Ref: WP25 029 RAI
Council Ref: MCUI 2025_5809/1

8 September 2025

The Chief Executive Officer
Douglas Shire Council
PO Box 723
Mossman, QLD 4873

Attention: Jenny Elphinstone
Via email: jenny.elphinstone@douglas.qld.gov.au

Dear Jenny,

INFORMATION REQUEST RESPONSE REGARDING PROPOSED DEVELOPMENT PERMIT FOR A MATERIAL CHANGE OF USE (IMPACT ASSESSMENT) FOR PERMANENT PLANTATION (ECOLOGICAL RESTORATION OF NATIONALLY SIGNIFICANT WETLAND AND SURROUNDS) AT CAPE TRIBULATION ROAD, LOWER DAINTREE

We refer to the Information Request dated 15 August 2025 in relation to the above-mentioned development application (Council Ref: MCUI 2025_5809/1). Please find herein a complete response to the matters contained within the Information Notice, pursuant to section 13.2(a) of the Development Assessment Rules ('the DA Rules').

For ease of reference, the item of the Information Request, applicable matter and response to each item is listed within **Schedule 1 – IRR register**.

We trust that the enclosed information assists in Council's continued assessment of the development application and in the event that further advices are sought we are here to assist.

Yours sincerely,

DOMINIC HAMMERSLEY
DIRECTOR / PRINCIPAL PLANNER
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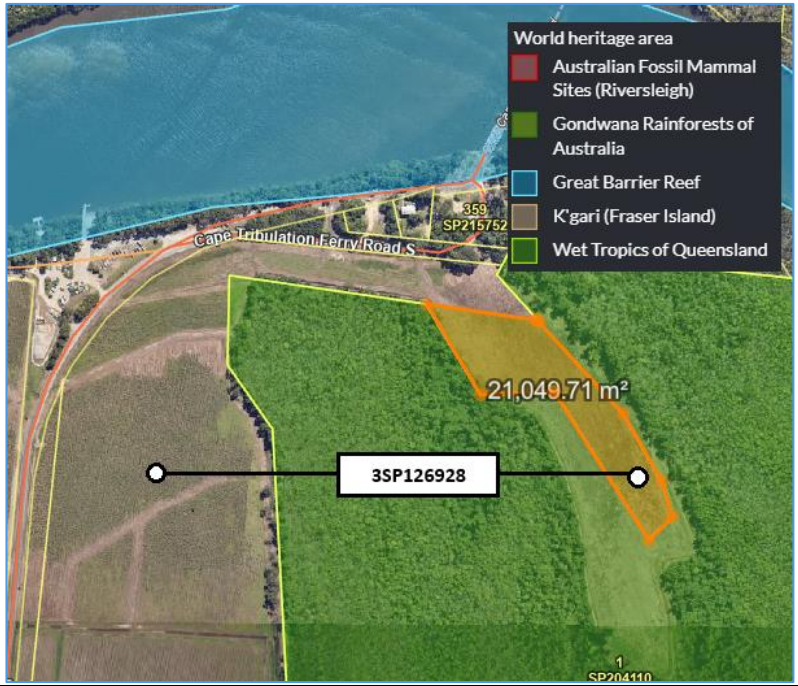
SCHEDULE 1 –
INFORMATION REQUEST RESPONSE REGISTER

SCHEDULE 1

PLAN

Information Request Response Register			
Project Name:	WP25 029 RAI	**Date:**	8/09/2025
Project Number:	WP25 029 RAI	**Prepared By:**	Cassie Tregea
Client:	Rainforest Rescue	**Reviewed By:**	Dominic Hammersley

IR #	Category	Information Request Actions	Response
1	**Conservation Significance UNESCO World Heritage**	UNESCO World Heritage Page 19 of the accompanying planning report states, "The site lies within the boundary of the Wet Tropics of Queensland World Heritage Area." An extract of the Wet Tropics of Queensland mapping appears to identify of only a very small part of the premises being part of Lot 2 on SR747, as detailed in the extract below of Map WTQ1 SH 7 Mossman, World Heritage Boundary Land, to be included in the World Heritage Area. Please confirm that the reference to "the site lies within the boundary of the Wet Tropics" is only in reference to part of Lot 2 on SR747.	Lot 2 on SR747 is not a recognised Title. The reference to "*the site lies within the boundary of the Wet Tropics*" applies to a portion of Lot 3 SP126928. Figure 10 in **Schedule 2** (Ecology Technical Memo) should assist Council in understanding the positioning of the site in the context of World Heritage Values. It is also relevant to note that part of the site (Lot 9 on SP143026) is identified as being within the 'Great Barrier Reef' World Heritage Area, as mapped in Queensland Globe.
2	**UNESCO World Heritage**	Please provide a calculation of the area of that part of Lot 2 on SR 747 that is within the boundary of the Queensland Wet Tropics World Heritage Area.	The part of Lot 3 SP126928 that falls within the WTWHA boundary is 2.1049 hectares:

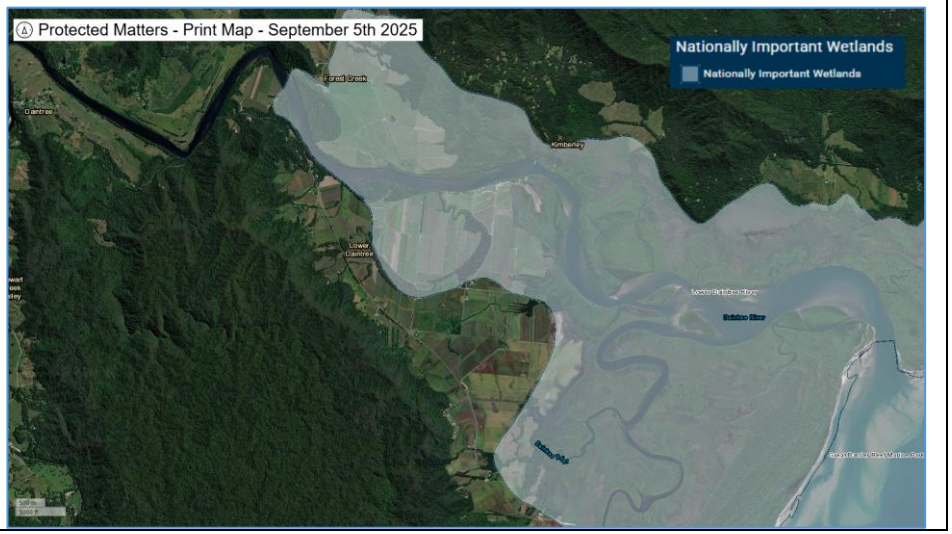
IR #	Category	Information Request Actions	Response
			
3	**UNESCO World Heritage**	Please provide advice as to whether any of the proposed activities associated with the material change of use, in particular the planting of various flora will require a permit from the Wet Tropics Authority. If a permit has been issued, please provide a copy of the approval issued by the Wet Tropics Authority.	The proposed Permanent Plantation does not require a permit from the Wet Tropics Management Authority (WTMA) as the activity involves revegetation using locally endemic species (*pers comm* Scott Buchanan, WTMA 2025).

IR #	Category	Information Request Actions	Response
4	**UNESCO World Heritage**	Please provide advice of weed species on the premises that is in the Wet Tropics and how these will be eradicated, removed and disposed of.	An assessment of weed species on the site has not been conducted. However, we note that 'Bana grass' which is recommended in Council's Information Request as an 'alternative crop' the subject of current trials is a hybrid of Napier/ Elephant Grass (*Pennisetum purpureum*) and Pearl Millet (*Pennisetum americanum*). Relevantly, *Pennisetum purpureum* is listed by WTMA in Information Sheet 12 as an undesirable plant and the invasive potential of Bana grass on World Heritage Values is therefore a concern within or adjoining the Wet Tropics given its invasive potential. The proposed development is for Permanent Plantation, comprising native plant species consistent with the pre-clearing Regional Ecosystems on the site and no weed species are proposed to be introduced as part of the proposed plantings. Notwithstanding, the Applicant is prepared to accept a condition of approval requiring the preparation of a Weed Management Plan that identifies weed management protocols and procedures.
5	**UNESCO World Heritage**	Please provide evidence that the continued cultivation for sugarcane production of the part of the land included in the Wet Tropics impacts on the integrity of the World Heritage Area and that such impact warrants the cessation of this land use.	**Schedule 2 – Ecology Technical Memo** and **Schedule 3 – GQAL Addendum Report** confirm the ecological significance and high sensitivity of the site and surrounds, and reiterate that the current land use is unsustainable, in consideration of market forces, soil erosion and hydrological constraints making it highly unsuitable for agriculture which has contributed to ecological decline. Only comprehensive ecological restoration, through staged revegetation of the site, can ensure the integrity of the site is maintained, and surrounding environments are protected. The proposed Permanent Plantation will deliver lasting benefits to the Daintree floodplain, the surrounding UNESCO World Heritage / Wet Tropics area and the Great Barrier Reef Marine Park.

IR #	Category	Information Request Actions	Response
6	**UNESCO World Heritage**	Please provide evidence that the continued cultivation, or alternative grazing, of that part of the premises not included in the Wet Tropics impacts on the integrity of the World Heritage Area and that such impact warrants the cessation of any cultivation other than replanting of endemic species.	Refer response to Information Request Item 5 and the following: • **Schedule 2 – Ecology Technical Memo** • **Schedule 3 – GQAL Addendum Report** We take the opportunity to remind Council of its obligations under the *Planning Act 2016* (particularly in respect to the context of the site in respect to the Great Barrier Reef Marine Park and Wet Tropics Management Area), the purpose of which states: *(1) The purpose of this Act is to establish an efficient, effective, transparent, integrated, coordinated, and accountable system of land use planning (**planning**), development assessment and related matters that facilitates the achievement of ecological sustainability.* *(2) **Ecological sustainability** is a balance that integrates—* *(a) **the protection of ecological processes and natural systems at local, regional, State, and wider levels**; and* *(b) economic development; and* *(c) the maintenance of the cultural, economic, physical and social wellbeing of people and communities.* *(3) For subsection (2)—* *(a) protecting ecological processes and natural systems includes—* *(i) **conserving, enhancing or restoring the life-supporting capacities of air,***

IR #	Category	Information Request Actions	Response
			ecosystems, soil and water for present and future generations; and (ii) ***protecting biological diversity***; and (b) achieving economic development includes achieving diverse, efficient, resilient and strong economies, including local, regional and State economies, ***that allow communities to meet their needs but do not compromise the ability of future generations to meet their needs***; and (c) maintaining the cultural, economic, physical and social wellbeing of people and communities includes— (i) creating and maintaining well-serviced, healthy, prosperous, liveable and resilient communities with affordable, efficient, safe and ***sustainable development***; and (ii) conserving or enhancing places of special aesthetic, architectural, cultural, historic, scientific, social or spiritual significance; and (iii) providing for integrated networks of pleasant and safe public areas for aesthetic enjoyment and cultural, recreational or social interaction; and (iv) ***accounting for potential adverse impacts of development on climate change, and seeking to address the impacts through sustainable***

IR #	Category	Information Request Actions	Response
			development *(sustainable settlement patterns or sustainable urban design, for example).* Council has a unique opportunity before it to make a decision that will have a positive long-term impact on Local, State, National and World Heritage values that will benefit future generations. On the balancing of interests under a triple-bottom line assessment (*id est* ecological sustainability), the proposed Permanent Plantation development unequivocally outweighs the limited economic benefit of land (if any) that has historically been used for sugar cane production but is otherwise significantly constrained by a multitude of factors including: 1. Flood 2. Storm Tide Inundation 3. Salinity 4. Lack of infrastructure 5. Acid Sulfate Soils (of which the Ecology Technical Memo identifies likely exposure due to historical land management practices) 6. Erosion Prone Area 7. Coastal Management District 8. Great Barrier Reef Marine Park Zoning 9. Wet Tropics Management Area Zoning 10. Market factors and infrastructure closures that have led to a catastrophic impact on the sugar cane industry.

IR #	Category	Information Request Actions	Response
-	**National Significance**	The application form references the development to be the restoration of "nationally significant wetland and surrounds." The accompanying planning report states the McDowell Swamp Oxbow to be, "listed as a Nationally Important Wetland" and listed in the Directory of Important Wetlands in Australia (DIWA)." The accompanying report also states the site, "is also part of a National Heritage Place." While the lower Daintree River is a listed wetland, a search of the Commonwealth website listing of nationally significant wetlands did not appear to identify the McDowell Swamp Oxbow as a listed wetland. See the following link to the database.	The McDowell Swamp Oxbow is part of the Lower Daintree River listing under the Directory of Important Wetlands in Australia (DIWA). We refer Council to the Australian Government Department of Climate Change, Energy, the Environment and Water Protected Matters Search Tool at the following link: Protected Matters Search Tool - DCCEEW For the convenience of Council we also provide the following extract from the Protected Matters Search Tool which identifies this 'Nationally Important Wetland' as relevant to the site: 

IR #	Category	Information Request Actions	Response
7	**National Significance**	Please provide the citation of significance and supporting documentation for the national significance of the McDowall Swamp Oxbow.	The McDowell Swamp Oxbow is part of the Lower Daintree River listing under the Directory of Important Wetlands in Australia (DIWA). Refer **Schedule 4 – Lower Daintree River – QLD154 Information Sheet**.
8	**National Significance**	Where it is inferred the proposal has regard to the Lower Daintree River Wetland, please provide a copy of the supporting cited references.	Citations and/or relevant documents in respect to section 2.2.7 of the Planning Report are identified as follows[1]: • Tait, J (2006)Daintree Oxbow - McDowell Swamp. Identified Management Issues and Options. Report prepared by WetlandCare Australia. • 'Douglas Shire Wetlands' Australian Government (refer **Schedule 5**) • Marine Deliens *pers comm* (June 2025) Rainforest Rescue, adapted from '*Environmental Reports, Biodiversity and Conservation Values Biodiversity Planning Assessments and Aquatic Conservation Assessments*'. For the selected area of interest Lot: 9 Plan: SP143026 (June 2025) p.16, Department of the Environment, Tourism, Science and Innovation (refer **Schedule 6**).

[1] Council's Information Request does not identify the Planning Report section(s) in which cited references are sought; however, for the purposes of the Information Request Response we assume that section 2.2.7 is the relevant section.

IR #	Category	Information Request Actions	Response
9	**Matters of State Environmental Significance (MSES)**	The state mapping of MSES, as provided in the application details only limited parts of the premises to have Wetlands and Waterways significance. Please provide an expert ecological analysis to substantiate the extent of landscape change to the premises necessary to maintain the integrity of the mapped and identified as MSES beyond the Wetland Protection Area.	**Schedule 2 – Ecology Technical Memo** identifies Four Classes of MSES mapped on/near the site: 1. Conservation Areas (e.g., Daintree National Park, Marine Park). 2. Wetland Values (e.g., McDowell Swamp Oxbow – a High Ecological Significance wetland listed in DIWA). 3. Wildlife Habitat (endangered/vulnerable species). 4. Vegetation and Habitat (remnant/regrowth ecosystems, essential habitat). A further assessment of MSES linked to the site (by presence or biophysical processes) and the landscape changes needed outside the Wetland Protection Area (WPA) to maintain MSES integrity is discussed within **Schedule 2 – Ecology Technical Memo** (prepared by Econcern for Rainforest Rescue, September 2025).
10	**Storm Tide Inundation**	The accompanying Planning report references the Planning Scheme mapping for Storm Tide Inundation Maps, which were State provided mapping. The Planning Scheme Schedule 6 – Planning Scheme Policies, refers to the Cairns Region Storm Tide Inundation Study 2013. Since the introduction of the Planning Scheme Council undertook further study of storm tide inundation by receipt of an Innovation Funding Grant from the State Government. The resultant Douglas Shire Council and JB Pacific Storm Tide Methodology Study was adopted by Council and is available on Council's website via the following link. https://douglas.qld.gov.au/download/Final-Version-Storm-Tide-Inundation-MethodologiesStudy.pdf Council provides a free online Storm Tide Inundation property	The Douglas Shire Planning Scheme is the relevant local planning instrument for the assessment of the development application and the 'Storm Tide – High Hazard' and 'Storm Tide ' Medium Hazard' Inundation maps contained in the Planning Scheme have been relied upon for the purposes of the development application, being the maps referred to in section 8.2.4.1 'Application' section of the Flood and storm tide hazard overlay code i.e. the Storm Tide plans referred to in the development application are the relevant plans that form part of the local categorising instrument. Where Council seeks to rely on the JB Pacific Storm Tide Inundation mapping it is recommended that this form a future amendment to the Planning Scheme for the purposes of transparency. Notwithstanding, Chapter 2, section 8 (4) of the *Planning Act 2016* states: *(4)* ***To the extent of any inconsistency—***

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		tool that interprets the Study for individual lots with mapping and identifying future development requirements. Refer to the following link for the Storm Tide Inundation Tool. The tool searches both via street address and lot and plan detail. https://maps.douglas.qld.gov.au/trueview/dsc_storm/disclaimer The Study mapping, unlike the State Mapping, does not identify the whole of lots to be inundated by storm tide. Refer to the map below. The Douglas Shire Council and JB Pacific Storm Tide Methodology Study took into account the impact of mangrove vegetation on storm tide inundation flows. Storm Tide Inundation is a natural flow of saltwater to ecosystems in areas of inundation. Please provide advice as to the necessity of reliance on the broad scale mapping by the State and the current Planning Scheme rather than the more refined and more recently adopted Douglas Shire Council and JB Pacific Storm Tide Methodology Study.	*(a) a **State planning policy applies instead of a regional plan or local planning instrument**; and* *(b) a regional plan applies instead of a local planning instrument; and* *(c) a planning scheme applies instead of a planning scheme policy;* State Planning Policy mapping relevant to the site is contained at **Schedule 7** and identifies that the following coastal and flood constraints occur comprehensively across the site: • Coastal Management District • Erosion Prone Area • High Storm Tide Inundation Area • Medium Storm Tide Indundation Area. The site is significantly constrained by coastal processes, including storm tide inundation, and we implore Council to holistically consider the coastal processes on the site and recognise the hydrologic and sediment trap functions of the site (in respect to the protection of World Heritage Values and in particular the Great Barrier Reef), which are significantly benefited under the Permanent Plantation proposal, restoring the protective functions of the Oxbow to its pre-clearing high functioning state.

IR #	Category	Information Request Actions	Response
11	**Storm Tide Inundation**	Please provide an analysis of the impact of reduction of storm tide inundation flows, if any, by the proposed permanent plantation, on the existing ecosystems and areas of inundation.	It is recognised that the site is located within a low-lying floodplain with poor drainage, influenced by tides and sea-level rise, which has been historically cleared and drained for agriculture, leaving fragmented wetlands, artificial drains, and degraded soils and vegetation. The current land use has several impacts on the land, including loss of floodplain wetland functions (water detention, aquifer recharge, fish passage), altered hydrology from drains and tide gates, exposing potential acid sulphate soils, elevated sediment/nutrient loads affecting the Great Barrier Reef Marine Park and habitat fragmentation, weed invasion, inappropriate fire regimes, and blackwater discharge risks. The Ecology Technical Memo provided within **Schedule 2** contends that the proposed Permanent Plantation comprising pre-clearing Regional Ecosystems is '*prudent, ecologically warranted, and required by the Far North Queensland Regional Plan for the health and protection of the Great Barrier Reef*' as the restorative effects of the Permanent Plantation will reinstate the pre-clearing hydrological regime, improve soil retention and erosion resilience in the context of storm tide inundation. See **Schedule 2** for further detail.
12-15	**Good Quality Agricultural Land**	Schedule 8 of the report application includes the Good Quality Agricultural Land Assessment report prepared by Dr Charissa Rixon. Page 4 of the report includes an assumption that the closure of the Mossman Mill requires a reassessment of Agricultural Land Classifications. Council understands there are agreements in place to continue transportation of the sugarcane to the Mulgrave Mill for at least the next four to five years. Furthermore, trials are being	**Schedule 3 – GQAL Addendum Report**, prepared by Dr Charissa Rixon of T.R.A.P. Services on 2 September 2025, responds to Items 12-15, in relation to the Good Quality Agricultural Land Assessment Report submitted on 7 August 2025. The addendum confirms that while current agreements allow for subsidised transport of 200,000 tonnes of sugarcane in 2024 and 2025, an estimated 70,000 tonnes will remain uncrushed each year, creating reliance on more than 10,000 truck trips annually. This system is only viable with subsidies, and beyond 2025, the industry is awaiting Transport and Main Roads (TMR) approval for larger 40-tonne trucks to make cane transport cost-effective. Without

IR #	Category	Information Request Actions	Response
		currently undertaken on former sugarcane production land for alternative crops – including sorghum and Bana grass. The premises is within the Mossman Groundwater Management Area, Mossman Zone 1B of the Wet Tropics Water Plan. Lot 3 on SP126928 contains a registered water bore. The report notes that the land does not have available irrigation licenses. Please provide the date and version of the Good Quality Agricultural Land Assessment report prepared by Dr Charissa Rixon that was submitted as part of the application. Please provide an updated report having regard to the current agreements in place to continue sugarcane production. Please provide an updated report where the storm tide inundation considerations have regard to the recent Douglas Shire Council and JB Pacific Storm Tide Methodology Study. Please provide an updated report identifying the amount of water license required for alternative crops, in particular having regard to the high rainfalls experienced in the local area.	approval, approximately 26% of cane could remain uncrushed, particularly as the farms assessed are located 30 km north of Mossman, further increasing costs compared with closer cane lands. Alternative crops were also considered, with Bana Grass showing some potential but carrying a high risk of invasiveness in flood-prone areas, and Sorghum proving unsuitable due to high disease pressure and low yields in the wet tropics. Although the region receives high rainfall, irrigation is still required for small or grain crops, with an estimated 4.8 megalitres per hectare needed for a typical 16-week cycle. However, local water sources are likely brackish, which restricts crop viability and risks long-term salinity issues. The Addendum Report includes updated information with respect to Storm Tide information, concluding that the elevation assessment undertaken by Dr Rixon was not distinct to the mapping included in the JB Pacific Storm Tide Methodology Study (refer response to Information Request Item 10 for further discussion with respect to Storm Tide mapping and its use within the context of the development application). After considering all relevant factors, Dr Rixon concludes that the land should remain classified as ALC Class D – Not Suitable for Agriculture, consistent with the findings of the original Final Report.

