



Cable Beach

Native Vegetation Clearing Permit Supporting Information

**Prepared for
Shire of Broome**

May 2023

● people ● planet ● professional

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1 Introduction

1.1 Background

360 Environmental Pty Ltd, part of SLR Consulting (360 Environmental), was commissioned by the Shire of Broome (the Shire) to prepare a Native Vegetation Clearing Permit (NVCP) application relating to the Cable Beach Foreshore Redevelopment Project (the Project). Detailed information on the wider Project is provided in Appendix A. This is the second NVCP application for this Project and its purpose is primarily for clearing to facilitate the maintenance of an existing drainage swale.

The area of native vegetation required to be cleared for the Project is 1.64 ha ('the Proposed Clearing Area') and is located at Cable Beach Reserve on the western edge of the town of Broome (Figure 1). The Project is situated on Cable Beach Road West (PIN 11478834) and Crown Land (vested with the Shire) on Lot 2789 and Lot 2792, Cable Beach Road, Cable Beach.

Under Section 51C of the *Environmental Protection Act 1986* (EP Act), clearing of any native vegetation requires an approved clearing permit under Part V of the EP Act or approval under Part IV of the EP Act, unless an exemption applies. Exemptions generally apply to small areas of vegetation cleared for maintenance/ fire issues. Proposals that are determined to have a significant environmental impact are assessed under Part IV of the EP Act by the Environmental Protection Authority (EPA) through a separate process. In this case no exemptions apply to the proposed clearing and is not considered to have a significant environmental impact therefore an NVCP is required before clearing can commence.

The data and information presented in this report are from a combined database search and an in-season detailed vegetation survey (Appendix B).

1.2 Purpose of Document

The purpose of this NVCP supporting document is to present the results of an assessment of the proposed clearing against the ten clearing principles as defined in Schedule 5 of the EP Act and outlined in the (then) Department of Environment Regulation's (DER) *A guide to the assessment of applications to clear native vegetation* (2014) under Part V Division 2 of the EP Act. This report identifies the potential environmental impacts associated with the proposal based on the best available data. This report and accompanying NVCP Area Permit application form will be submitted to the Department of Water and Environmental Regulation (DWER) for assessment.

1.3 Proposed Timeframe

Clearing associated with this application is proposed to commence as soon as possible due to the Western Australian Government's 'Building Better Regions Fund' \$6 million grant closing in quarter four 2023; expected commencement is August 2023. The proposed Clearing Area is expected to be cleared within 60 workdays post-commencement. The full Project (refer Appendix A for more information) is expected to be completed by December 2025.

1.4 Responsible Applicant

The Shire of Broome are responsible for the implementation of the clearing described within this report. Correspondence relating to this NVCP application should be addressed to:

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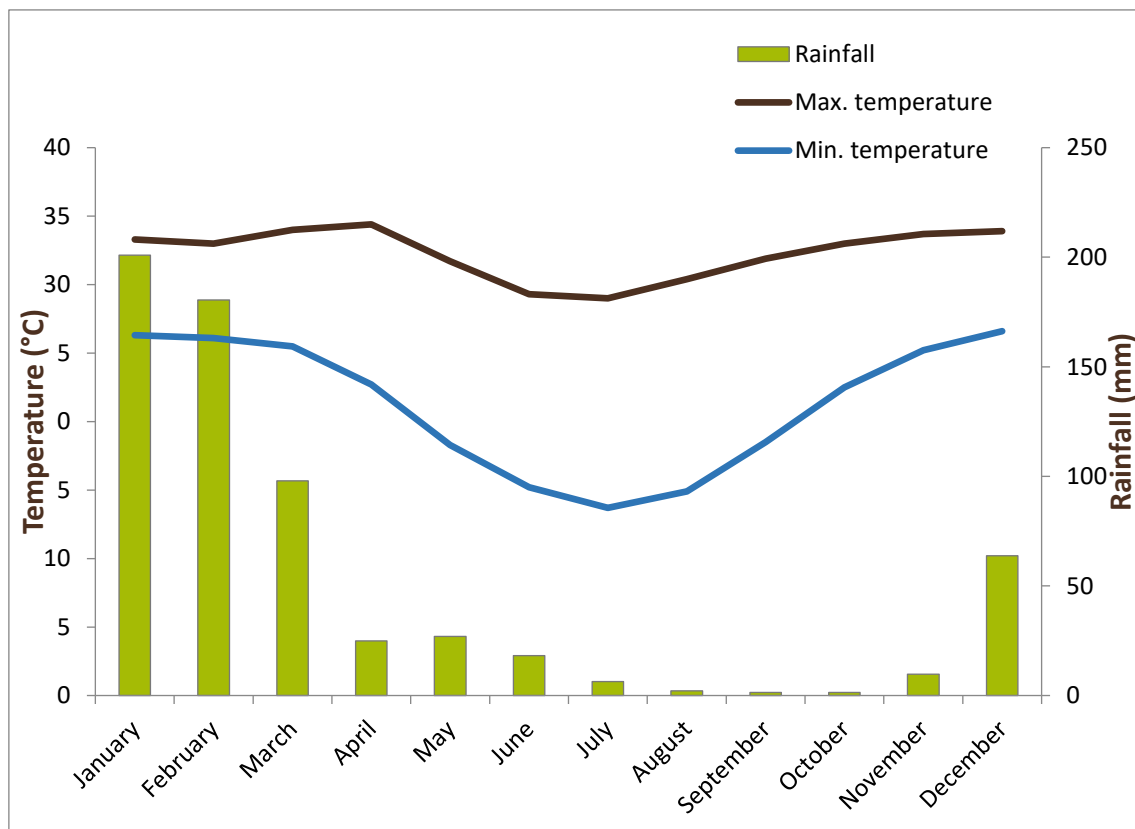
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2 Site Overview

