have been impacted by sediment and nutrient runoff (*pers comm*. T Marsden).

11.3.4. Sarina to Clairview

The area from Sarina to Clairview has a series of small creeks that drain the coastal range running inland along the entire length of this part of the coast. The coastal plain is narrow, being less that 10 km in width in most places and no more than 20 km wide in any area. In the northern area there is a mixture of sugar cane and grazing however grazing dominates from around Carmila south.

Most creeks in this area are short, have small estuaries and small permanent in-stream freshwater wetlands. Because of their short length and the undulating landscape they run through there are few off-stream freshwater wetlands. Most have natural connectivity along their length, with some remaining riparian vegetation and good water quality. The creeks in the agricultural areas have been affected the most while those in the grazing areas have mainly been affected by tree clearing. The most important creeks are Boundary Creek, Rocky Dam Creek, Marion Creek, West Hill Creek, Carmila Creek and Flaggy Rock Creek. The fishery resources of creeks in the Sarina and Broadsound shires have been reported (Laxton et al, 1995).

Rocky Dam Creek (*figure 47*) is the most important creek in this area due to its extensive network of wetlands. East of Koumala some high value wetlands remain in the Tedlands area. Alligator Waterhole on Tedlands Creek is reportedly over seven metres deep and is important to fishery resources (*figure 48*). This and adjacent shallow wetlands are now subject to a voluntary conservation agreement and protected from on-site impacts, however the long-term impacts of downstream water extraction by adjacent landholders is harder to assess. Water extraction can lower adjacent water tables (Tait, 1994) and this can result in oxidation of ASS with flow on impacts to the environment in

general and fishery resources in particular (Sammutt *et al*, 1994, 1996; White *et al*, 1996). This wetlands complex is used for irrigation and some of the more important shallow wetland areas have been pumped dry during the recent dry period for the first time in memory according to locals (*pers comm*. Local Landholder 2004). The impact of ponded pastures is recognised as it continues to reduce fisheries productivity.