SCHEDULE 2 –
ECOLOGY TECHNICAL MEMO

SCHEDULE 2

econcern

environmental consultancy
'*local to global – catchment to coastal*'

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To: Tate Brammer General Manager Finances and Operations Rainforest Rescue

From: Jim Tait Senior Environmental Scientist

Date: 3rd September 2025

Subject: **Technical Memo – Land Management Requirements to Protect MSES 110 Cape Tribulation Road, Lower Daintree.**

Figure 1. Oblique aerial view north showing approximate boundary of combined lots collectively referred to as 110 Cape Tribulation Rd, the Area of Interest (AOI) included in Rainforest Rescue's DA to Douglas Shire Council.

Background

This technical memo has been prepared in response to a request from Tate Brammer General Manager Finance and Operations at Rainforest Rescue (RR) to respond to a request from Douglas Shire Council (DSC) for further information to support a Development Application (DA) lodged by RR with DSC for 110 Cape Tribulation Rd (the Area Of Interest AOI). This DA is specifically for a "Material Change of Use *Permanent Plantation - Ecological Restoration of Nationally Significant Wetland And Surrounds* (wildPLAN 2025).

The request from DSC communicated to RR was to:

"provide an expert ecological analysis to substantiate the extent of landscape change to the premises necessary to maintain the integrity of the mapped and identified as MSES beyond the Wetland Protection Area."(sic)

It is assumed that the required ecological analysis is for "…*integrity of the **areas** mapped and identified as MSES…."*

Scope of Work

The scope of work for the preparation of this technical memo interpreted from this information request is to:

- Identify the Matters of State Environmental Significance (MSES) associated with 110 Cape Tribulation Road AOI either by occurrence on the site or by biophysical process linkages from the site to the associated MSES
- Use expert ecological analysis to identify the extent of landscape change required outside the *Wetland Protection Area** (Figure 2) to deliver Best Management Practices (BMP) necessary for maintaining the integrity of the mapped and identified MSES associated with the AOI.

*Note the information request does not specify if the *Wetland Protection Area* (WPA) referred to concerns only the mapped boundary of the High Ecological Significance wetland i.e., the *WPA wetland* and/or the broader buffered *WPA trigger area* (see Figure 2). However, the information request also notes under a bolded header **"Matters of State Environmental Significance (MSES)"** that:

"*The state mapping of MSES, as provided in the application details only limited parts of the premises to have Wetlands and Waterways significance*."

From this statement it is interpreted that the WPA referred to in the request is the *WPA wetland* and not the *WPA trigger area* as the latter occupies not a '*limited area'* but the majority of the combined Lots (see Figure 2) collectively referred to as 110 Cape Tribulation Rd in the DA application (wildPLAN 2025).

Methods

This technical memo has been prepared as a desktop study. Areas of MSES have been ascertained from Qld State government mapping including Matters of State Environmental Significance (MSES) and component Regional Ecosystems (REs) depicted on Qld Globe GIS platform mapped outputs and described in associated RE database (Qld Herbarium 2023). A cross reference of MSES identified via Qld Globe mapped outputs was also provided by DETSI environmental reports containing MSES lists generated for each property lot collectively forming the overall Area of Interest (AOI) included in the DA application as appendices (wildPLAN 2025). Additional biophysical information including site erosion and flooding /storm surge hazards associated with topography and soil types was also obtained by perusal of information included in the DA submission (wildPLAN 2025). Aerial imagery available on Qld Globe and Google Earth was also interpreted to provide additional site context in relation to landform, remnant vegetation, site disturbance and biogeographic setting.

General and ecosystem specific ecological theory and catchment biophysical process understanding was then applied to identify the BMP required to maintain the integrity of the mapped and identified MSES associated with the AOI but pertaining to land outside the mapped boundary of the High Ecological Significance (HES) wetland.

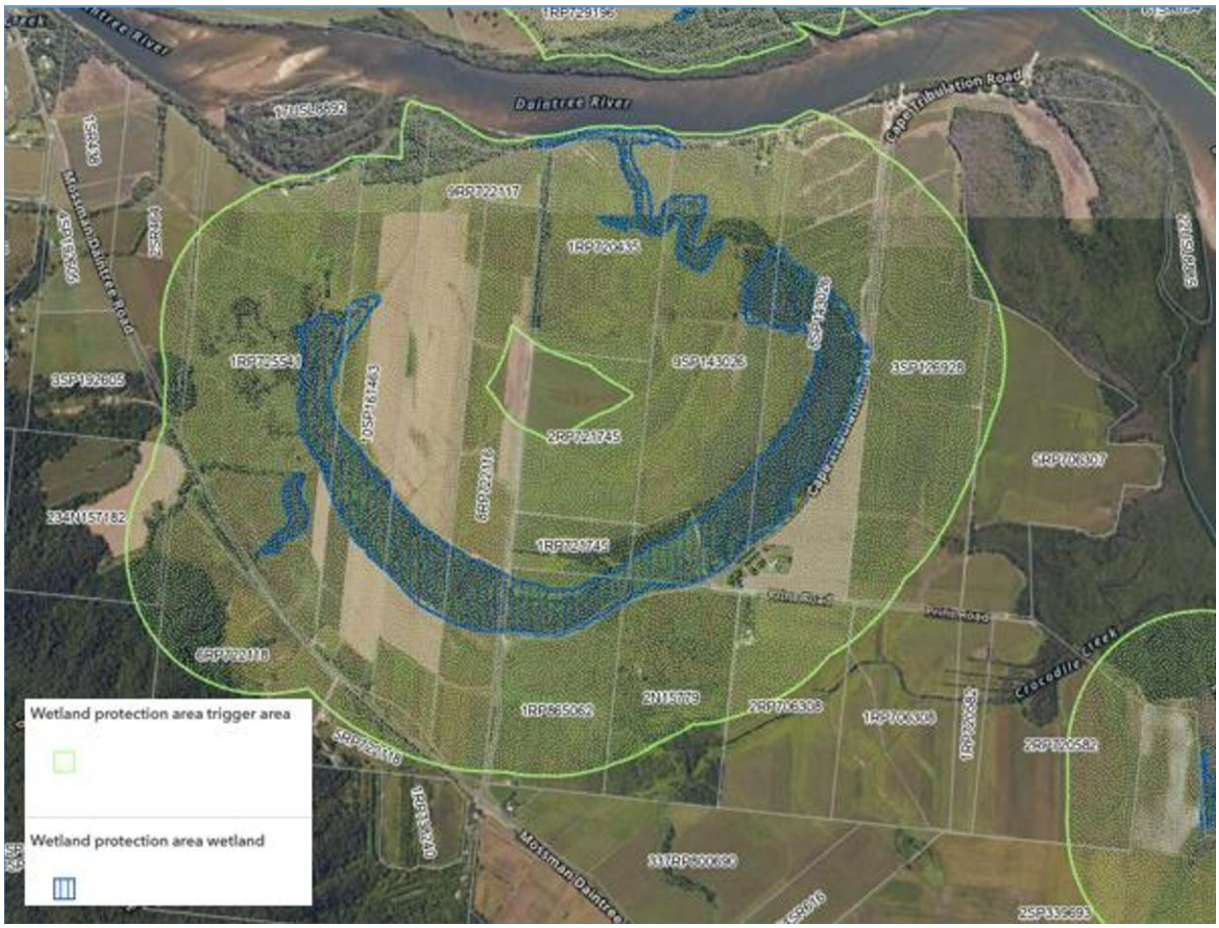

Figure 2. National *Directory Important Wetlands in Australia (DIWA)* Listed and High Ecological Significance (HES) classified McDowell Swamp Oxbow Wetland. Defined Wetland Protection Areas (WPA) includes WPA wetland (in blue) and WPA trigger area (in green shade) – Source DA Mapping System.

Matters of State Environmental Significance Associated with the AOI

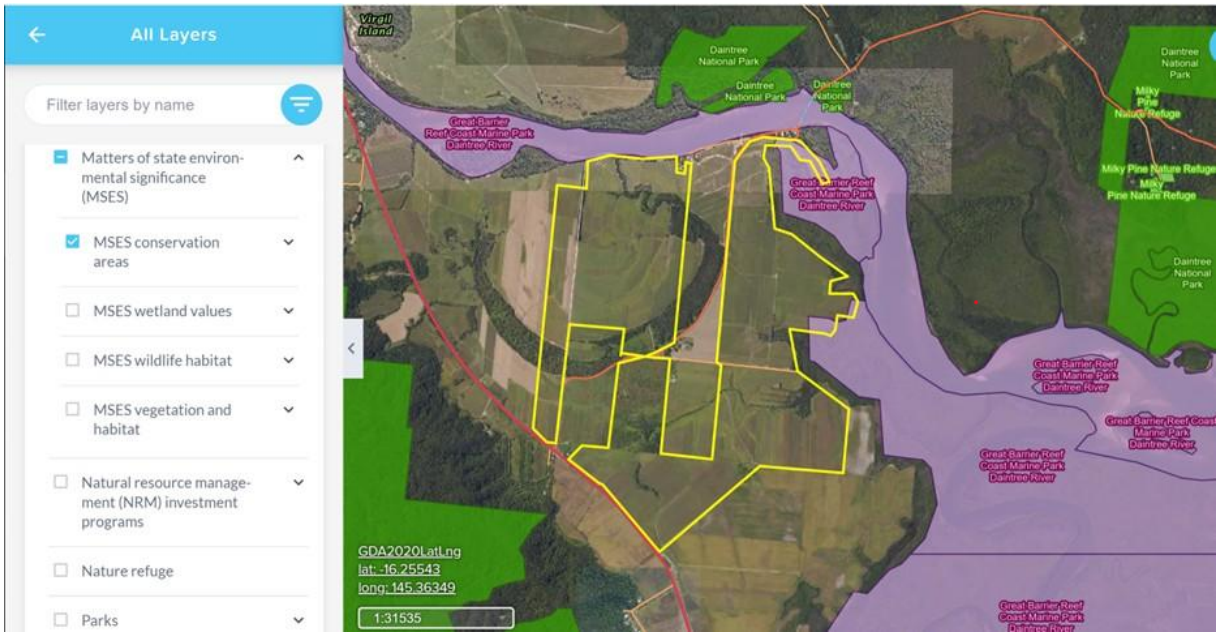

Figure 3. Qld Government mapped Matters of State Environmental Significance (MSES – Conservation Areas) in relation to 110 Cape Tribulation Rd AOI (yellow polygon) and the adjoining lower Daintree River

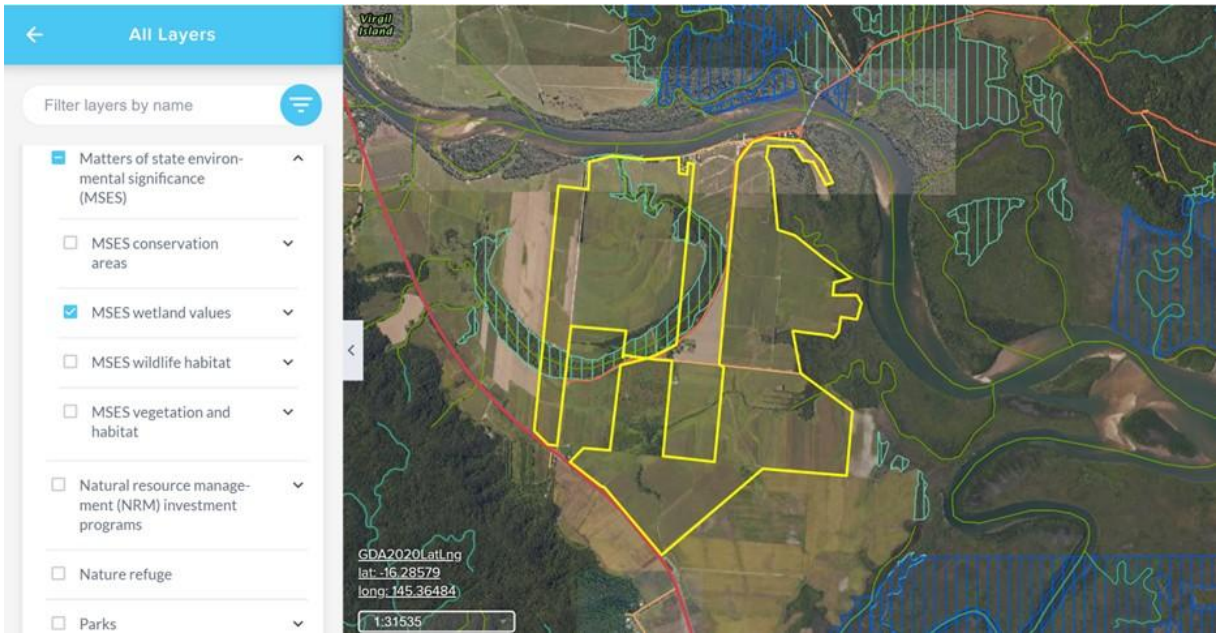

Figure 4. Qld Government mapped Matters of State Environmental Significance (MSES – Wetland Values) in relation to 110 Cape Tribulation Rd AOI (yellow polygon) and the adjoining lower Daintree River

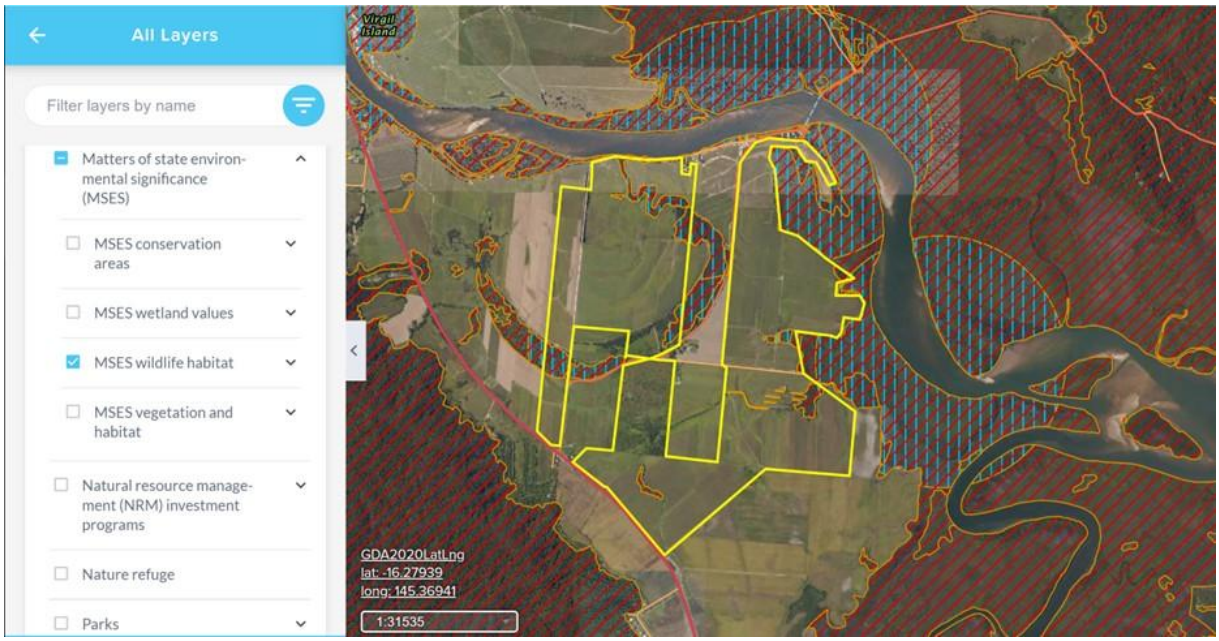

Figure 5. Qld Government mapped Matters of State Environmental Significance (MSES – Wildlife Habitat) in relation to 110 Cape Tribulation Rd AOI (yellow polygon) and the adjoining lower Daintree River

Figure 6. Qld Government mapped Matters of State Environmental Significance (MSES – Vegetation and Habitat) in relation to 110 Cape Tribulation Rd AOI (yellow polygon) and the adjoining lower Daintree River

Four broad classes of MSES listed on the Qld Globe platform are mapped as occurring within or in linked biophysical proximity to the 110 Cape Tribulation Rd AOI (see Figures 3 – 6). These include:

1. MSES – Conservation Areas
2. MSES – Wetland Values
3. MSES – Wildlife Habitat

4. MSES – Vegetation and Habitat

Each of these broad classes are further subdivided into a range of component types which have been identified for each lot in the DA AOI by DETSI Environmental Reports appended to the DA (wildPLAN 2025). A full list of the broad classes of MSES and their subcomponents found across the AOI and relevant BMP landscape changes nominated as necessary for maintaining their integrity are presented in Table 1.

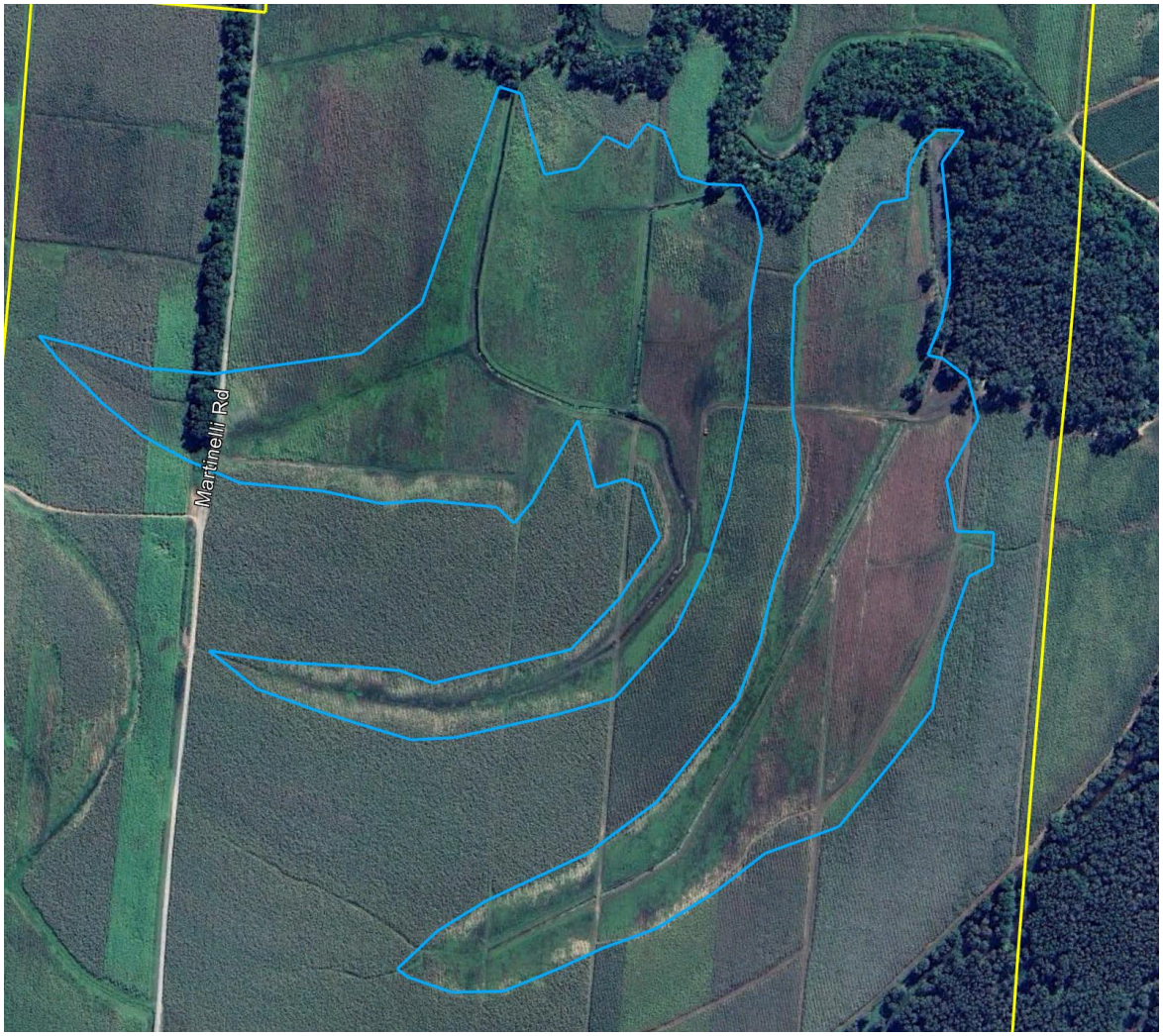

Figure7. Interpreted boundary and non-exhaustive depiction of prior wetland areas drained to facilitate agricultural development across three lot parcels in the central northern section of the AOI. Such features occur across the AOI. The agricultural limitations of these areas are apparent by historically poor cane establishment /growth. Scalded exposed sediment margins of these areas also indicate their erosion and sediment export hazard under current land use. NB drains excavated to drain prior wetlands now form State mapped watercourse features (see Figure 8).

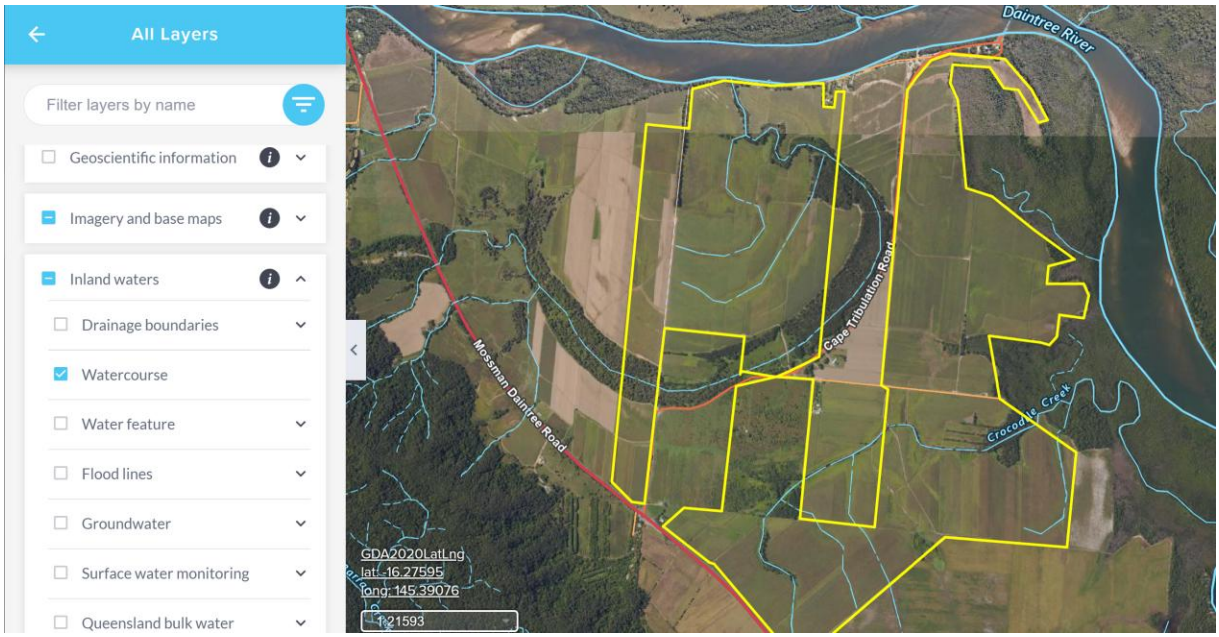

Figure 8. State mapped watercourse features across the AOI include most (but not all) of the excavated drain network and drainage depressions that form facultative riparian zones draining to the receiving environment of the Great Barrier Reef Marine Park (see for example southwestern and northwestern tributary catchments of Crocodile Ck).

Figure 9. Aerial image of drained prior tidally influence wetland within the northwestern tributary catchment of Crocodile Creek within the AOI. Red signatures in shallow wetland areas are interpreted as indicative of iron flocculants and the exposure of Potential Acid Sulphate Soils (PASS) by drainage. Revegetation of this site and its contributing catchment would address such impact risks.

Discussion and Conclusions

The AOI occurs on a hydrologically dynamic, low elevation, poorly drained floodplain site in a tidally influenced reach of the lower Daintree River valley in an area subject to wet season inundation, river overbank high flows, potential storm surge inundation and accelerating sea level rise.

Matters of State Environmental significance (MSES) are mapped across nearly all remnant vegetation including wetlands associated with the AOI and for the receiving estuarine environment and regionally proximal floodplain, foot hill and coastal range areas. Many of these ecological assets also qualify as matters of national environmental significance under Federal *EPBC Act* legislation.

All pre-clear regional ecosystems mapped for the alluvial Land Zone (3) on the site are associated with palustrine or riverine wetlands and riverine and estuarine wetlands also dominate adjoining Land Zones interfacing the Daintree River.

Within the contemporary land suitability and development assessment framework it is unlikely that any substantive portion of the AOI would be considered suitable for greenfield development for intensive forms of agricultural or other land use.

In such a low-lying wetland dominated landscape the biophysical integrity of downstream receiving environments which include MSES such as wetlands with High Ecological Value (HEV) waters and Marine Parks is tightly coupled to the catchment condition and hydrological process integrity of the adjoining land areas including the AOI.

The ecological integrity of the AOI is impacted by the legacy of past development which includes:

- the clearing and fragmentation of wetland (palustrine, riverine and estuarine) associated vegetation,
- road crossings constructed through oxbow wetland basin,
- excavation of a constructed drainage network,
- the draining of floodplain wetlands and
- the installation of flood / tide gate.

The impacts from this development legacy would be continuing to operate upon MSES both on-site and off-site within the receiving environment via:

- Loss of floodplain run off detention and overbank flow velocity baffling functions
- Loss of protective vegetation cover and exposure of floodplain soils to catchment run off and river overbank flow generated erosion
- Draining of shallow alluvial aquifers which supply wetland associated regional ecosystems, the HES wetland and adjoining estuarine system and present Potential Acid Sulphate Soils PASS exposure risks via the constructed drainage network discharges (see Figure 9)
- Altered catchment run off, high flow, groundwater and tidal hydrology
- Generation of elevated sediment and nutrient catchment loads
- Loss of habitat connectivity (terrestrial and aquatic /fish passage)

- Edge effects on remnant vegetation i.e., promotion of sun loving and other weed species, suppression of natural regeneration and introduction of inappropriate fire regime hazards to fire sensitive or dependent vegetation communities
- Invasion of exotic aquatic pasture grasses, loss of native aquatic macrophyte communities, increased loads of biological oxygen demanding (BOD) organic material, reduced flow and fish passage connectivity and increased risks of anoxic 'blackwater discharges' to receiving estuary

The ongoing cumulative effects of this suite of operating impacts means that the MSES on or associated with the site cannot be maintained under the status quo and are committed to a trajectory of ongoing decline of their condition and integrity. Best Management Practices (BMP) in ecological land management need to be implemented outside areas hosting MSES to secure their condition. While the specific proportion of the AOI that need to be bought under ecological land management to maintain the integrity of associated MSES cannot be readily defined by a desktop study it is sufficient to conclude based on the assessment of BMP nominated for each MSES (Table 1) that it would entail the greater proportion of the AOI.

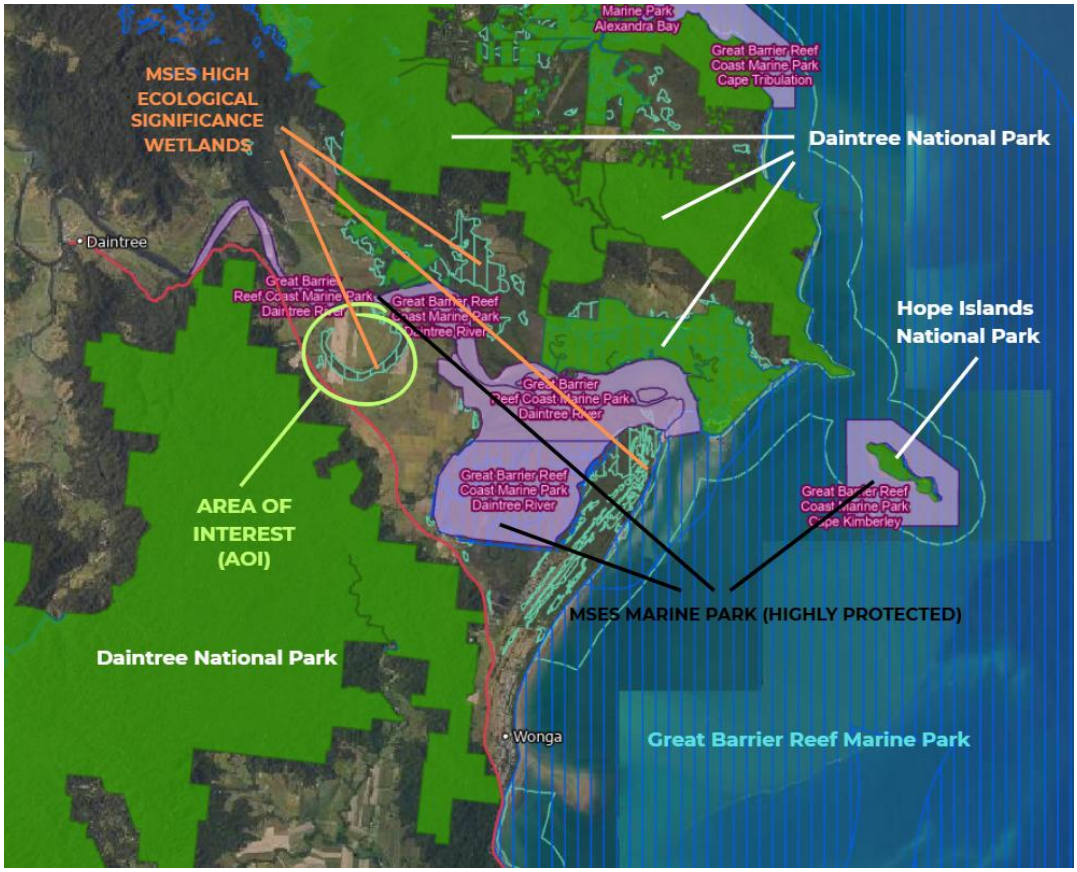

Figure 10. Regional context of the Area of Interest (AOI) to biophysically linked Matters of State Environmental Significance (MSES) such as protected areas and the receiving environment of the Great Barrier Reef Marine Park.

Given the existing and prospective ecological values of the site (if subject to ecological restoration), and potential biodiversity conservation benefits for adjoining protected areas including the Great Barrier Reef Marine Park receiving environment and proximal National Park floodplain, foot slopes and ranges (see Figure 10 above), the staged and comprehensive revegetation of the entire AOI to regional ecosystems representative of the pre-clear floodplain mosaic (as proposed in the Rainforest Rescue DA) is prudent, ecologically warranted, and required by the Far North Queensland Regional Plan for the health and protection of the Great Barrier Reef.

Dot Point Summary

- Landscape setting of AOI is poorly drained alluvial landforms abutting areas of tidal influence that is dominated by palustrine, riverine and estuarine wetlands and subject to wet season inundation, river overbank flows, storm surge hazard and emerging sea level rise
- In contemporary land suitability and development assessment framework AOI would not be considered suitable for greenfield development for agricultural use
- Site has outstanding ecological values defined as MSES. Also hosts MNES.
- Legacy of past development including clearing and fragmentation of floodplain and wetland vegetation and wetland draining commits site to trajectory of ongoing condition decline for associated MSES
- Existing and prospective ecological values of the site if subject to ecological restoration, and benefits for adjoining protected areas including the Great Barrier Reef Marine Park receiving environment and proximal National Parks, warrant the staged and comprehensive revegetation of the entire AOI to regional ecosystems representative of the pre-clear floodplain mosaic (as proposed in the Rainforest Rescue DA).

Table 1. Broad classes of MSES and their subcomponents found across the AOI and relevant landscape changes associated with BMP practices nominated for maintaining their integrity

MSES	Occurrence in Relation to DA AOI	Ecological Needs / Impact Hazards and Assessment Notes	Recommended Land Changes /BMP to maintain MSES Integrity
MSES – Conservation Areas			
State Marine Parks-highly protected zones	Receiving Environment at downstream margin AOI catchments	Where Marine Parks are receiving environments, contributing catchment condition and load exports are as important to the protection of their values and ecosystem process integrity as onsite management. Impact hazards are associated with elevated contaminant loads in contributing catchment (sediment, nutrients, chemical residues), and altered surface, groundwater and overbank flow hydrology. Sediment load hazard is linked to floodplain and riparian vegetation cover and condition and land use intensity (NLWRA 2002a & b). The AOI currently has very poor floodplain catchment condition including altered hydrology (deep drainage, loss of detention function) and elevated sediment exports due to historic clearing and draining of wetland vegetation to facilitate agricultural development (Figure 7).	Hydrology and high flow scour erosion protection of Daintree floodplain within AOI should be re-instated by revegetation of areas historically occupied by wetlands seeking to reinstate vegetation representative of the pre-clear regional ecosystem mosaic. While the specific extent of the AOI that was historically comprised of wetland associated Regional Ecosystems has not been determined by this assessment it is salient to note that all pre-clear regional ecosystems mapped by the Qld Herbarium for the alluvial land zone within the AOI i.e., 7.3.5c, 7.3.7b, 7.3.23a and 7.3.25a are all wetland associated. Furthermore, creation of vegetated buffer areas along historically cleared margins of the Marine Park adjoining the AOI should also be sought to minimise the potential for edge effects and to reinstate natural ecotonal (terrestrial – marine boundary) habitat values and functions.

MSES	Occurrence in Relation to DA AOI	Ecological Needs / Impact Hazards and Assessment Notes	Recommended Land Changes /BMP to maintain MSES Integrity
		In addition to aquatic and marine values, the Daintree River component of the Marine Park also hosts riverine and estuarine vegetation communities. Where land has been historically cleared into these vegetation communities, they are subject to edge effect impacts such as weed invasion and have often loss ecotonal (boundary) habitats.	
Daintree National Park	Within same Daintree River valley reach on opposite banks of river and adjoining coastal ranges	The values, integrity, and biodiversity conservation functional viability of National Parks is determined by a range of both on and off reserve factors, the latter including the condition and management of adjoining non-conservation tenure land holdings. These factors include national park size, representativeness of the pre-clear landscape mosaic, regional landscape connectivity and the impact of edge effects including weed invasion and fire regime introduced from adjoining lands. In the case of National Parks proximal to the AOI within the lower Daintree Valley, they are predominantly associated with coastal ranges and the lower	Improvements in regional landscape habitat connectivity and the pre-clear representativeness of remnant habitat would assist in maintaining the biodiversity conservation integrity of National Parks within the lower Daintree valley. It is recommended that targeted revegetation of the pre-clear regional ecosystems of the AOI should be implemented to create enhanced lateral habitat connectivity from the Daintree River toward National Park ranges to the south of the AOI and by proximity to the National Park tenured riverbank to the immediate north of the AOI. Longitudinal habitat connectivity should also be promoted by revegetation of contiguous ecotonal buffers representative of pre-

MSES	Occurrence in Relation to DA AOI	Ecological Needs / Impact Hazards and Assessment Notes	Recommended Land Changes /BMP to maintain MSES Integrity
		estuarine reaches and adjoining supra tidal lowlands of Daintree River tributaries. Ecosystems representative of alluvial Land Zone 3 are poorly represented in the National Park estate and habitat connectivity across the lower Daintree Valley has been lost to historical clearing.	clear regional ecosystems along the margins of remnant riverine, palustrine and estuarine wetland vegetation across the AOI.
MSES – Wetland Values			
High Ecological Significance (HES) wetlands	Central oxbow wetland and lower reach of floodplain distributary draining oxbow.	The HES wetland within the AOI is known as the McDowell Swamp Oxbow and officially listed in the Directory of Important Wetlands in Australia (DIWA). It's condition and management needs have been previously identified including by a State Aquatic Conservation Assessment (ACA) that noted it as "*a site of highest ecological importance, under threat from surrounding land uses, and a key focus for rehabilitation effort*". The contributing catchment for this wetland shares attributes described above for the Marine Park i.e., it is hydrologically modified by floodplain clearing and	To maintain (& re-instate) the integrity of the HES wetland within the AOI, a range of BMP management activities should be implemented on areas external to (and within) the HES wetland boundary. Principal amongst these is revegetation of the Daintree floodplain and ecotonal areas adjoining the wetland to a pre-clear regional ecosystem mosaic. This would serve to reinstate local catchment run in hydrology and sediment and nutrient loads as well as overbank flow hydrology to predevelopment conditions. It would also provide habitat connectivity to support the full realisation of nominated wildlife and essential habitat values (discussed below) and reduce the

MSES	Occurrence in Relation to DA AOI	Ecological Needs / Impact Hazards and Assessment Notes	Recommended Land Changes /BMP to maintain MSES Integrity
		wetland drainage and now receives elevated loads of sediment and nutrients and experiences altered overland flow hydrology. The HES wetland's values and condition are also impacted by edge impacts associated with historical clearing to its ecotonal margin, loss of habitat connectivity, aquatic weed invasion, road crossings and downstream tidal barriers and altered fire regimes (Tait 2006).	abundance of sun loving invasive weed species promoted under existing cleared boundary edge effects. Longer term rehabilitation aspirations that should be considered for the site including management actions that would extend across areas within and external to the defined HES wetland boundary include: removal of within basin bunds / road crossings and downstream fish passage barriers, reinstatement of beneficial controlled burning for fire mediated vegetation types, re-establishment of canopy cover via revegetation within areas of the wetland basin historically subject to clearing and control of the exotic aquatic pasture species now dominating much of its emergent macrophyte zone.
Regulated vegetation – defined watercourse	Drainage centreline of oxbow wetland, and lowermost reach of southeastern catchment area	The management function of this defined MSES is to provide protection or riparian and associated edge (ecotonal) vegetation adjoining active drainage lines to maintain the functional values of the riparian zone including geomorphic protection of the channel, water quality protection (reduction sediment/nutrient inputs)	BMP to protect the integrity of MSES biophysically linked or associated with the site's surface drainage network would be to protect / establish pre-clear regional ecosystem riparian vegetation and ecotonal buffers along all active drainage areas of the AOI in addition to defined watercourses *(e.g. refer mapped watercourse features in Figure 8).* This

MSES	Occurrence in Relation to DA AOI	Ecological Needs / Impact Hazards and Assessment Notes	Recommended Land Changes /BMP to maintain MSES Integrity
		and wildlife habitat and corridor functions. These values and functions are threatened where there are breaks in the contiguousness of riparian vegetation or severe reductions in its lateral extent which reduces its corridor and protective buffer functions, undermines geomorphic stability and introduces edge effects such as weed invasion and inappropriate fire. The assessment of the AOI note that there is an extensive network of site drainage depressions and constructed (excavated) drainage networks that are not mapped as defined watercourse but functionally are. also warrant contiguous, connected riparian vegetation in terms of BMP.	should ideally include pre-clear palustrine wetland regional ecosystems along less defined drainage depressions and revegetation with novel riparian communities suited to the constructed (excavated) drainage network. NB this recommendation is consistent with the FNQ Regional Plan (Qld Govt 2009) Land Use Policy: *7.2.B Improved catchment management to maintain water quality and the health of the Great Barrier Reef is achieved in accordance with the Reef Water Quality Protection Plan 2003* (Qld & Aust Govt 2003) the latter of which recommends management actions "*to conserve and rehabilitate areas such as riparian zones and wetlands*".
Declared high ecological value waters (wetland)	Receiving environment downstream on opposite bank of Daintree River.	As per Marine Park conservation area MSES (above).	As per Marine Park conservation area MSES (above).
MSES – Wildlife Habitat			

MSES	Occurrence in Relation to DA AOI	Ecological Needs / Impact Hazards and Assessment Notes	Recommended Land Changes /BMP to maintain MSES Integrity
Threatened (endangered or vulnerable) wildlife	Within remnant vegetation associated with oxbow wetland, associated connected drainage depression and riparian frontage Daintree River	The management function of this defined MSES is to provide protection to remnant vegetation identified via habitat modelling and/or species records as suitable habitat for endangered and/or vulnerable fauna taxa. The integrity of the habitat values provided by this MSES depends on the level of connectivity it retains with other habitat areas, the extent of protective buffering surrounding it that secures it against edge effects i.e., weed invasion, inappropriate fire regime. And the diversity of habitat resources it provides access to via retained edge (ecotonal) habitats and the broader landscape mosaic of pre-clear regional ecosystems.	BMP for maintaining the integrity and values of MSES Wildlife habitat is revegetation of surrounding floodplain areas to maximise connectivity, reduce the potential for ongoing edge effect impact risks and to provide listed wildlife species access to the habitat resource diversity of the pre-clear landscape mosaic. Revegetation of the AOI with representative pre-clear regional ecosystems would serve to establish lateral and longitudinal habitat connectivity across the floodplain and protective buffers to existing remnant vegetation mapped as MSES Wildlife Habitat.
Special least concern wildlife	Within inundated areas of oxbow and adjoining wetlands and downstream reaches of eastern constructed drainage network	As above for threatened (endangered or vulnerable) wildlife	As above for threatened (endangered or vulnerable) wildlife
MSES – Vegetation and Habitat			

MSES	Occurrence in Relation to DA AOI	Ecological Needs / Impact Hazards and Assessment Notes	Recommended Land Changes /BMP to maintain MSES Integrity
Regulated Vegetation - Endangered/Of concern Regional Ecosystems in Category B (remnant)	7.1.4a: Mesophyll vine forest/mangrove complex in lowermost reach floodplain distributary drainage, 7.3.25a: *Melaleuca leucadendra* open forest and woodland northern and southern reaches floodplain distributary and 7.2.4c blue gum, bloodwood woodland on relict beach ridges.	The management function of this defined MSES is to provide protection to remnant vegetation that has recognised biodiversity conservation value on account of its reduced representation in the post clear landscape i.e., < 10% of pre-clear extent = endangered and <30% pre-clear extent = of concern. These extent thresholds provide an indication of the reduced provision of habitat and other ecosystem services provided by these regional ecosystems. The value and integrity of remnant endangered and of concern regional ecosystems is determined by their core size and boundary extent exposing them to edge effects i.e., weed invasion, inappropriate fire regime, and connectivity to suitable recruitment /successionary expansion areas.	BMP to maintain the integrity and value of this MSES is revegetation of surrounding floodplain area with representative pre-clear regional ecosystems to establish component species population connectivity and recruitment /population expansion opportunities and protective buffers to existing remnant vegetation with MSES Regulated Vegetation Endangered/Of Concern Regional Ecosystems.
Regulated Vegetation - Category R (GBR riverine regrowth)	Central basin of oxbow, ecotonal boundaries of lower reach floodplain distributary and Daintree River	The management function of this defined MSES is to protect and promote regrowth vegetation that is representative of riverine regional ecosystems that once established will provide protection or riparian and	BMP for maintaining the integrity and value of MSES riverine regrowth is to ensure for the regeneration /revegetation of not only defined riverine regrowth but of all areas within the AOI that function as riverine habitat i.e., drainage depressions

MSES	Occurrence in Relation to DA AOI	Ecological Needs / Impact Hazards and Assessment Notes	Recommended Land Changes /BMP to maintain MSES Integrity
	frontage and lowermost reach southeastern catchment.	associated edge (ecotonal) vegetation adjoining active drainage lines to maintain the functional values of the riparian zone including geomorphic protection of the channel, water quality protection (reduction sediment/nutrient inputs) and wildlife habitat and corridor functions. These values and functions are threatened where there are breaks in the contiguousness of riparian vegetation or severe reductions in its lateral extent which reduces its corridor and protective buffer functions, undermines geomorphic stability and introduces edge effects such as weed invasion and inappropriate fire. The assessment of the AOI identified that there are extensive areas that historically formed riverine wetlands that lack regrowth and numerous drainage depressions and a constructed (excavated) drainage network that now function as riverine habitat that also warrant protection of regrowth revegetation and/or dedicated revegetation to deliver the	that convey surface run off and the constructed drainage network. This BMP can be achieved via planting or promotion of regeneration of pre-clear riverine regional ecosystems including in novel settings adjoining constructed (excavated) drainage networks. NB this recommendation is consistent with the FNQ Regional Plan (Qld Govt 2009) Land Use Policy: *7.2.B Improved catchment management to maintain water quality and the health of the Great Barrier Reef is achieved in accordance with the Reef Water Quality Protection Plan 2003* (Qld & Aust Govt 2003) the latter of which recommends management actions "*to conserve and rehabilitate areas such as riparian zones and wetlands*".