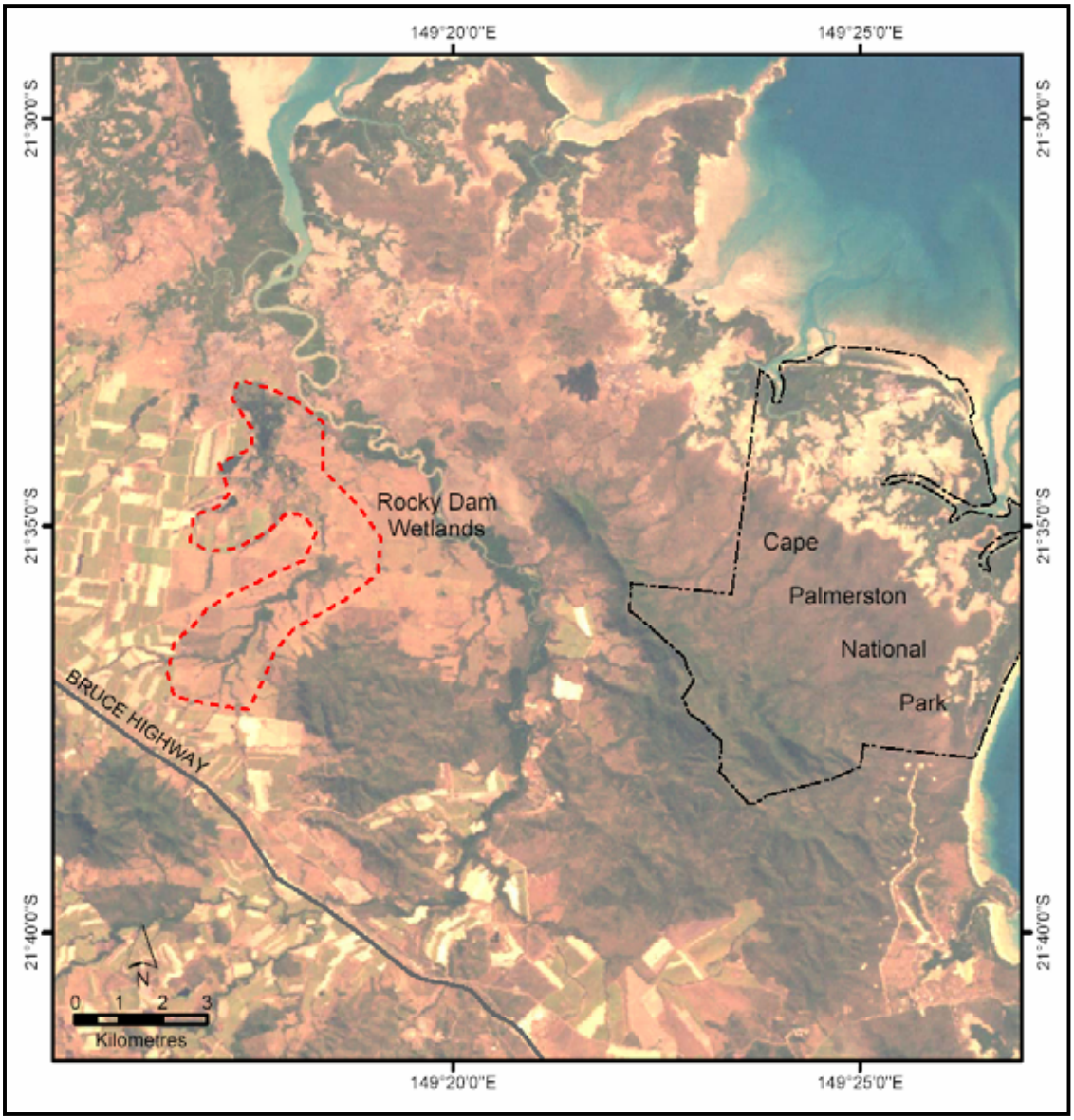

Figure 47: Rocky Dam Creek wetlands near Koumala

Risks or threats to Rocky Dam wetlands and Alligator Waterhole:

1. Ponded pastures and downstream barriers that reduce connectivity.
2. Water extraction for irrigation.
3. Feral pigs and invasive weeds, particularly hymenacne and para grass.
4. Disturbance of ASS.

Figure 48: Alligator Waterhole on Tedlands Creek

11.4. Central Queensland

Central Queensland, in the context of this report, is from Clairview in the north to Rodds Bay in the south.

11.4.1. Broadsound and Shoalwater Bay

Access by marine fish to both in-stream and off-stream freshwater wetlands in the Broadsound District have been severely limited by ponded pastures. The district has 80 pondage systems with a total length of pondage banks of 57 km, one bank on the northern side of Herbert Creek being 18 km in length. Most of the systems are used for pasture and cattle production and many dry completely during the dry season. Hyland (2002) reported on the use of these ponded areas by fish. The fishery resources of creeks in the Sarina and Broadsound Shires have been reported (Laxton *et al*, 1995).

In the northwest part of the Broadsound District, many creeks between Clairview Creek and St Lawrence Creek have barriers at the upper tidal limit. These barriers are bank high causeways that were part of the old alignment of the Bruce Highway and now provide permanent freshwater for adjoining cattle properties. The barrier on St Lawrence Creek has been upgraded in the past few years (*figure 49*) with no allowance made for fish passage. These barriers effectively prevent fish passage except during major flooding and fish use of these areas is unknown.

Figure 49: Tidal barrier on St Lawrence Creek

To the south of St Lawrence Creek many creeks have significant in-stream freshwater wetlands that have natural connectivity to their estuaries. Most significant off-stream wetlands have been converted to ponded pastures. The most important creeks with instream wetlands are Waverley Creek, Granite Creek, Tooloombah Creek and Wellington Creek. These creeks run through grazing country that has been extensively cleared but on most creeks in-stream riparian vegetation remains in good condition and water quality is also likely to be acceptable.

Herbert Creek is the largest creek that runs into Broadsound (*figure 50*) and has significant in-stream and some off-stream wetlands in the Tilpal area. Off-stream wetlands downstream of Tilpal have been largely converted to ponded pastures.

Off-stream wetlands above Tilpal include Bull Lagoon and Potty Lagoon. These lagoons are connected to Herbert Creek. During the wet years in the late 1980s through to 1991 this area was targeted for the tagging of barramundi and around 500 fish were tagged in Herbert Creek and lagoons. Fish were subsequently recaptured at Hay Point south of Mackay in the north to Frogmore Lagoon at Rockhampton in the south as well as throughout Broadsound (Suntag, 2004). The current status of Herbert Creek and the lagoons has not been assessed.