MSES	Occurrence in Relation to DA AOI	Ecological Needs / Impact Hazards and Assessment Notes	Recommended Land Changes /BMP to maintain MSES Integrity
		protective benefits of riverine riparian vegetation.	
Regulated Vegetation - Essential habitat	Remnant forest vegetation of oxbow wetland, lowermost reach of floodplain distributary, Daintree River frontage and disjunct southern tributary remnant, and external to the AOI on uncleared alluvial floodplain and adjoining foot slopes and ranges.	The management function of this defined MSES is as described for MSES Wildlife Habitat (above).	As described for MSES Wildlife Habitat (above)
Regulated Vegetation - within 100m of a Vegetation Management Wetland	Buffered area surrounding oxbow wetland, lower floodplain distributary channel and Daintree River frontage wetland associated remnant vegetation.	The management function of this defined MSES is to provide a protective buffer to maintain catchment condition and edge (ecotonal) habitats surrounding wetland associated vegetation. This protection assists in limiting disturbed edge effect impacts i.e., weed invasion, inappropriate fire, elevated sediment /nutrient inputs and geomorphic stability. Assessment of the AOI identified substantive areas of historically	BMP should seek to secure the MSES condition hazard presented by: • Existing cleared areas with 100m+ of vegetation management wetlands, and also, • Other areas of the AOI that currently function as wetlands but lack State mapping designation (i.e., constructed drainage network, depressions holding and/or conveying surface run off) • Historically cleared, drained and degraded wetlands

MSES	Occurrence in Relation to DA AOI	Ecological Needs / Impact Hazards and Assessment Notes	Recommended Land Changes /BMP to maintain MSES Integrity
		cleared /drained wetland within the catchment of mapped wetlands but often extending >100m from mapped vegetation management wetlands.	The BMP to re-instate /maintain integrity of both the defined vegetation management wetlands and the biophysical process linkages from unmapped functional wetlands and historically drained wetlands is revegetation of the AOI to representative pre-clear regional ecosystems.

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Qld Govt (2009). *Far North Queensland Regional Plan 2009–2031*. Brisbane: Department of Infrastructure and Planning.

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SCHEDULE 3 -

GQAL ADDENDUM REPORT

SCHEDULE 3

PLAN

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Addendum Report

It has been requested that I address questions 12 to 15 raised by the Douglas Shire Council review that relate directly to the Good Quality Agricultural Land Assessment Report. The concerns and questions are addressed below. This supplementary report is an addendum to the original report that was submitted.

12. Please provide the date and version of the Good Quality Agricultural Land Assessment report prepared by Dr Charissa Rixon that was submitted as part of the application.

The Good Quality Agricultural Land Assessment Final report ("Final Report") was provided to Rainforest Rescue for submission on the 7th August 2025.

This is an addendum report responding to the questions raised by the Douglas Shire Council from the submission of the Final Report.

13. Please provide an updated report having regard to the current agreements in place to continue sugarcane production.

Page 4 – Assumption that the closure of the Mossman Mill requires a reassessment of Agricultural Land Classification.

The Douglas Shire Council is correct that there is an agreement in place to continue transportation of sugarcane for the next 4 to 5 years.

1. Current agreement is for the freight for 200,000 tonnes of cane to be subsidized for the 2024 and 2025 season. The 2025 initial crop estimate for Mossman Mill region was 270,000 tonnes, this has since been revised down, however, this would be close to the annual average. This leaves 70,000 tonnes of cane unable to be crushed each year.
   This cane is being transported via trucks which carry 20 tonnes per trip, and the cane harvest generally goes for a period of 21 - 22 weeks. At 20 tonnes/truck this equates to a minimum of 10000 round trips per year (as not all trucks are going to be full), which is 470 to 480 round trips per week.
   This is currently a viable option whilst the freight is subsidized. If freight is not subsidized this model is not financially viable in the long term.

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2. For 2026 and beyond negotiations are currently underway with MSF to continue crushing the Mossman Cane at Mulgrave Mill and with TMR for signoff to allow larger trucks to operate on the Captain Cook Highway. With freight subsidies being reduced or removed altogether, the industry is looking for a more cost effective freight system.
   Trials were conducted by TMR in July of this year, evaluating different heavy vehicle configurations on the haul route. The viability of the industry is waiting for these results to be considered by TMR in conjunction with road safety data and quantity of cane to be hauled for a decision to be made. The industry is pushing to have purpose built trucks engineered that can cart 40t of cane in a single load, however the configuration and ultimately the weight of cane that can be hauled in an individual vehicle is all hinging on the outcome of the TMR decision. The state government has offered $6M to go towards the purchase of these trucks. If the TMR signs off to allow the proposed heavy vehicle configuration to be utilized, this would provide savings equivalent to the 2024 and 2025 government subsidy.

   If the new proposal does not get the required approvals, the current transport arrangement will remain in place at a significant cost to the industry both directly through increased freight costs, and indirectly through leaving approximately 70,000 tonnes of cane unharvested each season, which is approximately 26% of the crop. The location of the lots being evaluated in the Final Report, are approximately 30 km north of Mossman, adding an additional 60 km/ trip which will further escalate the cost of the freight. There is better cane growing land closer to the mill that would be a better financial proposition than the farms covered by the Final Report. The amount of cane that these farms contribute to the industry is approximately 30,000 tonnes and this does not take into consideration fallow blocks on the farms.

Alternative cropping options

I am aware of trials being conducted evaluating alternative crops for the region. One of the crops being evaluate is Bana Grass which is a hybrid of Pennisetum purpureum (commonly known as Napier Grass or Elephant Grass) and Pennisetum americanum (Pearl Millet) and grows in a similar manner to sugarcane. Elephant grass is listed by the Queensland Government as an invasive weed, however it is not a restricted or prohibited plant under the *Biosecurity Act* 2014. Bana Grass does not produce viable seeds but will propagate vegetatively when the stems come in contact with moist soil. Considering a large portion of the area being assessed in the

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Final Report is subject to flooding annually which would allow the Bana grass to self propagate where it could then invade environmentally sensitive or protected zones that are within or immediately adjacent to the area being assessed. Bana Grass is a favourite plant within permaculture, however it comes with a warning to manage it diligently to prevent it from becoming invasive.

Sorghum as an alternative crop was discussed on page 5 in paragraph 2 of the Final Report.

> *"Sorghum has been trialed in the Mossman region, and it was found that there are some disease issues due to the high humidity and extreme wet conditions that can occur in the Wet tropics. As with maize, the market is on the Atherton Tablelands for animal feed and the market size is limited."*

The disease pressure in the Sorghum in this region is extremely high, causing crops to be lost in the trials or produce very low yields making this crop non viable for the area being assessed in the Final Report.

The current information about the future of the mill is a possibility but not a certainty, and there are physical constraints on the quantity of sugarcane that can be trucked for crushing at the Mulgrave Mill. This along with the position of these blocks in the landscape, ie they are positioned on a flood plain and subject to flooding which causes lower crop yields, the additional distance from the mill, and the fact that 26% of the cane that is currently present is most likely not going to be crushed each year. The decrease in income incurred by 26% of the crop not being crushed each season and the significant increase in freight costs, would make growing sugarcane on this area in the future a low return option, and possibly at a loss in some seasons, depending on the world sugar price.

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14. Please provide an updated report where the storm tide inundation considerations have regard to the *recent Douglas Shire Council and JB Pacific Storm Tide Methodology Study*.

Figure 1 is a map produced using the Douglas Shire Council and JB Pacific Storm Tide Methodology Study showing the medium and high storm tide hazard. When this is compared to the Elevation Map in Appendix 5 of the Final Report (Figure 2) areas identified as High Storm Tide Hazard from the Douglas Shire Council and JB Pacific Storm Tide Methodology Study is similar to the areas I had nominated as flood zones. The Medium Storm Tide Hazard area in Figure 1, is additional to the areas that I had identified as being a flood zone. This information further supports my original assessment that the area being assessed should be reclassified as ALC Code D – Not suitable for agriculture. The Douglas Shire Councils online interactive mapping interface also highlights that the areas that are classed as having a high storm tide hazard, are also erosion prone areas (Figure 3). This also supports my assessment of these blocks as being ALC Code D- Not suitable for agriculture, as there would be a high risk of erosion if land preparation was necessary during the wet season for crop establishment.

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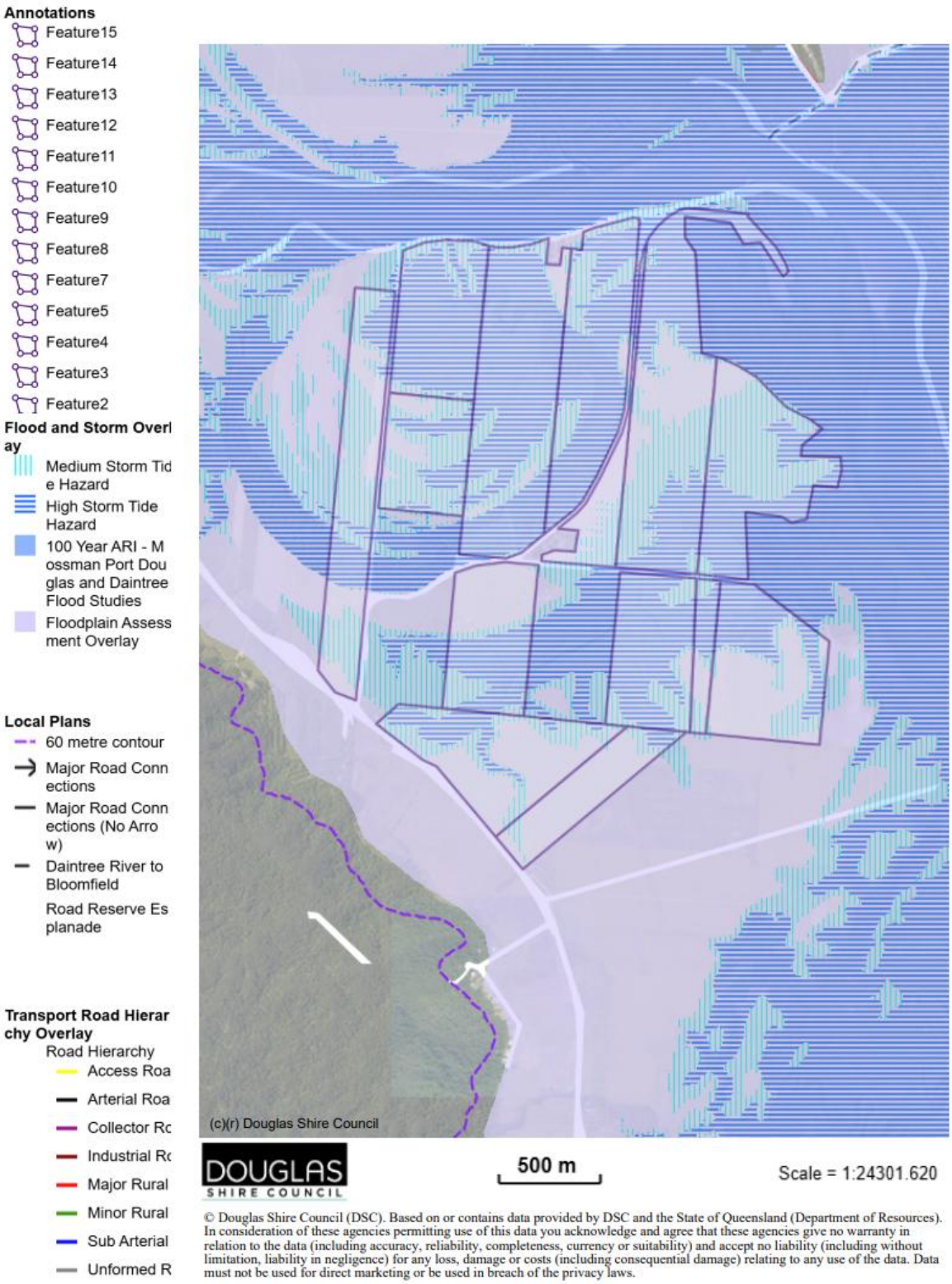

Figure 1 - Storm Tide Inundation Map derived from the Douglas Shire Councils JB Pacific Storm Tide Methodology Study

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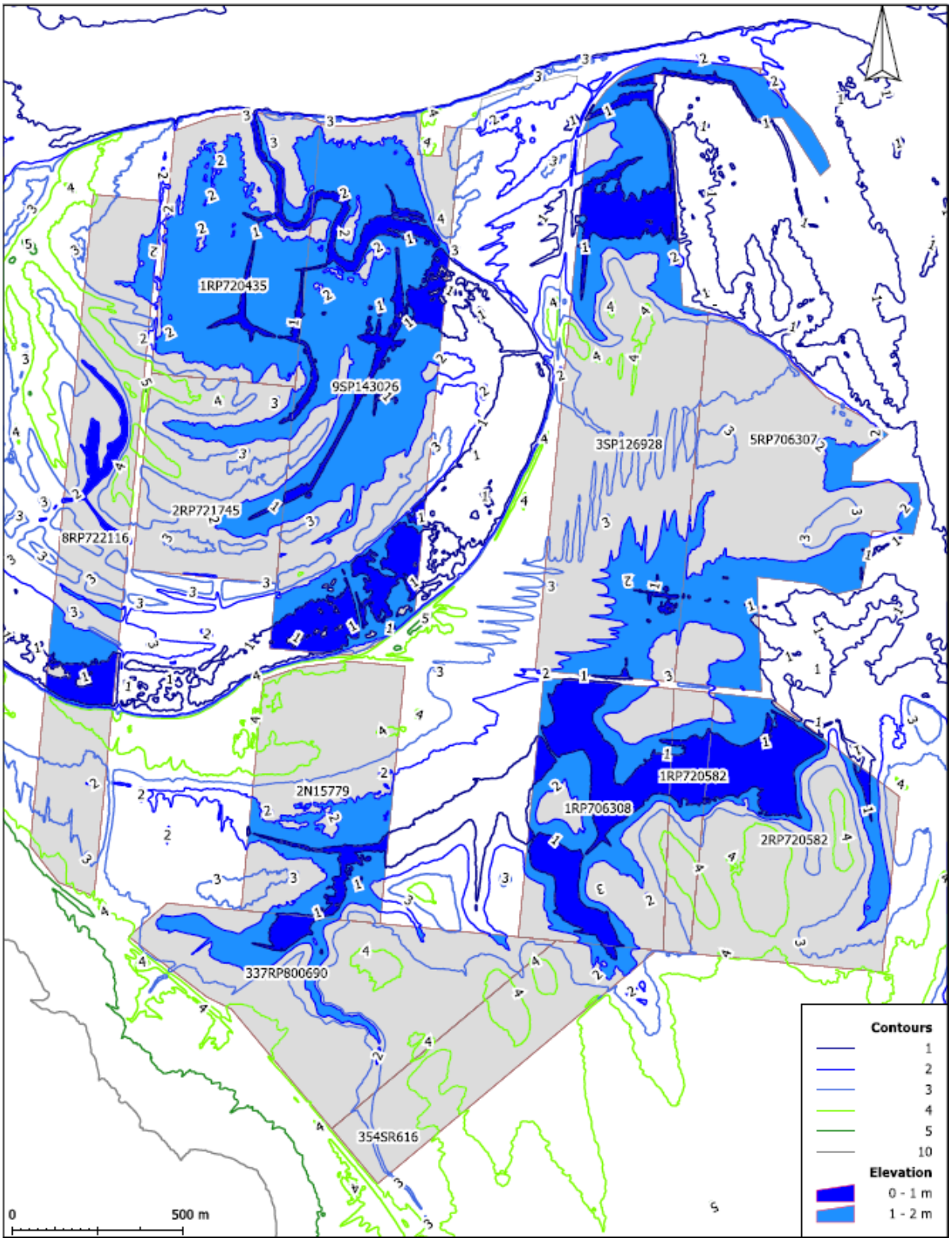

Figure 2 - Elevation Map from Appendix 5 of the Final Report

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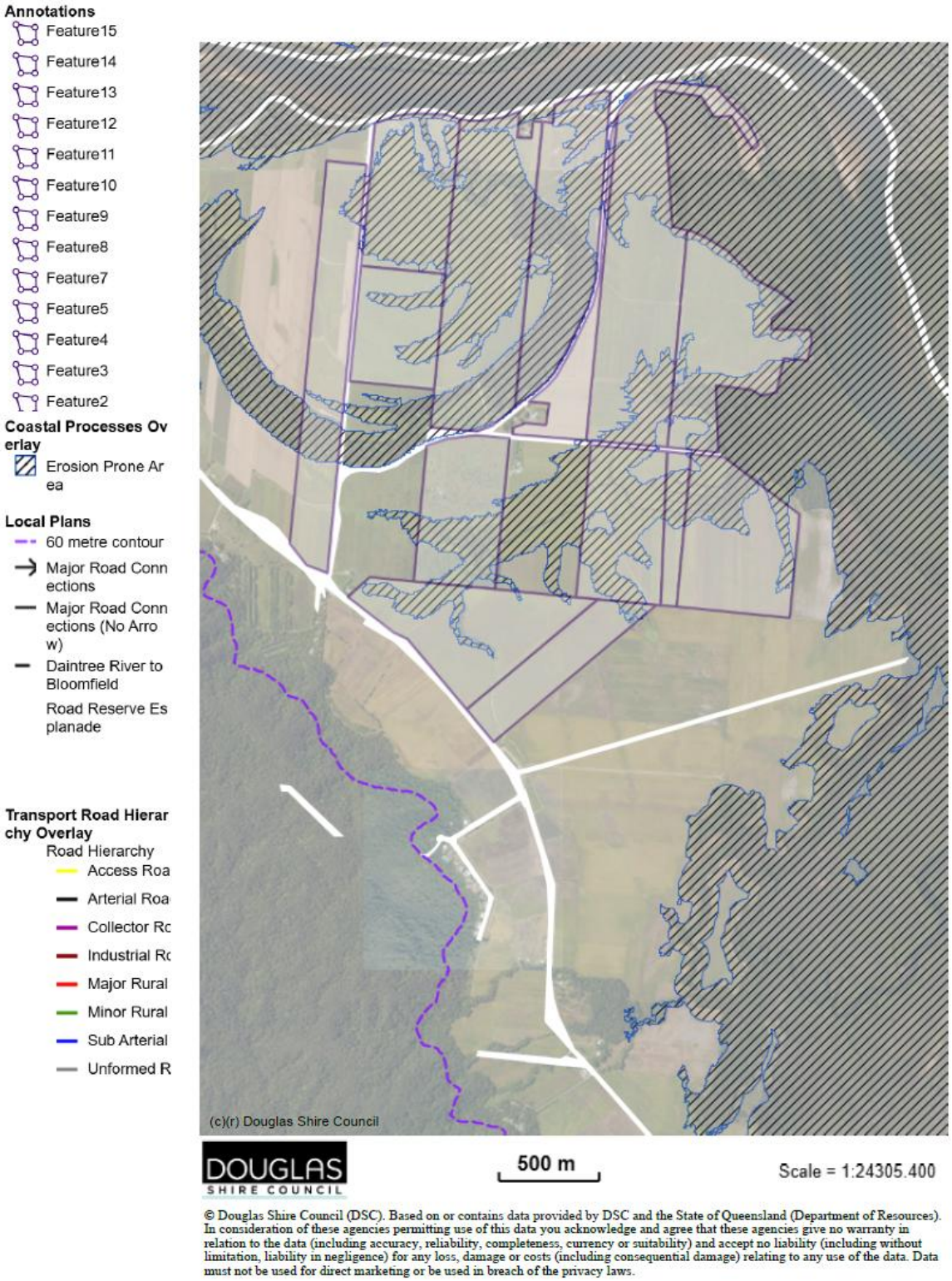

Figure 3 - Erosion Prone areas derived from the Douglas Shire Councils JB Pacific Storm Tide Methodology Study

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15. Please provide an updated report identifying the amount of water license required for alternative crops, in particular having regard to the high rainfalls experienced in the local area.

To grow small crops (vegetable crops) during the winter months when flooding is low risk some irrigation will be required, as although this area receives large quantities of rain the distribution is too unreliable for high value vegetable crops or crops such as cucurbits. The irrigation requirement of these crops does vary. However, if an estimate of 30 mm/week (assumption is trickle irrigation) for the duration of the crop is required (assumed that irrigation is required for a 16 week period) then 4.8 megaliters per hectare of water would be required.

The growth of any grain crops under irrigation would require a similar quantity of water to grow the crops, because although they generally require less water, overhead, lateral, pivot or hard hose irrigators would be the method of irrigation which is less efficient than trickle irrigation. With the storm tide inundation risk for this area, lateral and pivot style irrigation is unlikely to be used due to the cost of the infrastructure and the risk of damage to it during the wet season. So, the remaining irrigation options would be overhead irrigation using solid set style overhead sprinklers that are set up at the start of each season and removed at the end, or more likely a hard hose travelling irrigator. Neither of these methods are very efficient, and both require a much larger flow rate of available water (l/min) compared to trickle irrigation.

If irrigation licenses were secured, there then becomes another point to consider and that is the quality of the water. Water pumped either directly out of the Daintree River or out of a Bore in this area is most likely going to be brackish, of which many crops would not be able to tolerate, which further narrows the range of potential crops, and longer term there is potential for the soil to accumulate salt creating salinity issues.

All the questions raised by the Douglas Shire Council are valid, but after addressing these questions, I still deem the area being assessed in the Final Report to be ALC Class D – Not Suitable for Agriculture, as per the Final Report.

This Addendum report has been prepared by Dr Charissa Rixon of T.R.A.P. Services on the 8th September 2025.

SCHEDULE 4 -

LOWER DAINTREE RIVER – QLD154 INFORMATION SHEET

SCHEDULE 4

WILD PLAN

Australian Government
Department of Climate Change, Energy, the Environment and Water

Directory of Important Wetlands

Directory of Important Wetlands in Australia - Information sheet

Lower Daintree River - QLD154

Level of importance:	National - Directory
Location:	16 degrees 17' 13" S, 145 degrees 25' 12" E; the site has an east-west length of c. 13 km and is up to 10 km wide at its coastal extent, with its centre 78 km north northwest of Cairns. It falls within the Mossman-Daintree catchment (Queensland Department of Primary Industries 1993).
Biogeographic region:	Wet Tropics
Shire:	Douglas.
Area:	5 266 ha.
Elevation:	Less than 10 m ASL.
Other listed wetlands in same aggregation:	None.
Wetland type:	A6, B14, B1, A9
Criteria for inclusion:	1, 2, 3, 5,

Site description:

The Daintree River enters the Coral Sea between the Dagmar Range in the south and the Thornton Range in the north, and

its floodplain and delta are restricted to a relatively narrow area between these ranges. There are dunes at the river mouth, in the south they form a band up to 1.5 km wide. Behind the dunes are tidal flats, which are more extensive on the southern bank than on the northern. Behind the tidal flats are areas of brackish and freshwater swamp. Discontinuous low sandy ridges that run parallel to the river on the northern bank and extend upstream as far as the ferry crossing are probably the remains of beach ridges formed when the Daintree mouth was at or upstream of the ferry crossing. There is a mass of sand on the south western margin of the site that has no ridge-swale pattern, which appears to mark a period of stability when the Daintree mouth was at or upstream of the ferry crossing (Murtha 1989).

Physical features:
Soils: basic regolithic orthic tenosol, aeric podosols and humic semiaquc podosols on frontal dunes. Yellow kandosols on the floodplain on the western margin of the site. Red ferrosols on alluvial fans on the northern and southwestern margins of the site. Patches of organic swamp soil occur on the northern and southwestern margins of the site. The major soils are redoxic hydrosols on the landward margin and intertidal hydrosols on the seaward margin (Murtha 1989; Isbell 1993). Climate: BIOCLIM predictions for the area around the Daintree River mouth are: annual rainfall 3000-4000 mm; driest quarter rainfall 150-225 mm; annual mean temperature above 25 C; coldest month mean minimum temperature above 17 C; mean annual rainfall at Mossman (16 27" S, 145 23" E) is 2338 mm; driest quarter mean rainfall 171 mm (Nix c. 1991).

Hydrological features:
The Daintree River has a catchment area of c. 132 000 ha and an annual discharge of c. 85 cumecs. Water supply: tidal influx, river flow and direct rainfall. The river flow is seasonally variable, resulting in significant variation in salinity levels in the estuary. During the wet season, floods can rapidly and dramatically dilute estuarine waters. During the dry, when river flow is minimal, salt water can intrude above the tidal limit. The tidal arm of the river is c. 24 km long (Pearson 1992).

Ecological features:
There is a significant area of open water habitat in the Daintree Estuary. 14 vegetation types have been distinguished in the area, including mangrove communities, melaleuca communities, rainforest communities, dune woodlands and thickets, and sedge lands. Populations of invertebrate river fauna appear to be affected by the seasonality of river flow. During the dry season (low flow) species characteristic of estuaries (e.g. isopods and amphipods) tend to predominate, but during the wet season (high flow) species characteristic of freshwater river reaches tend to predominate (Pearson 1992).

Significance:
The site contains a well defined array of geomorphological features that are representative of coastal expansion within a confined space. The tall closed red mangrove (Rhizophora stylosa) forest that lines the mid tidal reaches of the site is an outstanding example of the type. The paperbark swamps of the northern bank are an outstanding and spectacular example of this type of forest. They may also be the most significant breeding area for the estuarine crocodile (Crocodylus porosus) (Sv) in the Wet Tropics bioregion.

Notable flora:
The following mangroves have been recorded near the Daintree Mouth: mangrove fern (Acrostichum speciosum), river mangrove (Aegiceras corniculatum), large-leaved orange mangrove (large-fuited orange mangrove (Bruguiera gymnorhiza)), small-leaved orange mangrove (B. parviflora), yellow mangrove (Ceriops tagal var. tagal), C. decandra, coastal lolly bush (Clerodendrum inerme), mangrove lily (Crinum pendunculatum), wrinkle pod mangrove (Cynometra iripa), milky mangrove (Excoecaria agallocha), looking-glass mangrove (Heritiera littoralis), red-flowered black mangrove (Lumnitzera littorea), white-flowered black mangrove (L. racemosa), myrtle mangrove (Osbornia octodonta), tall-stilted mangrove (R. apiculata), white-flowered mangrove apple (Sonneratia alba) and cannonball mangrove (Xylocarpus granatum). The following species have been recorded near the upstream end of the tidal arm of the Daintree: holly mangrove (Acanthus ilicifolius), freshwater mangrove (Barringtonia racemosa), Bruguiera sexangula, milky mangrove, cottonwood (Hibiscus tiliaceus) and red-flowered mangrove apple (Sonneratia caseolaris). Grey mangrove (grey mangrove (Avicennia marina) var. eucalyptifolia), red mangrove, R. mucronata, R. x lamarckii, Sonneratia x gulngai, cedar mangrove (Xylocarpus australasicus), yam stick mangrove (Scyphiphora hydrophyllacea), Thespesia populnea and yellow mangrove (Ceriops tagal) var. australiensis have been recorded only towards the middle of the tidal reach. Northern paperbark (Melaleuca leucadendra) swamp forest is

common along the river. A number of variations of this have been recognised in the area. Where soils are alluvial, and inundation is intermittent and the result of runon from adjacent slopes, northern paperbark forms a canopy, either on its own or with swamp satinash (Syzygium angophoroides), over an understorey of vine forest species. At the landward edge of the mangroves, where freshwater conditions begin to predominate over saline, there is often a narrow band of northern paperbark swamp forest with Clerodendrum inerme, Gymnanthera nitida, looking-glass mangrove, lolly berry (Salacia chinensis), Leptocarpus elatior and marine couch (Sporobolus virginicus). The existence of this community is dependent on precise soil factors that occur in this narrow ecotone between saline and non saline conditions. Many examples of this community have been destroyed by clearing or drainage. This example is amongst the best of the few remaining. swamp paperbark (Melaleuca quinquenervia) semi permanent swamp forest occurs on gleyed podosolic soil. This has a characteristic ground layer including Cladium articulatum, Cyperus javanicus, C. haspan, Fuirena umbellata, Rhynchospora corymbosa, Scleria terrestris, Philydrum lanuginosum and Polygonum hydropiper. swamp paperbark (Melaleuca quinquenervia) tidal freshwater swamp forest occurs on sand over clay. Other species likely to be present are milky mangrove, looking-glass mangrove, wrinkle pod mangrove and Acrostichum aureum. This forest type forms where permanent freshwater seepage meets tidal influences. The water table is always high and rises and falls with tidal movements or in response to rainfall events. Broad-leaved paperbark (Melaleuca viridiflora) swamp forest occurs on recent marine alluvium, adjacent to salt marshes, and where constantly outflowing freshwater maintains high water tables for most of the year. On gleyed podosolic soils where the water table fluctuates from the surface to 1.5 m below it, black sheoak (Allocasuarina littoralis) and Melastoma malabathricum are associated with this forest type. Seasonally inundated red beech (Dillenia alata) forest grows adjacent to saline environments. Feather palm (Archontophoenix alexandrae) swamp forest features semi permanent standing water with plants growing on small hummocks that rise above it. Bulkurru Eleocharis dulcis sedge swamp borders salt marshes and mangrove areas, and free water varies from fresh to brackish depending on variations in input from tidal and fresh water. coast she-oak (coast she-oak (coast she-oak (coast she-oak (Casuarina equisetifolia)))) woodland grows on beach dunes. large-fruited red mahogany (Eucalyptus pellita), ivory basswood (Polyscias australiana) and Syzygium angophoroides forest grows on sand islands amongst mangroves. Broad-leaved paperbark swamp forest is relatively uncommon in the Wet Tropics, much of that originally present having been cleared for agriculture. Feather palm (Archontophoenix alexandrae) swamp forest is an uncommon vegetation type in the Wet Tropics bioregion. Bulkurru sedge swamp is also an uncommon vegetation type in the Wet Tropics bioregion (Duke 1985; Stanton & Godwin 1989; Le Cussan 1991).

Notable fauna:

The following mammals have been recorded at the site: little red flying fox (Pteropus scapulatus) (common, there is an important camp in mangroves on the site), spectacled flying-fox (P. conspicillatus) (small camp), northern myotis (Myotis moluccarum), fawn-footed melomys (Melomys cervinipes), water rat (Hydromys chrysogaster) and feral pig (Sus scrofa). 74 bird species have been recorded in the area. The following birds have been recorded on the site: little tern (Sterna albifrons) (Ne, Sv), white-faced heron (Ardea novaehollandiae) (common), great-billed heron (A. sumatrana) (uncommon), little egret (Egretta garzetta) (very common), intermediate egret (Ardea intermedia) (very common), eastern reef egret (E. sacra) (common), striated heron (Butorides striatus) (common), varied honeyeater (Lichenostomus versicolor) (common), wandering whistling-duck (Dendrocygna arcuata) (uncommon), whimbrel (Numenius phaeopus) (common), Australian white ibis (Threskiornis molucca) (uncommon), bar-shouldered dove (Geopelia humeralis) (common), bar-tailed godwit (Limosa lapponica) (uncommon), silver gull (Larus novaehollandiae) (common), black butcherbird (Cracticus quoyi) (common), osprey (Pandion haliaetus) (common), brahminy kite (Haliastur indus) (common), forest kingfisher (Todiramphus macleayii) (common), collared kingfisher (Todiramphus chloris) (common), azure kingfisher (Alcedo azurea) (common) and white-bellied sea-eagle (Haliaeetus leucogaster) (common). The lower Daintree is an important breeding area for the estuarine crocodile (Crocodylus porosus) (Sv). 16 other reptile species have been recorded in the area, including the little file snake (Acrochordus granulatus), mourning gecko (Lepidodactylus lugubris) and rusty monitor (Varanus semiremex) (Sr). Two amphibians have been recorded: the cane toad (Bufo marinus) and striped rocketfrog (Litoria nasuta). There have been 37 species of crustacea, 26 species of mollusc, 17 species of spider and 26 species of fish recorded in the area, including the spotfin goby (Redigobius chrysosoma), an estuarine fish that is uncommon on the Australian east coast (Trennery 1991).

Other Fauna:

Social and Cultural values:
The site supports areas of sugar cane production as well as being an important ecotourism destination.

Land tenure:
Public purposes reserve 54, esplanade and Daintree National Park. Freehold and leasehold.

Current land use:
Conservation, vacant land, commercial and recreational fishing, tourism, limited cattle grazing and cane growing. Grazing, cane growing, conservation, recreation and tourism.

Disturbance or threat:
Past/present: Much of the Daintree floodplain has been cleared for cane production or grazing. Some areas have been cleared to the water s edge, and bank erosion in some areas is severe.

Potential: Increase in tourism and further clearing. Weed invasion, by Pond Apple Annona glabra in particular.

Conservation measures taken:
Declaration of Daintree National Park. The southern and central portions of the site are protected under the World Heritage Properties Act 1984. The Wet Tropics Regional Coastal Management Plan includes the site in a coastal management district.

Management authority and jurisdiction:
Queensland Parks and Wildlife Service, Department of Natural Resources and Mines.

References:
Duke, N.C. (1985); Isbell, R.F. (1993); Isbell, R.F. et al. (1968); Le Cussan, J. (1991); Natural Resources Association for Queensland Commercial Fishers Organisation (1989); Nix, H.A. (c. 1991); Pearson, R.G. (1992); Queensland Department of Primary Industries. (1993); Stanton, J.P. & Godwin, M.D. (1989); Trennery M. (1991). See Queensland Reference List

Compiler & date:
Perry, T.W., 1995. Edited Miller, G.J. and Worland, J.L., 2004.

Drainage:

AWRC Division: North-East Coast
AWRC Region: BARRON
AWRC Basin: DAINTREE RIVER
Catchment: Daintree River
Sub-catchment:

Go to basic query form | Go to spatial query tool

SCHEDULE 5 -

DOUGLAS SHIRE WETLANDS INFORMATION SHEET

SCHEDULE 5

PLAN

Douglas Shire wetlands

The Great Barrier Reef Coastal Wetlands Protection Program Pilot Program was commissioned by the Australian Government to deliver on-ground actions for the sustainable management of 22 priority wetlands in the Great Barrier Reef catchment. The $2 million program was delivered over two years by a consortium led by Conservation Volunteers Australia and involved partnerships between government, community and landowners to identify and protect these wetlands.

Project summary

Two wetlands were chosen in the Douglas Shire area as part of the Pilot Program. Although they are only small sites, McDowell swamp and Maslin's wetland are both considered ecologically valuable due to the:

- rarity of these wetland types in the Daintree catchment
- endangered/of-concern ecosystem types contained at these wetland sites.

Both wetlands are on the floodplain of the Daintree catchment in the wet tropics region of Queensland.

The projects have highlighted the success of management agreements and incentives, as well as promoting an increased understanding of the function and value of wetlands. They have also provided the tools for the landholders to better manage their wetlands in the future.

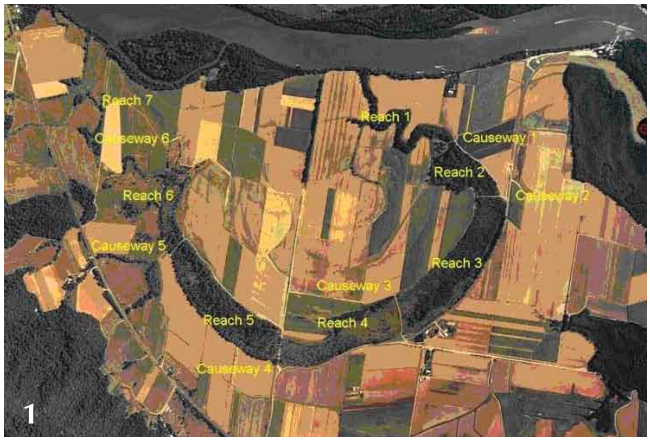

Photo 1: McDowell swamp showing management 'reaches'

About the sites

McDowell swamp is the only oxbow lagoon formed by a cut-off meander loop in the lower Daintree floodplain. It is a 3-hectare wetland with four managing landholders. McDowell swamp protects the water quality of the Daintree River by providing a settling area for sediment, nutrients and other contaminant loads that are contained in run-off.

The surrounding area has mostly been cleared for agriculture, predominantly sugarcane. Crossings have been built across the swamp and have split it into six freshwater sections. There is also a tidal section downstream of Section 4, but tidal waters are prevented from entering the lagoon by a floodgate (see Photo 1). The swamp was chosen for the Pilot Program because of its high biodiversity and potential fishery values. It has three regional endangered/of-concern ecosystem types:

- **7.1.4** mangrove and vine forest
- **7.3.5** *Melaleuca quinquenervia* (swamp paperbark) and/or *M cajuputi*
- **7.3.25** *Melaleuca leucadendra* plus vine forest species and open to closed forest.

This remnant habitat provides a potential wildlife corridor for some sensitive species, including arboreal mammals and cassowaries, between the Daintree River and the nearby escarpment. Wetlands of this area host 74 recorded bird species, flying fox, estuarine crocodile, bat, melomys and water rat.

Queensland Wetlands Programme

Australian Government

Maslin's wetland is unique because it consists of a series of benched, freshwater, ephemeral wetlands. Although it is only 1.5 hectares in area, it has significant value as one of the few remaining freshwater wetlands in the Douglas Shire. The land was previously used as a grazing property. The current landholder is highly involved in the management of the wetland and has expanded and reinstated much of its ecological function. Maslin's wetland is utilised as an eco-tourism site focusing on bird-watching—by both the landholder and the public.

The wetland contains three regional endangered/of-concern ecosystem types:

- **7.3.10** Simple–complex mesophyll vine forest
- **7.3.23** Simple–complex semi-deciduous notophyll to mesophyll vine forest on lowland alluvium
- **7.3.25** *Melaleuca leucadendra* plus vine forest species and open to closed forest.

Photo 2: Aerial photo highlighting Maslin's wetland (photo: Jim Tait)

Photo 3: Small remnant stand of native bulkuru sedge (foreground), a wetland vegetation type that was more extensive before exotic pasture weeds (background) invaded (photo: Jim Tait)

Challenges

McDowell swamp

The **hydrology** of McDowell swamp is freshwater in reaches 2–7, with tidal influence restricted to reach 1, blocked at causeway 1 by a floodgate. This has modified the hydrology, with the floodgate lowering the water level in the lagoon and preventing tidal exchange. As a result, fish are no longer able to move between tidal and freshwater areas. Even if fish did pass through the floodgate, the other five causeways would prevent their passage. McDowell swamp has therefore been modified to the point where aquatic habitat, connectivity and movement opportunities for estuarine fish species into the wetland have been lost.

The problems of modified hydrology have been exacerbated by colonisation of much of the lagoon surface by invasive aquatic weeds. The lagoon receives catchment runoff from adjoining cane land, and this has caused a deterioration in water quality through increased nutrient levels and sediment loadings.

Exotic pasture grasses that have become 'naturalised' within the wet tropics lowlands infest McDowell swamp; they include para grass and hymenachne, along with guinea grass in well-drained riparian areas. These grasses have the following ecological impacts:

- competitive exclusion of overstorey seedlings, native wetland grasses and other wetland species such as bulkuru sedge
- detrimental effects on water quality, by smothering open water areas, shading native aquatic plants and generating large organic loadings, thereby reducing oxygen levels in resident and discharge water
- generation of large fire fuel loads, with the potential for hot and damaging wildfires in the drained wetland
- barriers to fish passage due to physical blockages (floodgate and road crossings) and/or chemical blockages in the form of low dissolved oxygen in water.

Photo 4 (photo: Jim Tait)

McDowell swamp includes a mix of vegetation types including some that are fire-sensitive (rainforest) and some that are fire-dependent (eucalypt and paperbark communities). In recent decades, **fire** appears to have been largely excluded from the wetland, resulting in:

- proliferation of weed species and fuel load build-up
- limited recruitment of fire-dependent overstorey species.

The current condition and values of the remnant vegetation communities of the McDowell swamp are affected by:

- **invasive woody weeds** such as pond apple
- **loss of protective vegetation buffers** between the wetland areas and surrounding land uses
- **unmanaged hot and/or frequent fires**
- **loss of corridor connectivity** to larger areas of upstream remnant vegetation.

Maslin's wetland

The main problem affecting the Maslin's wetland ecosystem is the perennial one of invasive weed encroachment into the riparian and wetland areas. Maslin's wetland is especially prone to impacts from exotic grasses, and from woody weeds in the riparian areas. The implications for the health of the wetland and the three regional endangered/of-concern ecosystem types are similar to those in McDowell Swamp.

Rehabilitation actions

McDowell swamp

To assist site assessment and rehabilitation needs, the swamp was divided into 'reaches', as shown in Photo 1. Each reach required different management to suit the landholders' preferred management regimes:

- The upper reaches were fenced and will be crash-grazed at the appropriate times for the control of hymenachne and para grass.
- The mid-reaches were managed with herbicide for the control of hymenachne, para grass and pond apple.
- The lower reaches were maintained in their original unmanaged status.

Pest management works included:

- treatment of small scattered infestations of olive hymenachne
- monitoring of olive hymenachne for reinfestation
- treatment of infestations of pond apple, including follow-up control.

Photo 5: Culling of pond apple infestation at McDowell wetland (photo: Jim Tait)

Maslin's wetland

An agreement was developed with the landholder to control the weeds at Maslin's Wetland. The project funded the cost of bioactive glyphosate (to be sprayed at specific intervals) and the landholder provided the labour. The landholder also agreed to maintain a time-series of photo-monitoring points to record vegetation changes.

Lessons learnt

The timeframe for fencing needed to be extended, because of several obstacles to the erection of fencing in the upper reach of McDowell swamp. First a prolonged wet season prevented access for the fencing contractor and delayed construction. (This highlights the need to be aware of, and plan for, the seasons in the wet tropics.) Then problems were encountered with sourcing materials (timber posts) and contractors.

Innovations

Wetland Incentives Program

This pilot trialled a wetlands incentive program aimed at supporting better management of privately owned wetlands in the Douglas Shire by landholders. Landholders were given information bulletins and were invited to apply for funding assistance. Various incentive approaches were investigated, to determined the strengths and weaknesses of each. They included:

- ecosystem services payments
- voluntary management agreements
- grants
- stewardship payments
- tax incentives
- nature refuges
- auction/tender systems
- conservation covenants.

The owners of the two sites chosen (Maslin's wetland and McDowell swamp) participated in voluntary management agreements, which included incentives. This arrangement proved successful in gaining the landholders' support for wetland management.

Further reading

Tait, J 2006, *Daintree Oxbow—McDowell swamp: identified management issues and options*, report prepared by WetlandCare Australia.

Bradley, P 2007, *Great Barrier Reef Coastal Wetland Protection Program*, Douglas Shire Incentives Project.

Bradley, P 2006, *Incentives project*, Terrain NRM (formerly FNQ NRM) & Douglas Shire Council.

Contacts

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WetlandCare Australia
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Photos courtesy of WetlandCare Australia

Australian Government

SCHEDULE 6 -

DETSI ENVIRONMENTAL REPORT

SCHEDULE 6

PLAN

Queensland Government

Department of the Environment, Tourism, Science and Innovation

Environmental Reports

Biodiversity and Conservation Values

Biodiversity Planning Assessments and Aquatic Conservation Assessments

For the selected area of interest

Lot: 9 Plan: SP143026

Environmental Reports - General Information

The Environmental Reports portal provides for the assessment of selected matters of interest relevant to a user specified location, or Area of Interest (AOI). All area and derivative figures are relevant to the extent of matters of interest contained within the AOI unless otherwise stated. Please note, if a user selects an AOI via the "Central co-ordinates" option, the resulting assessment area encompasses an area extending from 2km radius from the point of interest.

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 2020). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

The matters of interest reported on in this document are based upon available state mapped datasets. Where the report indicates that a matter of interest is not present within the AOI (e.g. where area related calculations are equal to zero, or no values are listed), this may be due either to the fact that state mapping has not been undertaken for the AOI, that state mapping is incomplete for the AOI, or that no values have been identified within the site.

The information presented in this report should be considered as a guide only and field survey may be required to validate values on the ground.

Please direct queries about these reports to: biodiversity.planning@qld.gov.au

Disclaimer

Whilst every care is taken to ensure the accuracy of the information provided in this report, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness, or suitability, for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which the user may incur as a consequence of the information being inaccurate or incomplete in any way and for any reason.

Table of Contents

Summary Information

Tables 1 to 8 provide an overview of the AOI with respect to selected topographic and environmental values.

Table 1: Details for area of interest: Lot: 9 Plan: SP143026, with area 62.99 ha

Local Government(s)	
Douglas Shire	
Bioregion(s)	**Subregion(s)**
Wet Tropics	Daintree - Bloomfield
Catchment(s)	
Daintree	

The following table identifies available Biodiversity Planning Assessments (BPAs) and Aquatic Conservation Assessments (ACAs) with respect to the AOI.

Table 2: Available Biodiversity Planning and Aquatic Conservation Assessments

Biodiversity Planning Assessment(s)	Aquatic Conservation Assessment(s) (riverine)	Aquatic Conservation Assessment(s) (non-riverine)
Wet Tropics v1.1	Great Barrier Reef Catchments v1.1	Great Barrier Reef Catchments v.1.3

Table 3: Remnant regional ecosystems within the AOI as per the Qld Herbarium's 'biodiversity status'

Biodiversity Status	Area (Ha)	% of AOI
Endangered	7.89	12.52
Of concern	0.57	0.91
No concern at present	0.00	0.00

The following table identifies the extent and proportion of the user specified area of interest (AOI) which is mapped as being of "State", "Regional" or "Local" significance via application of the Queensland Department of the Environment, Tourism, Science and Innovation's *Biodiversity Assessment and Mapping Methodology* (BAMM).