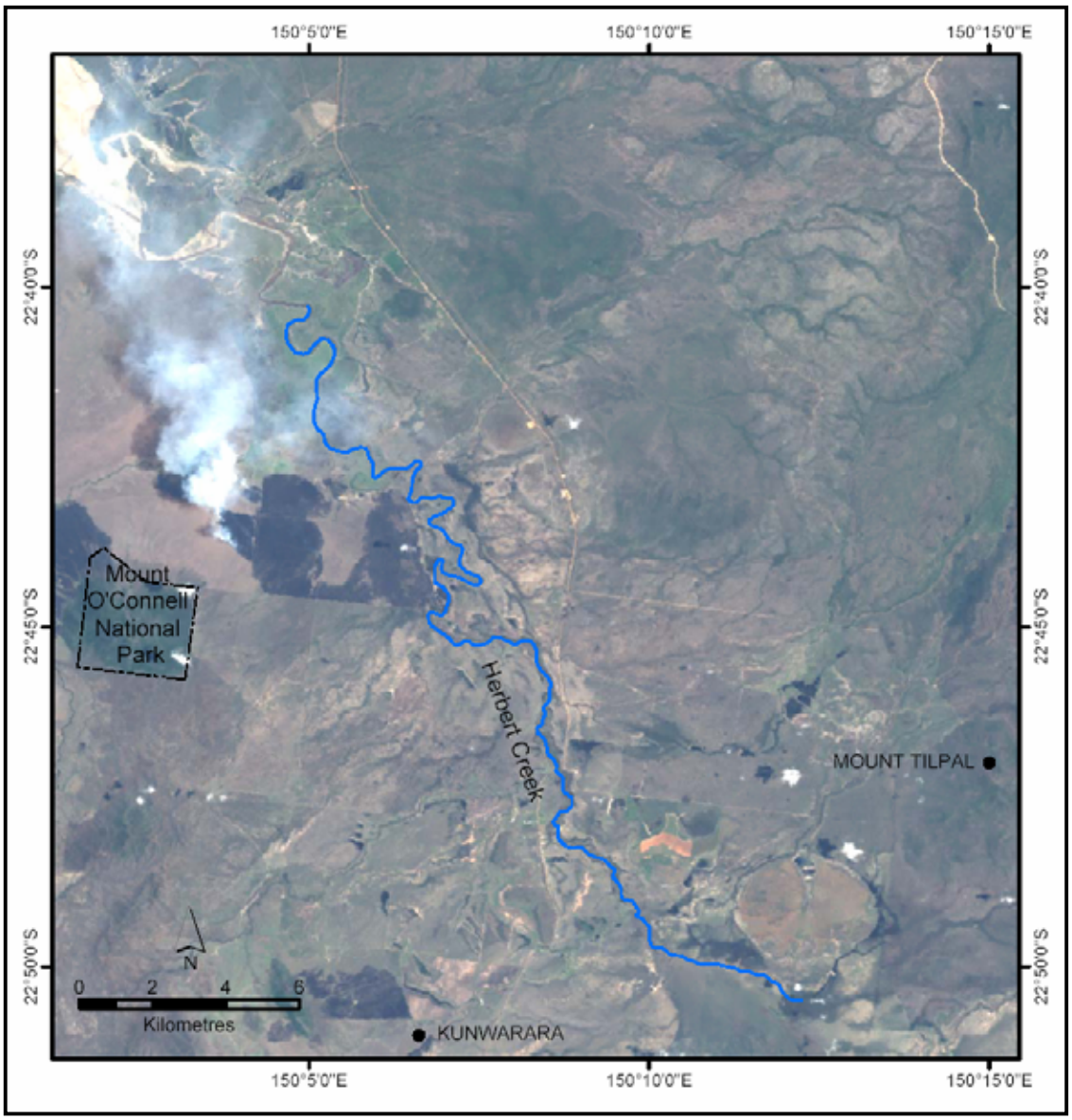

Figure 50: Herbert Creek and adjacent wetlands in Broad Sound

On the eastern side of Herbert Creek there are a small number of in-stream wetlands adjacent to the Stanage Bay Road on Boundary Creek called Boundary Flat Lagoons. While small in size these lagoons remain close to pristine with natural connectivity to the estuary. Barramundi have been tagged in these lagoons with one recaptured at Double Heads south of Yeppoon (Suntag, 2004).

To the south of Stanage Bay is the largest freshwater wetland area in Central Queensland. The Torilla Flats wetland is estimated to be 170 square kilometres in size (*figure 51*). It is primarily a grassed wetland with some treed areas. The wetland has been ponded along the upper tidal limit and the use of this wetland by fish is unknown. It is probable that before being ponded, this wetland was significant to fisheries resources.