Table 4: Summary table, biodiversity significance

Biodiversity Status	Area (Ha)	% of AOI
State Habitat for EVNT taxa	8.98	14.25
State	54.01	85.74

Table 5: Non-riverine wetlands intersecting the AOI

Non-riverine wetland types intersecting the area of interest	#
Number of Palustrine wetlands	2
Total number of non-riverine wetlands	2

NB. The figures presented in the table above are derived from the relevant non-riverine Aquatic Conservation Assessment(s). Later releases of wetland mapping produced via the Queensland Wetland Mapping Program may provide more recent information in regards to wetland extent.

Table 6: Named waterways intersecting the AOI

(No Records)

Refer to **Map 1** for general locality information.

The following two tables identify the extent and proportion of the user specified AOI which is mapped as being of "Very High", "High", "Medium", "Low", or "Very Low" aquatic conservation value for riverine and non-riverine wetlands via application of the Queensland Department of the Environment, Tourism, Science and Innovation's *Aquatic Biodiversity Assessment and Mapping Method* (AquaBAMM).

Table 7: Summary table, aquatic conservation significance (riverine)

Aquatic conservation significance (riverine wetlands)	Area (Ha)	% of AOI
Very High	62.99	100.00

Table 8: Summary table, aquatic conservation significance (non-riverine)

Aquatic conservation significance (non-riverine wetlands)	Area (Ha)	% of AOI
High	2.68	4.25
Very High	10.18	16.16

Biodiversity Planning Assessments

Introduction

The Department of the Environment, Tourism, Science and Innovation (DETSI) attributes biodiversity significance on a bioregional scale through a Biodiversity Planning Assessment (BPA). A BPA involves the integration of ecological criteria using the *Biodiversity assessment and Mapping Methodology* (BAMM) and is developed in two stages: 1) **diagnostic criteria**, and 2) **expert panel criteria**. The diagnostic criteria are based on existing data which is reliable and uniformly available across a bioregion, while the expert panel criteria allows for the refinement of the mapped information from the diagnostic output by incorporating local knowledge and expert opinion.

The BAMM methodology has application for identifying areas with various levels of significance solely for biodiversity reasons. These include threatened ecosystems or taxa, large tracts of habitat in good condition, ecosystem diversity, landscape context and connection, and buffers to wetlands or other types of habitat important for the maintenance of biodiversity or ecological processes. While natural resource values such as dryland salinity, soil erosion potential or land capability are not dealt with explicitly, they are included to some extent within the biodiversity status of regional ecosystems recognised by the DETSI. Biodiversity Planning Assessments (BPAs) assign three levels of overall biodiversity significance.

- **State significance** - areas assessed as being significant for biodiversity at the bioregional or state scales. They also include areas assessed by other studies/processes as being significant at national or international scales. In addition, areas flagged as being of State significance due to the presence of endangered, vulnerable and/or near threatened taxa, are identified as "State Habitat for EVNT taxa".
- **Regional significance** - areas assessed as being significant for biodiversity at the subregional scale. These areas have lower significance for biodiversity than areas assessed as being of State significance.
- **Local significance and/or other values** - areas assessed as not being significant for biodiversity at state or regional scales. Local values are of significance at the local government scale.

For further information on released BPAs and a copy of the underlying methodology, go to:

http://www.qld.gov.au/environment/plants-animals/biodiversity/planning/

The GIS results can be downloaded from the Queensland Spatial Catalogue at:

https://qldspatial.information.qld.gov.au/catalogue/custom/index.page

The following table identifies the extent and proportion of the user specified AOI which is mapped as being of "State", "Regional" or "Local" significance via application of the BAMM.

Table 9: Summary table, biodiversity significance

Biodiversity Status	Area (Ha)	% of AOI
State Habitat for EVNT taxa	8.98	14.25
State	54.01	85.74

Refer to **Map 2** for further information.

Diagnostic Criteria

Diagnostic criteria are based on existing data which is reliable and uniformly available across a bioregion. These criteria are diagnostic in that they are used to filter the available data and provide a "first-cut" or initial determination of biodiversity significance. This initial assessment is then combined through a second group of other essential criteria.

A description of the individual diagnostic criteria is provided in the following sections.

Criteria A. Habitat for EVNT taxa: Classifies areas according to their significance based on the presence of endangered, vulnerable and/or rare (EVNT) taxa. EVNT taxa are those scheduled under the *Nature Conservation Act 1992* and/or the *Environment Protection and Biodiversity Conservation Act 1999*. It excludes highly mobile fauna taxa which are instead considered in Criterion H and brings together information on EVNT taxa using buffering of recorded sites or habitat suitability models (HSM) where available.

Criteria B. Ecosystem value: Classifies on the basis of biodiversity status of regional ecosystems, their extent in

protected areas (presence of poorly conserved regional ecosystems), the presence of significant wetlands; and areas of national importance such as the presence of Threatened Ecological Communities, World Heritage areas and Ramsar sites. Ecosystem value is applied at a bioregional (**B1**) and regional (**B2**) scale.

Criteria C. Tract size: Measures the relative size of tracts of vegetation in the landscape. The size of any tract is a major indicator of ecological significance, and is also strongly correlated with the long-term viability of biodiversity values. Larger tracts are less susceptible to ecological edge effects and are more likely to sustain viable populations of native flora and fauna than smaller tracts.

Criteria D. Relative size of regional ecosystems: Classifies the relative size of each regional ecosystem unit within its bioregion (**D1**) and its subregion (**D2**). Remnant units are compared with all other occurrences with the same regional ecosystem. Large examples of a regional ecosystem are more significant than smaller examples of the same regional ecosystem because they are more representative of the biodiversity values particular to the regional ecosystem, are more resilient to the effects of disturbance, and constitute a significant proportion of the total area of the regional ecosystem.

Criteria F. Ecosystem diversity: Is an indicator of the number of regional ecosystems occurring within an area. An area with high ecosystem diversity will have many regional ecosystems and ecotones relative to other areas within the bioregion.

Criteria G. Context and connection: Represents the extent to which a remnant unit incorporates, borders or buffers areas such as significant wetlands, endangered ecosystems; and the degree to which it is connected to other vegetation.

A summary of the biodiversity status based upon the diagnostic criteria is provided in the following table.

Table 10: Summary of biodiversity significance based upon diagnostic criteria with respect to the AOI

Biodiversity significance	Description	Area (Ha)	% of AOI
State	Significant Wetland (B1)	53.28	84.59
State	Remnant contains at least 1 Endangered RE (B1) & Significant Wetland (B1)	0.73	1.15
State	Remnant contains at least 1 Endangered or 2 Vulnerable or Near Threatened species (A)	8.98	14.25

Assessment of diagnostic criteria with respect to the AOI

The following table reflects an assessment of the individual diagnostic criteria noted above in regards to the AOI.

Table 11: Assessment of individual diagnostic criteria with respect to the AOI

Diagnostic Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
A: Habitat for EVNT Taxa	8.98	14.25	0.00	0.00	0.00	0.00	0.75	1.18
B1: Ecosystem Value (Bioregion)	62.99	99.99	0.00	0.00	0.00	0.00	0.00	0.00
B2: Ecosystem Value (Subregion)	8.56	13.59	0.00	0.00	0.00	0.00	1.16	1.84
C: Tract Size	0.00	0.00	0.00	0.00	0.00	0.00	9.72	15.44
D1: Relative RE Size (Bioregion)	4.07	6.45	0.00	0.00	3.57	5.67	2.09	3.32
D2: Relative RE Size (Subregion)	4.54	7.20	0.00	0.00	3.10	4.92	2.09	3.32

Diagnostic Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
F: Ecosystem Diversity	0.00	0.00	2.39	3.80	7.33	11.64	0.00	0.00
G: Context and Connection	0.44	0.69	0.00	0.00	9.29	14.74	0.00	0.00

Other Essential Criteria

Other essential criteria (also known as expert panel criteria) are based on non-uniform information sources and which may rely more upon expert opinion than on quantitative data. These criteria are used to provide a "second-cut" determination of biodiversity significance, which is then combined with the diagnostic criteria for an overall assessment of relative biodiversity significance. A summary of the biodiversity status based upon the other essential criteria is provided in the following table.

Table 12: Summary of biodiversity significance based upon other essential criteria with respect to the AOI

Biodiversity significance	Description	Area (Ha)	% of AOI
State	Remnant contains Special Biodiversity Values (view Expert Panel data for further information) (I) & Remnant forms part of a bioregional corridor (J)	0.30	0.48
State	Remnant contains Special Biodiversity Values (view Expert Panel data for further information) (I)	8.68	13.77

A description of each of the other essential criteria and associated assessment in regards to the AOI is provided in the following sections.

Criteria H. Essential and general habitat for priority taxa: Priority taxa are those which are at risk or of management concern, taxa of scientific interest as relictual (ancient or primitive), endemic taxa or locally significant populations (such as a flying fox camp or heronry), highly specialised taxa whose habitat requirements are complex and distributions are not well correlated with any particular regional ecosystem, taxa important for maintaining genetic diversity (such as complex spatial patterns of genetic variation, geographic range limits, highly disjunct populations), taxa critical for management or monitoring of biodiversity (functionally important or ecological indicators), or economic and culturally important taxa.

Criteria I. Special biodiversity values: areas with special biodiversity values are important because they contain multiple taxa in a unique ecological and often highly biodiverse environment. Areas with special biodiversity values can include the following:

- Ia - centres of endemism - areas where concentrations of taxa are endemic to a bioregion or subregion are found.
- Ib - wildlife refugia (Morton *et al*. 1995), for example, islands, mound springs, caves, wetlands, gorges, mountain ranges and topographic isolates, ecological refuges, refuges from exotic animals, and refuges from clearing. The latter may include large areas that are not suitable for clearing because of land suitability/capability.
- Ic - areas with concentrations of disjunct populations.
- Id - areas with concentrations of taxa at the limits of their geographic ranges.
- Ie - areas with high species richness.
- If - areas with concentrations of relictual populations (ancient and primitive taxa).
- Ig - areas containing REs with distinct variation in species composition associated with geomorphology and other environmental variables.
- Ih - an artificial waterbody or managed/manipulated wetland considered by the panel/s to be of ecological significance.
- Ii - areas with a high density of hollow-bearing trees that provide habitat for animals.
- Ij - breeding or roosting sites used by a significant number of individuals.
- Ik - climate change refuge.

The following table identifies the value and extent area of the Other Essential Criteria H and I within the AOI.

Table 13: Relative importance of expert panel criteria (H and I) used to access overall biodiversity significance with respect to the AOI

Expert Panel	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
H: Core Habitat Priority Taxa	0.00	0.00	0.00	0.00	8.98	14.25	0.00	0.00
Ia: Centres of Endemism	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ib: Wildlife Refugia	8.98	14.25	0.00	0.00	0.00	0.00	0.00	0.00
Ic: Disjunct Populations	7.01	11.13	0.00	0.00	0.00	0.00	0.00	0.00
Id: Limits of Geographic Ranges	0.00	0.00	7.01	11.13	0.00	0.00	0.00	0.00
Ie: High Species Richness	0.00	0.00	1.96	3.12	7.01	11.13	0.00	0.00
If: Relictual Populations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ig: Variation in Species Composition	0.00	0.00	7.01	11.13	0.00	0.00	0.00	0.00
Ih: Artificial Wetland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ii: Hollow Bearing Trees	0.00	0.00	7.01	11.13	0.00	0.00	0.00	0.00
Ij: Breeding or Roosting Site	8.98	14.25	0.00	0.00	0.00	0.00	0.00	0.00
Ik: Climate Refugia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

NB. Whilst biodiversity values associated with Criteria I may be present within the site (refer to tables 12 and 15), for the New England Tableland and Central Queensland Coast BPAs, area and % area figures associated with Criteria Ia through to Ij cannot be listed in the table above (due to slight variations in data formats between BPAs).

Criteria J. Corridors: areas identified under this criterion qualify either because they are existing vegetated corridors important for contiguity, or cleared areas that could serve this purpose if revegetated. Some examples of corridors include riparian habitats, transport corridors and "stepping stones".

Bioregional and subregional conservation corridors have been identified in the more developed bioregions of Queensland through the BPAs, using an intensive process involving expert panels. Map 3 displays the location of corridors as identified under the Statewide Corridor network. The Statewide Corridor network incorporates BPA derived corridors and for bioregions where no BPA has been assessed yet, corridors derived under other planning processes. *Note: as a result of updating and developing a statewide network, the alignment of corridors may differ slightly in some instances when compared to those used in individual BPAs.*

The functions of these corridors are:

- **Terrestrial** Bioregional corridors, in conjunction with large tracts of remnant vegetation, maintain ecological and evolutionary processes at a landscape scale, by:

- Maintaining long term evolutionary/genetic processes that allow the natural change in distributions of species and connectivity between populations of species over long periods of time;
- Maintaining landscape/ecosystems processes associated with geological, altitudinal and climatic gradients, to allow for ecological responses to climate change;
- Maintaining large scale seasonal/migratory species processes and movement of fauna;
- Maximising connectivity between large tracts/patches of remnant vegetation;
- Identifying key areas for rehabilitation and offsets; and

- **Riparian** Bioregional Corridors also maintain and encourage connectivity of riparian and associated ecosystems.

The location of the corridors is determined by the following principles:

- Terrestrial

  - Complement riparian landscape corridors (i.e. minimise overlap and maximise connectivity);
  - Follow major watershed/catchment and/or coastal boundaries;
  - Incorporate major altitudinal/geological/climatic gradients;
  - Include and maximise connectivity between large tracts/patches of remnant vegetation;
  - Include and maximise connectivity between remnant vegetation in good condition; and

- Riparian

  - Located on the major river or creek systems within the bioregion in question.

The total extent of remnant vegetation triggered as being of "State", "Regional" or "Local" significance due to the presence of an overlying BPA derived terrestrial or riparian corridor within the AOI, is provided in the following table. For further information on how remnant vegetation is triggered due to the presence of an overlying BPA derived corridor, refer to the relevant landscape BPA expert panel report(s).

Table 14: Extent of triggered remnant vegetation due to the presence of BPA derived corridors with respect to the AOI

Biodiversity Significance	Area (Ha)	% of AOI
State	0.30	0.48

NB: area figures associated with the extent of corridor triggered remnant vegetation are only available for those bioregions where a BPA has been undertaken.

Refer to **Map 3** for further information.

Threatening process/condition (Criteria K) - areas identified by experts under this criterion may be used to amend (upgrade or downgrade) biodiversity significance arising from the "first-cut" analysis. The condition of remnant vegetation is affected by threatening processes such as weeds, ferals, grazing and burning regime, selective timber harvesting/removal, salinity, soil erosion, and climate change.

Assessment of Criteria K with respect to the AOI is not currently included in the "Biodiversity and Conservation Values" report, as it has not been applied to the majority of Queensland due to data/information limitations and availability.

Special Area Decisions

Expert panel derived "Special Area Decisions" are used to assign values to Other Essential Criteria. The specific decisions which relate to the AOI in question are listed in the table below.

Table 15: Expert panel decisions for assigning levels of biodiversity significance with respect to the AOI

Decision Number	Description	Panel Recommended Significance	Criteria Values
wet_fa_16	Large patches of lowland swamp forest	State	Ib (refugia): VH Ic (disjunct populations): VH Id (range limits): H Ie (species richness): M Ig (ecosystem variation): H Ii (hollows and habitat): H Ij (aggregation site): VH
wet_fa_02	Coastal fringing ecosystems	State	Ib (refugia): VH Ie (species richness): H Ij (aggregation site): VH

Decision Number	Description	Panel Recommended Significance	Criteria Values
wet_l_31a	Riparian bioregional corridors (landscape connections)	State	Criterion J (riparian corridor): STATE

Expert panel decision descriptions:

Decision Number	Description
wet_fa_16	Similar to lowland rainforest, lowland swamp forest within the Wet Tropics has been subject to extensive clearing, infilling and hydrological modification resulting in a diminished preclear extent, with much of the remaining extent in reduced condition. Examples of large complexes still present in moderate to good condition include those in Ella Bay, Kurramine, Woolamaroo, Edmund Kennedy NP to Hull Heads, areas on the northern side of the mouth of Bloomfield, and those situated at the mouth of the Daintree River. In terms of faunistic values, lowland swamp forest provides significant habitat for a number of threatened taxa including: *Hypochrysops apollo apollo, Crocodylus porosus, Casuarius casuarius* and *Petaurus gracilis*. Important community for crakes, bitterns, rails and kingfisher and a specific suite of bird fauna is present in in the dry season. Sections of the mapped extent are included in the Coastal Wet Tropics Key Biodiversity Area (Birdlife Australia 2018). Whilst not significant in terms of terrestrial endemic taxa (a few endemic lowland terrestrial taxa such as *Megacrania batesii* and *P. gracilis* utilise this habitat), most fish species endemic to the Wet Tropics are confined to lowland habitats and can also be found in this habitat, including: *Cairnsichthys rhombosomoides, C. bitaeniatus, Synclidopus hogani, Tandanus tropicanus, Melanotaenia utcheensis, Guyu wujalwujalensis, Glossogobius bellendenensis* and *Hephaestus tulliensis.* Similarities with Cape York fish assemblages occur, with populations present at the southern limit of their range often as disjunct occurrences e.g. *Melanotaenia maccullochi, Pseudomugil gertrudae* and *Denariusa australis.* Another distinctive feature is the only Australian presence of taxa found elsewhere in the world such as *Bunaka gyrinoides, Giurus margaritacea, Awaous acritosus, Glossogobius bicirrhosus* and *Ambassis miops.* These areas also acts as important nursery sites for commercial fish such as Barramundi (*Lates calcarifer*). A narrow range endemic invertebrate, *Megacrania batesii*, also resides in this area where stands of *Pandanus* spp. are present. For information on general vertebrate richness value see wet_fa_22.
wet_fa_02	Coastal habitats of the WET incorporate extensive areas of mudflat, beaches, mangroves and littoral forests, which stretch from Archer Point in the north to Bluewater Beach in the south. Various threatened taxa inhabit these environs which include Hypochrysops apollo apollo, Crocodylus porosus, Esacus magnirostris and Xeromys myoides. Mudflat and beaches provide important staging habitat for migratory waders such as Numenius madagascariensis, Calidris tenuirostris, C. canutus, Charadrius leschenaultia and C. mongolus. Well known shorebird areas include Cairns Esplanade-Trinity Inlet, Yule Point and beaches between Wonga Beach and Cooya, and at Lucinda. Sections of this area recognised as part of the Coastal Wet Tropics Key Biodiversity Area (Birdlife Australia 2018). Vulnerable sea turtle species (i.e. Chelonia mydas and Natator depressus) occasionally nest in these areas. Mangroves provide key nursery/nesting areas for crustaceans, fish and Ardea sumatrana, while Sternula albifrons nest on scattered sandspits. Significant crocodile areas include lower Daintree River, Saltwater Creek near Newell Beach, Dicksons Inlet/Packers Creek near Port Douglas, Trinity Inlet, Hull River-Cardwell (including Hinchinbrook Channel), lower Herbert River and Cattle Creek. Breeding noted for Hull River area.
wet_l_31a	Riparian corridors encompass some of the most diverse, dynamic and complex habitats incorporating both environmental and topographic gradients. Comparatively, such areas tend to exhibit high species richness with respect to both flora and fauna, provide important resources in terms of water, food, shelter, nesting and nursery sites and act as a refugia during periods of drought, or in response to longer terms impacts associated with climatic change. At the landscape scale, networks of major and minor riparian linkages are a significant element of habitat continuity and provide important migratory and dispersal pathways for a substantial number of species (especially birds, insects and flora, but also for many arboreal mammals and reptiles). In some areas of fragmented landscapes, watercourses often provide the only remaining habitat connectivity due to the extensive clearing and surrounding modified landscape. Within the WET, the panel determined that remnant vegetation within 200m and 100m of major and minor waterways should be designated as being of State and Regional significance respectively. The significance of selected riverine systems were also modified in some instances (Table 16). Corridor triggered remnant vegetation focuses upon identifying key connections between remaining core tracts/nodes (as identified under the special area decisions wet_l_25) within the bioregion. For further information regarding the broad principles and intent, as well as more specific information relating to the Wet Tropics riparian corridor network, refer to Section 3.3.2.2.

Aquatic Conservation Assessments

Introduction

The Aquatic Biodiversity Assessment and Mapping Method or AquaBAMM (Clayton *et al.* 2006), was developed to assess conservation values of wetlands in queensland, and may also have application in broader geographical contexts. It is a comprehensive method that uses available data, including data resulting from expert opinion, to identify relative wetland conservation/ecological values within a specified study area (usually a catchment). The product of applying this method is an Aquatic Conservation Assessment (ACA) for the study area.

An ACA using AquaBAMM is non-social, non-economic and identifies the conservation/ecological values of wetlands at a user-defined scale. It provides a robust and objective conservation assessment using criteria, indicators and measures that are founded upon a large body of national and international literature. The criteria, each of which may have variable numbers of indicators and measures, are naturalness (aquatic), naturalness (catchment), diversity and richness, threatened species and ecosystems, priority species and ecosystems, special features, connectivity and representativeness. An ACA using AquaBAMM is a powerful decision support tool that is easily updated and simply interrogated through a geographic information system (GIS).

Where they have been conducted, ACAs can provide a source of baseline wetland conservation/ecological information to support natural resource management and planning processes. They are useful as an independent product or as an important foundation upon which a variety of additional environmental and socio-economic elements can be added and considered (i.e. an early input to broader 'triple-bottom-line' decision-making processes). An ACA can have application in:

- determining priorities for protection, regulation or rehabilitation of wetlands and other aquatic ecosystems
- on-ground investment in wetlands and other aquatic ecosystems
- contributing to impact assessment of large-scale development (e.g. dams)
- water resource and strategic regional planning prcesses

For a detailed explanation of the methodology please refer to the summary and expert panel reports relevant to the ACA utilised in this assessment. These reports can be accessed at Wetland *Info*:

http://wetlandinfo.des.qld.gov.au/wetlands/assessment/assessment-methods/aca

The GIS results can be downloaded from the Queensland Spatial Catalogue at:

https://qldspatial.information.qld.gov.au/catalogue/custom/index.page

Explanation of Criteria

Under the AquaBAMM, eight criteria are assessed to derive an overall conservation value. Similar to the Biodiversity Assessment and Mapping Methodology, the criteria may be primarily diagnostic (quantitative) or primarily expert opinion (qualitative) in nature. The following sections provide a brief description of each of the 8 criteria.