In the SWBTA there are a number of small in-stream freshwater wetlands on creeks that flow into Shoalwater Bay. These include Raspberry Creek, Oyster Creek, Shoalwater Creek and Head Creek. All these are small, mostly pristine and are not under any known threat being in the SWBTA. The estuarine creeks in Shoalwater Bay are pristine and fishing effort is low. Barramundi stocks in these creeks are considered to be lower than other heavily fished areas such as the Fitzroy River (*pers obs.* Sawynok). This could be due in part to the healthy stocks of other competing species or the very small extent of freshwater wetlands supporting these estuaries.

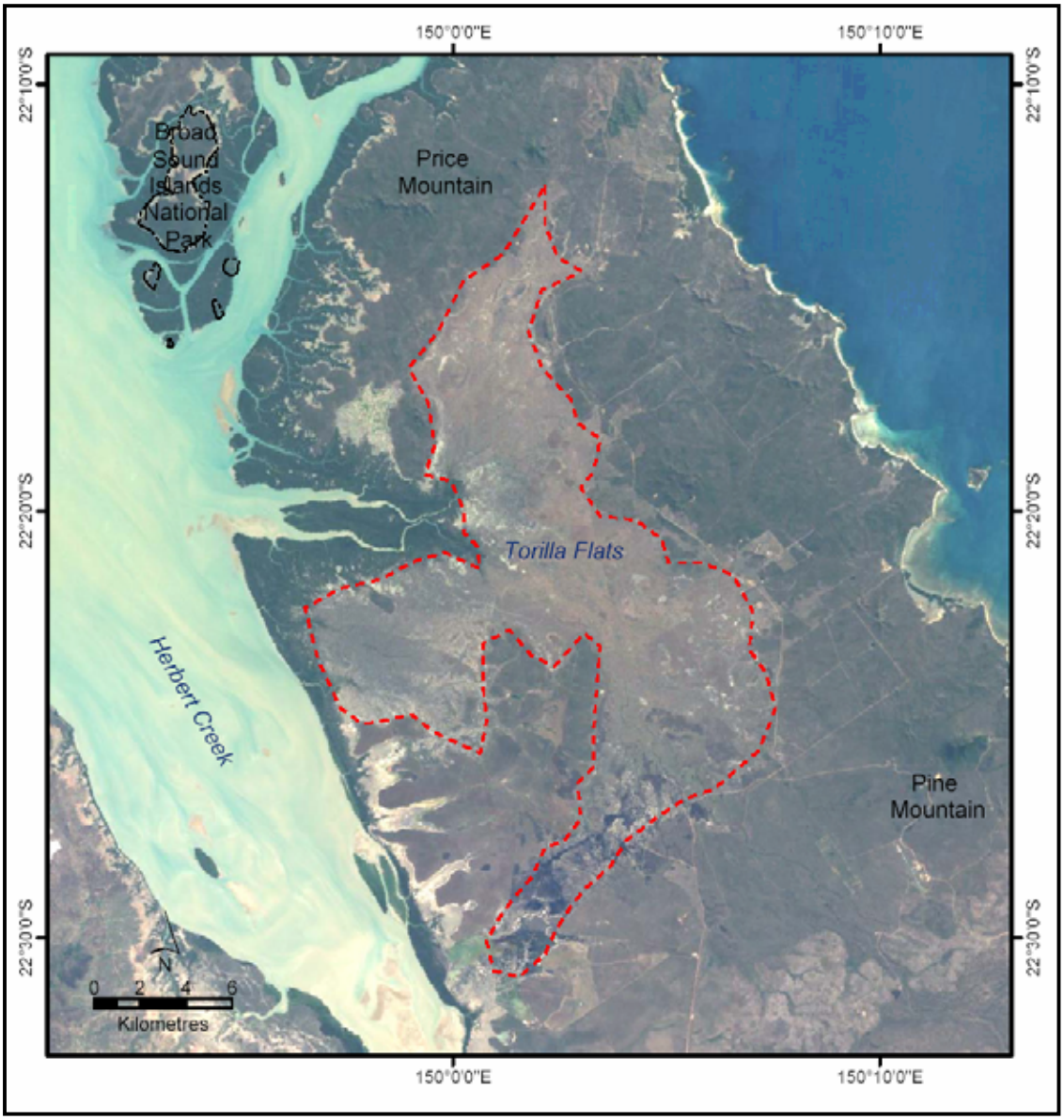

Figure 51: Torilla Flats wetlands south of Stanage Bay

Risks or threats to Broadsound wetlands:

1. Ponded pastures that reduce connectivity with the marine system.