Criteria 1. Naturalness - Aquatic: This attribute reflects the extent to which a wetland's (riverine, non-riverine, estuarine) aquatic state of naturalness is affected through relevant influencing indicators which include: presence of exotic flora and fauna; presence of aquatic communities; degree of habitat modification and degree of hydrological modification.

Criteria 2. Naturalness - Catchment: The naturalness of the terrestrial systems of a catchment can have an influence on many wetland characteristics including: natural ecological processes e.g. nutrient cycling, riparian vegetation, water chemistry, and flow. The indicators utilised to assess this criterion include: presence of exotic flora and/or fauna; riparian, catchment and flow modification.

Criteria 3. Naturalness - Diversity and Richness: This criterion is common to many ecological assessment methods and can include both physical and biological features. It includes such indicators as species richness, riparian ecosystem richness and geomorphological diversity.

Criteria 4. Threatened Species and Ecosystems: This criterion evaluates ecological rarity characteristics of a wetland. This includes both species rarity and rarity of communities / assemblages. The communities and assemblages are best represented by regional ecosystems. Species rarity is determined by NCA and EPBC status with Endangered, Vulnerable or Near-threatened species being included in the evaluation. Ecosystem rarity is determined by regional ecosystem biodiversity status i.e. Endangered, Of Concern, or Not of Concern.

Criteria 5. Priority Species and Ecosystems: Priority flora and fauna species lists are expert panel derived. These are aquatic, semi-aquatic and riparian species which exhibit at least 1 particular trait in order to be eligible for consideration. For flora species the traits included:

- It forms significant macrophyte beds (in shallow or deep water).
- It is an important food source.
- It is important/critical habitat.
- It is implicated in spawning or reproduction for other fauna and/or flora species.
- It is at its distributional limit or is a disjunct population.
- It provides stream bank or bed stabilisation or has soil binding properties.
- It is a small population and subject to threatening processes.

Fauna species are included if they meet at least one of the following traits:

- It is endemic to the study area (>75 per cent of its distribution is in the study area/catchment).
- It has experienced, or is suspected of experiencing, a serious population decline.
- It has experienced a significant reduction in its distribution and has a naturally restricted distribution in the study area/catchment.
- It is currently a small population and threatened by loss of habitat.
- It is a significant disjunct population.
- It is a migratory species (other than birds).
- A significant proportion of the breeding population (>one per cent for waterbirds, >75 per cent other species) occurs in the waterbody (see Ramsar criterion 6 for waterbirds).
- Limit of species range.

See the individual expert panel reports for the priority species traits specific to an ACA.

Criteria 6. Special Features: Special features are areas identified by flora, fauna and ecology expert panels which exhibit characteristics beyond those identified in other criteria and which the expert panels consider to be of the highest ecological importance. Special feature traits can relate to, but are not solely restricted to geomorphic features, unique ecological processes, presence of unique or distinct habitat, presence of unique or special hydrological regimes e.g. spring-fed streams. Special features are rated on a 1 - 4 scale (4 being the highest).

Criteria 7. Connectivity: This criterion is based on the concept that appropriately connected aquatic ecosystems are healthy and resilient, with maximum potential biodiversity and delivery of ecosystem services.

Criteria 8. Representativeness: This criterion applies primarily to non-riverine assessments, evaluates the rarity and uniqueness of a wetland type in relation to specific geographic areas. Rarity is determined by the degree of wetland protection within "protected Areas" estate or within an area subject to the *Fisheries Act 1994*, *Coastal Protection and Management Act 1995*, or *Marine Parks Act 2004*. Wetland uniqueness evaluates the relative abundance and size of a wetland or wetland management group within geographic areas such as catchment and subcatchment.

Riverine Wetlands

Riverine wetlands are all wetlands and deepwater habitats within a channel. The channels are naturally or artificially created, periodically or continuously contain moving water, or connecting two bodies of standing water. AquaBAMM, when applied to riverine wetlands uses a discrete spatial unit termed subsections. A subsection can be considered as an area which encompasses discrete homogeneous stream sections in terms of their natural attributes (i.e. physical, chemical, biological and utilitarian values) and natural resources. Thus in an ACA, an aquatic conservation significance score is calculated for each subsection and applies to all streams within a subsection, rather than individual streams as such.

Please note, the area figures provided in Tables 16 and 17, are derived using the extent of riverine subsections within the AOI. Refer to **Map 5** for further information. A summary of the conservation significance of riverine wetlands within the AOI is provided in the following table.

Table 16: Overall level/s of riverine aquatic conservation significance

Aquatic conservation significance (riverine wetlands)	Area (Ha)	% of AOI
Very High	62.99	100.00

The individual aquatic conservation criteria ratings for riverine wetlands within the AOI are listed below.

Table 17: Level/s of riverine aquatic conservation significance based on selected criteria

Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
1. Naturalness aquatic	0.00	0.00	0.00	0.00	0.00	0.00	62.99	100.00
2. Naturalness catchment	0.20	0.32	62.79	99.68	0.00	0.00	0.00	0.00
3. Diversity and richness	62.99	100.00	0.00	0.00	0.00	0.00	0.00	0.00
4. Threatened species and ecosystems	62.79	99.68	0.20	0.32	0.00	0.00	0.00	0.00
5. Priority species and ecosystems	62.79	99.68	0.00	0.00	0.00	0.00	0.00	0.00
6. Special features	62.99	100.00	0.00	0.00	0.00	0.00	0.00	0.00
7. Connectivity	62.99	100.00	0.00	0.00	0.00	0.00	0.00	0.00
8. Representativeness	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

The table below lists and describes the relevant expert panel decisions used to assign conservation significance values to riverine wetlands within the AOI.

Table 18: Expert panel decisions for assigning overall levels of riverine aquatic conservation significance

Decision number	Special feature	Catchment	Criteria/Indicator/Measure	Conservation rating (1-4)
da_r_ec_02	Brown Creek wetlands south of Alexandra Range	Daintree	6.3.1	4
da_r_fa_02	Northern bank of Daintree/ Forest creek road area	Daintree	6.3.1	4

4 is the highest rating/value

Expert panel decision descriptions:

Decision number	Description
da_r_ec_02	The wetlands south of Alexandra Range identified in this decision are an interplay of tidal and freshwater wetlands containing a large complex of mangroves and freshwater wetland species. The site contains many threatened communities and species and provides an important function as a fish nursery area. **Note**: This decision was also included in the non-riverine ACA assessment (decision number da_nr_ec_04). See the Wet Tropics non-riverine report for more details.
da_r_fa_02	The northern bank of the Daintree River contains good biodiversity and good fish habitat including an isolated population of McCullough's rainbow fish (*Melanotaenia maccullochi*) which is morphologically distinctive, endangered species of frogs, good cassowary (*Casuarius casuarius johnsonii*) habitat and is home for many other rare and threatened species.

Non-riverine Wetlands

Non-riverine wetlands include both lacustrine and palustrine wetlands, however, do not currently incorporate estuarine, marine or subterranean wetland types. A summary of the conservation significance of non-riverine wetlands within the AOI is provided in the following table. Refer to **Map 6** for further information.

Table 19: Overall level/s of non-riverine aquatic conservation significance

Aquatic conservation significance (non-riverine wetlands)	Area (Ha)	% of AOI
Very High	10.18	16.16
High	2.68	4.25

The following table provides an assessment of non-riverine wetlands within the AOI and associated aquatic conservation criteria values.

Table 20: Level/s of non-riverine aquatic conservation significance based on selected criteria

Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
1. Naturalness aquatic	0.00	0.00	2.68	4.25	0.00	0.00	10.18	16.16
2. Naturalness catchment	0.00	0.00	0.00	0.00	12.86	20.42	0.00	0.00
3. Diversity and richness	12.86	20.42	0.00	0.00	0.00	0.00	0.00	0.00
4. Threatened species and ecosystems	12.86	20.42	0.00	0.00	0.00	0.00	0.00	0.00
5. Priority species and ecosystems	12.86	20.42	0.00	0.00	0.00	0.00	0.00	0.00
6. Special features	10.18	16.16	2.68	4.25	0.00	0.00	0.00	0.00
7. Connectivity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8. Representativeness	10.18	16.16	0.00	0.00	2.68	4.25	0.00	0.00

The table below lists and describes the relevant expert panel decisions used to assign conservation significance values to non-riverine wetlands within the AOI.

Table 21: Expert panel decisions for assigning overall levels of non-riverine aquatic conservation significance.

Decision number	Special feature	Catchment	Criteria/Indicator/ Measure	Conservation rating (1-4)
da_nr_ec_03	McDowall Swamp	Daintree	6.4.1	2
da_nr_fl_02	Daintree River	Daintree	6.3.1	4

4 is the highest rating/value

Expert panel decision descriptions:

Decision number	Description
da_nr_ec_03	McDowall Swamp contains a mix of freshwater and estuarine species. The swamp has connectivity with surrounding riverine and estuarine wetlands in the Daintree River. The area is under threat from surrounding land uses. The swamp has been identified as a good site to focus rehabilitation efforts.
da_nr_fl_02	The Daintree River contains significant areas of *Melaleuca cajuputi* in a series of large swamp ecosystems. The area also contains many unique and disjunct habitats as well as disjunct and threatened species. **Note**: This decision was also included in the riverine ACA assessment (decision number da_r_fl_02). See the Wet Tropics riverine report for more details.

Threatened and Priority Species

Introduction

This chapter contains a list of threatened and priority flora and/or fauna species that have been recorded on, or within 4km of the Assessment Area.

The information presented in this chapter with respect to species presence is derived from compiled databases developed primarily for the purpose of BPAs and ACAs. Data is collated from a number of sources and is updated periodically.

It is important to note that the list of species provided in this report, may differ when compared to other reports generated from other sources such as the State government's WildNet, Herbrecs or the federal government's EPBC database for a number of reasons.

Records for threatened and priority species are filtered and checked based on a number of rules including:

- Taxonomic nomenclature - current scientific names and status,
- Location - cross-check co-ordinates with location description,
- Taxon by location - requires good knowledge of the taxon and history of the record,
- Duplicate records - identify and remove,
- Expert panels - check records and provide new records,
- Flora cultivated records excluded,
- Use precise records less than or equal to 2000m,
- Use recent records greater than or equal to 1975 animals, greater than or equal to 1950 plants.

Threatened Species

Threatened species are those species classified as "Endangered" or "Vulnerable" under the *Environment Protection and Biodiversity Conservation Act 1999* or "Endangered", "Vulnerable" or "Near threatened" under the *Nature Conservation Act 1992*.

The following threatened species have been recorded on, or within approximately 4km of the AOI.

Table 22: Threatened species recorded on, or within 4km of the AOI

Species	Common name	NCA status	EPBC status	Migratory species*	Wetland species**	Identified flora/fauna
Acronychia acuminata		NT				FL
Austromuellera trinervia		NT				FL
Cairnsichthys bitaeniatus	Daintree rainbowfish		CE			FA
Calidris acuminata	sharp-tailed sandpiper	SL	V	Y	I	FA
Casuarius casuarius johnsonii (southern population)	southern cassowary (southern population)	E	E			FA
Crocodylus porosus	estuarine crocodile	V		Y	I	FA
Cyclopsitta diophthalma macleayana	Macleay's fig-parrot	V				FA
Dasyurus maculatus gracilis	spotted-tailed quoll (northern subspecies)	E	E			FA

Species	Common name	NCA status	EPBC status	Migratory species*	Wetland species**	Identified flora/fauna
Dendrolagus bennettianus	Bennett's tree-kangaroo	NT				FA
Dioclea hexandra		E				FL
Endiandra cooperana		E	E			FL
Endiandra grayi		V				FL
Endiandra microneura		NT				FL
Freycinetia marginata		E				FL
Gallinago hardwickii	Latham's snipe	SL	V	Y	I	FA
Gardenia actinocarpa		E	E			FL
Hedyotis novoguineensis		E				FL
Heliodendron xanthoxylon	yellow siris	NT				FL
Hipposideros diadema reginae	diadem leaf-nosed bat	NT				FA
Isachne sharpii		E			I	FL
Lepiderema hirsuta		NT				FL
Mischocarpus albescens		NT				FL
Musa jackeyi		E				FL
Pteropus conspicillatus	spectacled flying-fox	E	E			FA
Rhodamnia sessiliflora		E				FL
Rhodomyrtus effusa		E				FL
Ryparosa kurrangii		NT				FL
Sticherus milnei		V				FL
Xanthophyllum fragrans		NT				FL

NB. Please note that the threatened species listed in this section are based upon the most recently compiled DETSI internal state-wide threatened species dataset. This dataset may contain additional records that were not originally available for inclusion in the relevant individual BPAs and ACAs.

**JAMBA - Japan-Australia Migratory Bird Agreement; CAMBA - China-Australia Migratory Bird Agreement; ROKAMBA - Republic of Korea-Australia Migratory Bird Agreement; CMS - Convention on the Conservation of Migratory Species.*

***I - wetland indicator species; D - wetland dependent species.*

BPA Priority Species

A list of BPA priority species that have been recorded on, or within approximately 4km of the AOI is contained in the following table.

Table 23: Priority species recorded on, or within 4km of the AOI

Species	Common name	Identified flora/fauna
Ailuroedus maculosus	spotted catbird	FA

Species	Common name	Identified flora/fauna
Barringtonia racemosa		FL
Melaleuca cajuputi subsp. platyphylla		FL
Melaleuca leucadendra	broad-leaved tea-tree	FL
Melaleuca quinquenervia	swamp paperbark	FL
Ptiloris victoriae	Victoria's riflebird	FA
Scirpodendron ghaeri		FL

NB. Please note that the list of priority species is based on those species identified in the BPAs, however records for these species may be more recent than the originals used. furthermore, the BPA priority species databases are updated from time to time. At each update, the taxonomic details for all species are amended as necessary to reflect current taxonomic name and/or status changes.

ACA Priority Species

A list of ACA priority species used in riverine and non-riverine ACAs that have been recorded on, or within approximately 4km of the AOI are contained in the following tables.

Table 24: Priority species recorded on, or within 4 km of the AOI - riverine

(No Records)

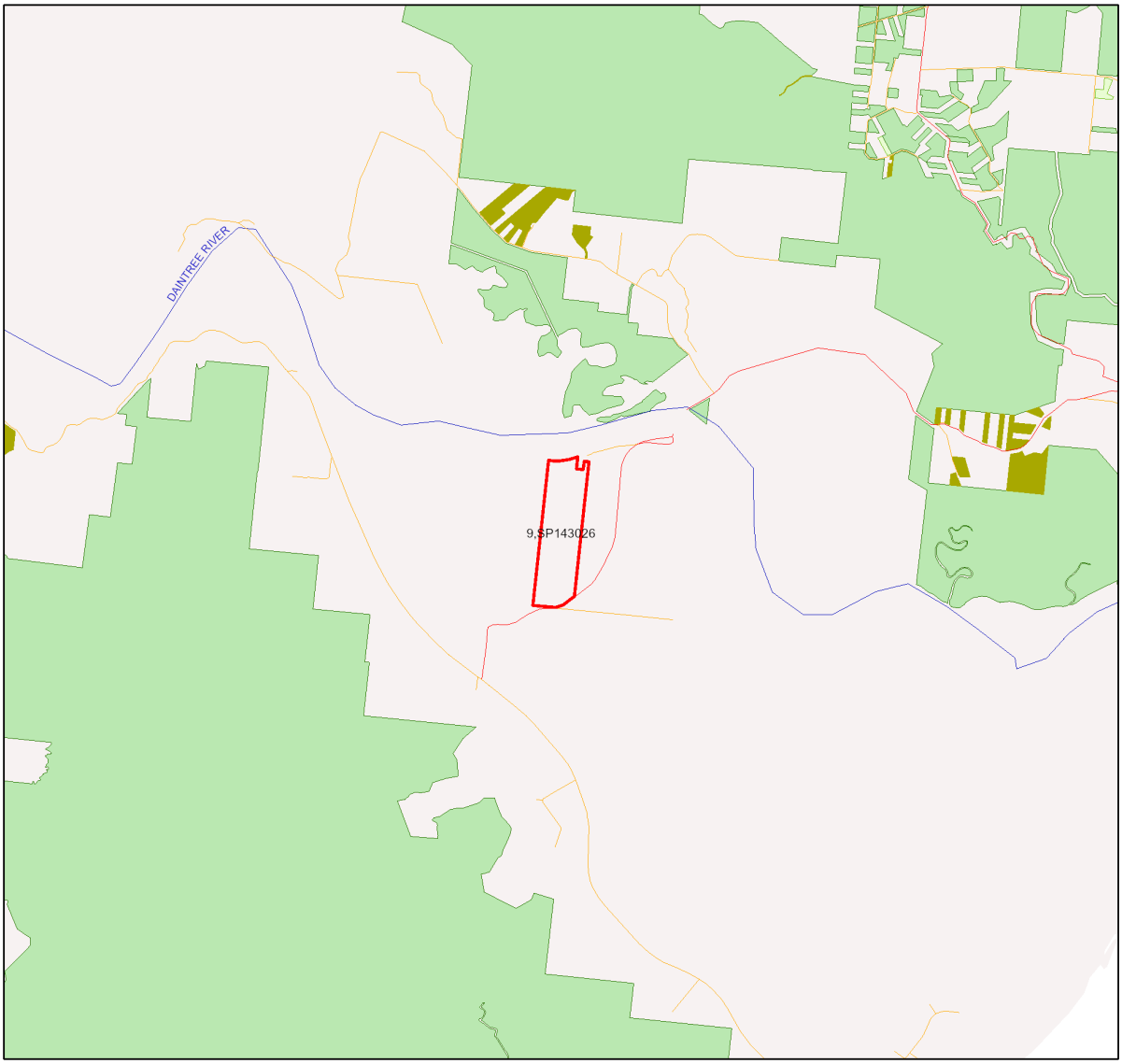
Table 25: Priority species recorded on, or within 4 km of the AOI - non-riverine

Species	Common name	Identified flora/fauna
Gahnia sieberiana	sword grass	FL

NB. Please note that the priority species records used in the above two tables are comprised of those adopted for the released individual ACAs. The ACA riverine and non-riverine priority species databases are updated from time to time to reflect new release of ACAs. At each update, the taxonomic details for all ACAs records are amended as necessary to reflect current taxonomic name and/or status changes.

Maps

Map 1 - Locality Map

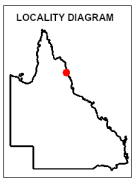


Locality Map

Legend

- Towns
- Freeways/Highways
- Connector
- Street/Local Road
- Lakes and reservoirs
- National Park
- National Park (Scientific)
- National Park (CYPAL)
- National Park (Aboriginal Land)
- Conservation Park
- Resources Reserve
- Forest Reserve
- State Forest
- Timber Reserve
- Nature Refuges
- Coordinated Conservation Areas
- Major rivers/creeks
- Queensland
- Selected Lot and Plan

LOCALITY DIAGRAM



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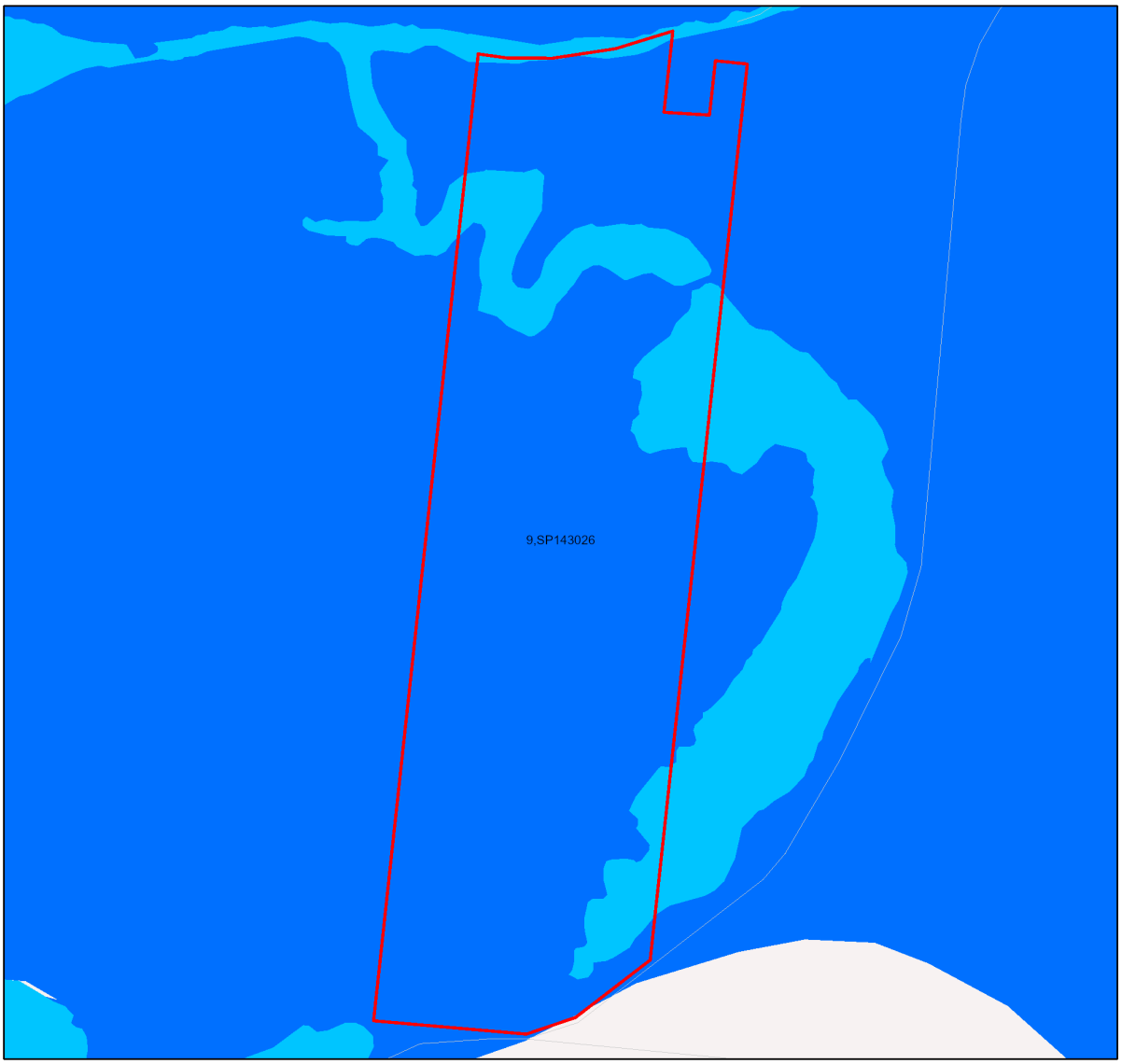
Map 2 - Biodiversity Planning Assessment (BPA)



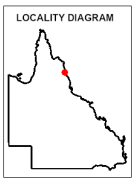
Biodiversity Planning Assessments

- Towns
- Roads
- Major Rivers/Creeks
- Queensland

Biodiversity Planning Assessment

- State Habitat for EVNT taxa
- State
- Regional
- Local or Other Values
- Selected Lot and Plan

LOCALITY DIAGRAM



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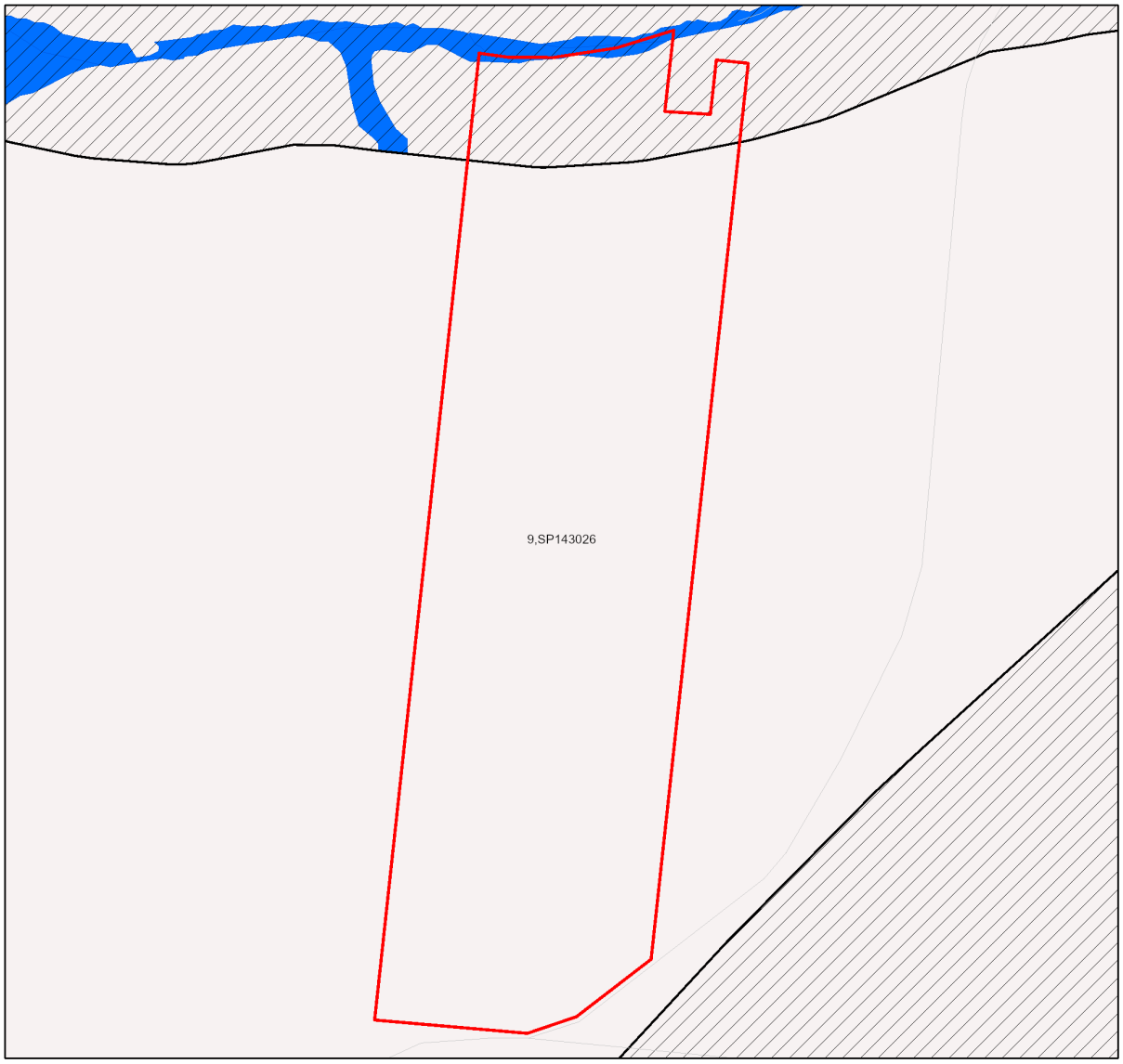
Map 3 - Corridors



Corridors

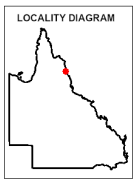
- Towns
- Roads
- Queensland
- Major Rivers/Creeks

Corridors
- State
- Regional

Corridor Triggered Vegetation
- State
- Regional
- Local

Core Area Vegetation
- Brigalow Belt Only
- Selected Lot and Plan

LOCALITY DIAGRAM



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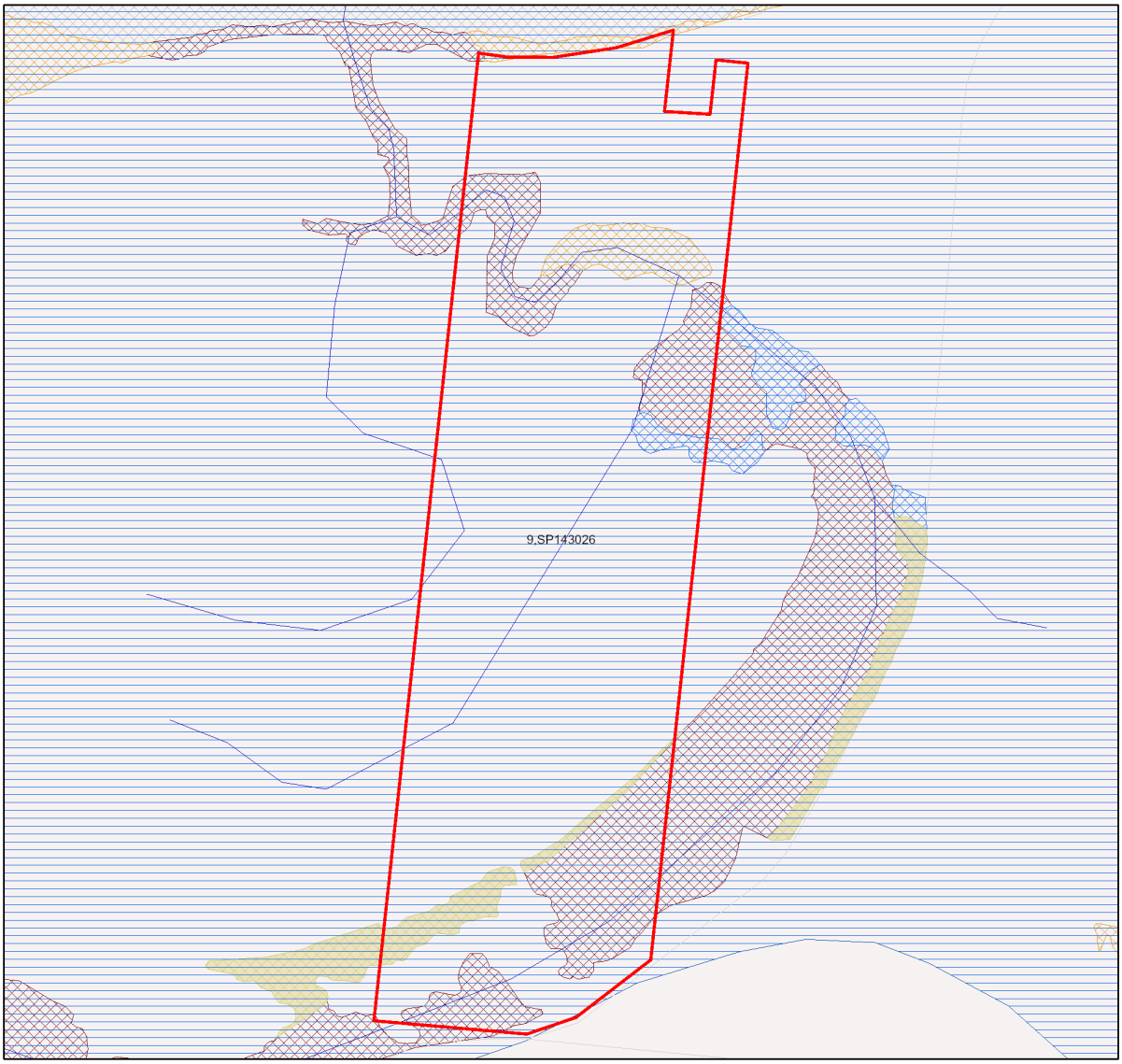
Map 4 - Wetlands and waterways



Wetlands and Waterways

- Towns
- Roads
- Springs
- Rivers/Creeks
- Directory of Important Wetlands
- Ramsar Sites - QLD

Wetland Type

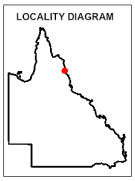
Hydrologically natural Wetlands
- Lacustrine Wetlands (hydrologically natural)
- Palustrine Wetlands (hydrologically natural)
- Riverine Wetlands (hydrologically natural)
- Intertidal Wetlands (hydrologically natural)
- Subtidal Wetlands (hydrologically natural)
- Intertidal/Subtidal Wetlands (hydrologically natural)

Hydrologically Modified and Artificial Wetlands
- Lacustrine Wetlands (hydrologically modified or artificial)
- Palustrine Wetlands (hydrologically modified or artificial)
- Riverine Wetlands (hydrologically modified or artificial)
- Intertidal Wetlands (hydrologically modified or artificial)
- Subtidal Wetlands (hydrologically modified or artificial)
- Intertidal/Subtidal Wetlands (hydrologically modified or artificial)

Subdominant Wetlands
- Subdominant Wetlands (51 - 80%)

Contains Wetlands
- Contains Wetlands (1 - 50%)
- Queensland
- Selected Lot and Plan

LOCALITY DIAGRAM



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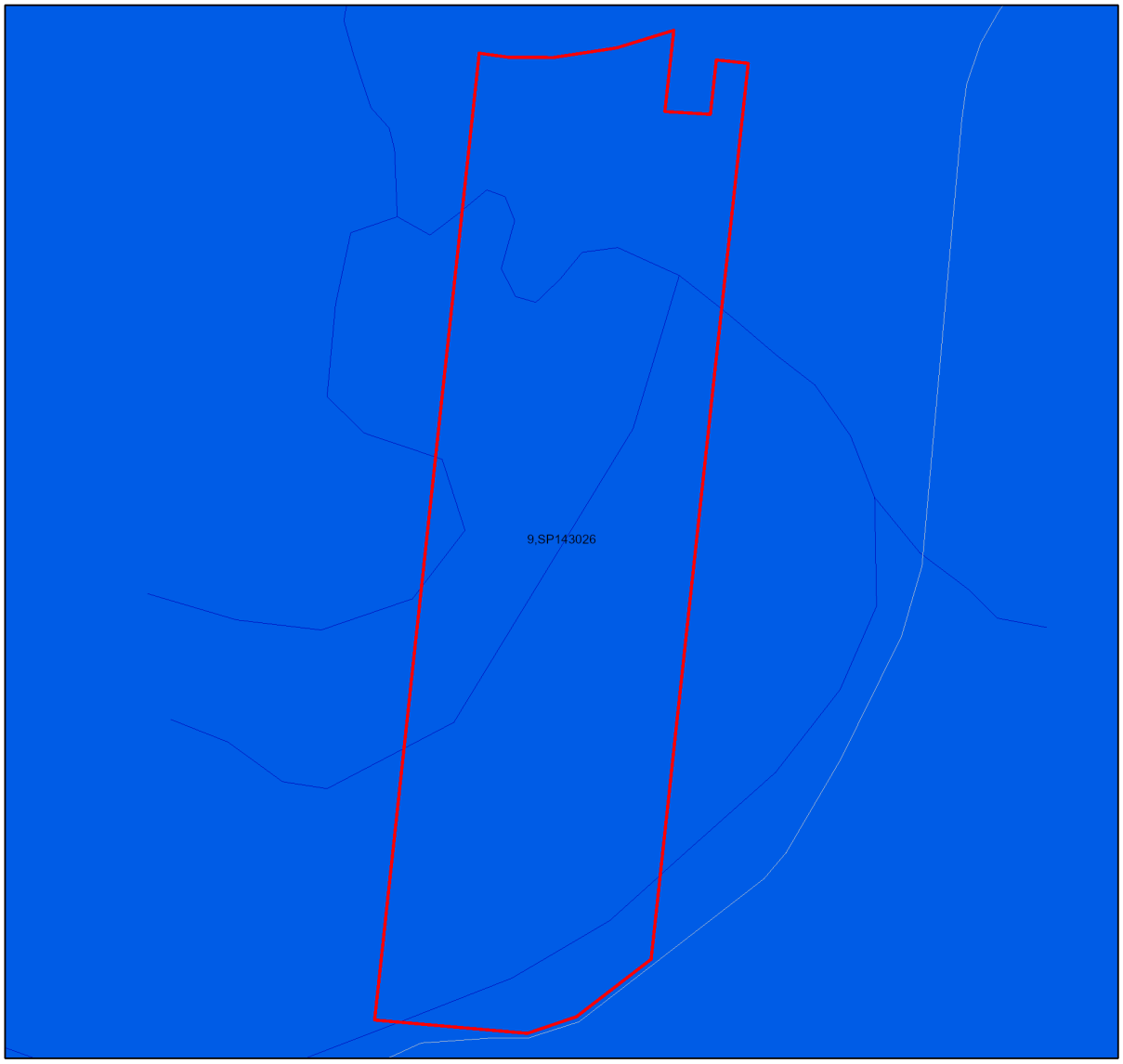
Map 5 - Aquatic Conservation Assessment (ACA) - riverine



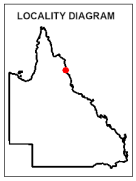
Aquatic Conservation Assessment (ACA) - riverine

- Towns
- Roads
- Rivers/Creeks
- Queensland

ACA Riverine - Subcatchment Significance

- Very High
- High
- Medium
- Low
- Very Low
- Selected Lot and Plan

LOCALITY DIAGRAM



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Map 6 - Aquatic Conservation Assessment (ACA) - non-riverine

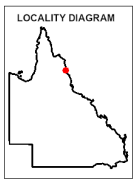
Aquatic Conservation Assessment (ACA) - nonriverine

- Towns
- Roads
- Rivers/Creeks
- Queensland

ACA Non-riverine

- Very High
- High
- Medium
- Low
- Very Low
- Selected Lot and Plan

LOCALITY DIAGRAM



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Clayton, P.D., Fielder, D.F., Howell, S. and Hill, C.J. (2006) *Aquatic biodiversity assessment and mapping method (AquaBAMM): a conservation values assessment tool for wetlands with trial application in the Burnett River catchment.* Published by the Environmental Protection Agency, Brisbane. ISBN 1-90928-07-3. Available at

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Appendices

Appendix 1 - Source Data

Theme	Datasets
Aquatic Conservation Assessments Non-riverine*	Combination of the following datasets: Cape York Peninsula Non-riverine v1.1 Eastern Gulf of Carpentaria v1.1 Great Barrier Reef Catchment Non-riverine v1.3 Lake Eyre and Bulloo Basins v1.1 QMDBB Non-riverine ACA v2.1 Southeast Queensland ACA v1.1 WBB Non-riverine ACA v1.1 Southern Gulf Catchments Non-riverine ACA v1.1 WBBGBRCC Non-riverine ACA v2.1
Aquatic Conservation Assessments Riverine*	Combination of the following datasets: Cape York Peninsula Riverine v1.1 Eastern Gulf of Carpentaria v1.1 Great Barrier Reef Catchment Riverine v1.1 Lake Eyre and Bulloo Basins v1.1 QMDBB Riverine ACA v2.1 Southeast Queensland ACA v1.1 WBB Riverine ACA v1.1 Southern Gulf Catchments Riverine ACA v1.1 WBBGBRCC Riverine ACA v2.1
Biodiversity Planning Assessments*	Combination of the following datasets: Brigalow Belt BPA v2.1 Cape York Peninsula BPA v1.1 Central Queensland Coast BPA v1.3 Channel Country BPA v1.1 Desert Uplands BPA v1.3 Einasleigh Uplands BPA v1.1 Gulf Plains BPA v1.1 Mitchell Grass Downs BPA v1.1 Mulga Lands BPA v1.4 New England Tableland v3.1 Northwest Highlands v1.1 Southeast Queensland v4.1 Wet Tropics v1.1
Statewide BPA Corridors*	Statewide corridors v1.7
Threatened Species	An internal DETSI database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.
BPA Priority Species	An internal DETSI database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.
ACA Priority Species	An internal DETSI database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.

These datasets are available at:
http://dds.information.qld.gov.au/DDS

Appendix 2 - Acronyms and Abbreviations

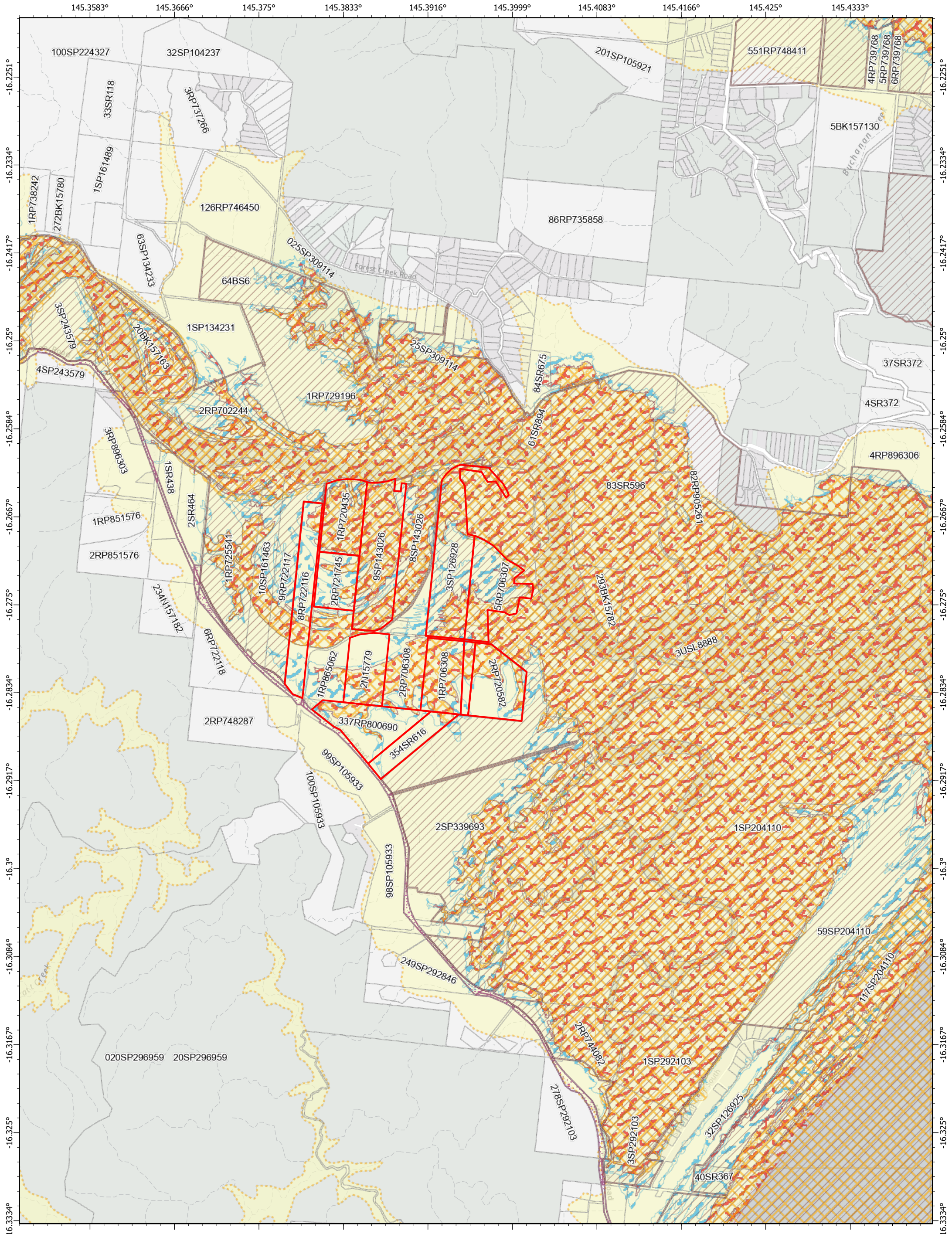
AOI	- Area of Interest
ACA	- Aquatic Conservation Assessment
AQUABAMM	- Aquatic Biodiversity Assessment and Mapping Methodology
BAMM	- Biodiversity Assessment and Mapping Methodology
BoT	- Back on Track
BPA	- Biodiversity Planning Assessment
CAMBA	- China-Australia Migratory Bird Agreement
DETSI	- Department of the Environment, Tourism, Science and Innovation
EPBC	- *Environment Protection and Biodiversity Conservation Act 1999*
EVNT	- Endangered, Vulnerable, Near Threatened
GDA2020	- Geocentric Datum of Australia 2020
GIS	- Geographic Information System
JAMBA	- Japan-Australia Migratory Bird Agreement
NCA	- *Nature Conservation Act 1992*
RE	- Regional Ecosystem
REDD	- Regional Ecosystem Description Database
ROKAMBA	- Republic of Korea-Australia Migratory Bird Agreement

SCHEDULE 7 -

STATE PLANNING POLICY MAPPING

SCHEDULE 7

PLAN



State Planning Policy IMS - Export Map

Making or amending a local planning instrument and designing land for local infrastructure

Date: 05/09/2025

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N

Scale: 1:36,200

0 780 1,560

Metres

Queensland Government

Queensland Government

- Cadastre (50k)
- Coastal management district
- Erosion prone area
- High storm tide inundation area
- Medium storm tide inundation area
- State-controlled road
- Flood hazard area - Level 1 - Queensland floodplain assessment overlay

State Planning Policy IMS - Export Map

Making or amending a local planning instrument and designing land for local infrastructure

Date: 05/09/2025