2.1 Climate

The nearest Bureau of Meteorology (BoM) weather station to the Project is Broome Airport (Station No. 003003) located approximately 2.7 km southeast from the Project. Data statistics have been collected from 1939 to 2023. The long-term mean minimum temperature for Broome Airport Station ranges from 13.7°C (July) to 26.6°C (December). The long-term mean maximum temperature ranges from 29°C (July) to 34.4°C (April) (Bureau of Meteorology, 2023). Broome receives rainfall 35.3 days annually with an average annual mean rain of 627.6 mm (Graph 1).



Graph 1: Climate Statistics for Broome Airport (Station No. 003003; Bureau of Meteorology, 2023).

2.2 Topography

The topography is variable across the Clearing Area and ranges from 13 m Australian Height Datum (AHD) to 17 m AHD. The highest elevation points are on the northern and southern side of the Clearing Area (Google Earth Pro, 2023).

2.3 Interim Biogeographic Regionalisation of Australia

The Interim Biogeographic Regionalisation of Australia (IBRA) divides Australia into 89 bioregions based on major biological, geographical, and geological attributes. These bioregions are subdivided into 419 subregions as part of a refinement of the IBRA framework (Department of Climate Change, Energy, the Environment and Water, 2021).

The Clearing Area is mapped within the Dampierland bioregion and the Pindanland (DAL02) subregion. The Dampierland bioregion is composed of quaternary marine deposits on coastal plains, with mangal and samphire - *Sporobolus* spp. grasslands, *Melaleuca alsophila* low forests, and *Spinifex* spp. – *Crotalaria* spp. strand communities. The Pindanland subregion comprises sandplains of the Dampier Peninsula that includes fine-textured sand-sheets with subdued dunes. It is a coastal, semi-arid basin comprising of mangroves, coastal dune communities, and grasslands with scattered low trees (Graham, 2001).

The following vegetation is consistent with the Pindanland subregion: *Eucalyptus tectifica* (Darwin box), *Corymbia flavescentes* woodland with *Acacia tumida* (pindan wattle) open-scrub and *Chrysopogon* spp. (ribbon grass) and *Triodia bitextura* grasses. These are supported by *Eucalyptus tetradonta* (Darwin stringybark), *Eucalyptus miniata* (Darwin woollybutt), *Melaleuca citrolens* (lemon-scented teatree) and *Melaleuca* spp. (paperbark) low woodland with sparse *Chrysopogon fallax* (golden beard grass) tussock grasses (Graham, 2001).

2.4 Soil Landscape Systems

Soil landscapes and land system mapping of Western Australia describes broad soil and landscape characteristics from regional to local scales, and has been captured at scales ranging from 1:20,000 to 1:250,000 (Department of Primary Industries and Regional Development [DPIRD], 2019). The Clearing Area is comprised of one soil land system, Yeeda System 335Ye. This system is described as red sandplains supporting pindan vegetation with dense acacia shrubs, scattered bloodwood, grey box trees, curly spinifex, and ribbon grass. The main soil type is red deep sand (82%), with red sandy earth (7%) and yellow deep sand (7%) (DPIRD, 2019).

2.5 Hydrology

2.5.1 Groundwater

The Broome Sandstone Aquifer is the primary groundwater resource within the region. It is a layered aquifer comprising coarse sandstone and conglomerate and is around 250 m thick beneath Broome. Groundwater within the Broome Sandstone is recharged by direct rainfall infiltration, with fresh to slightly brackish groundwater overlying a saltwater wedge. The groundwater total dissolved solids (TDS) values range from 500 to 1,500 mg/L. The Clearing Area does not overlap any Public Drinking Water Sources Areas (PDWSA). The closest source for PDWSA is mapped approximately 10 km northeast to the Clearing Area.

2.5.2 Surface Water

The Clearing Area is within the Cape Leveque Coast Catchment, within the basin of the same name, of the Timor Sea Division. Surface water flows within the area are managed via the formal drainage network within the Broome Township area. Where formal drainage does not exist, flood water is stored in local depressions. Inundation from ocean flooding events is rare; the local drainage network is the dominant flood mechanism for the Broome Township.

Coconut Wells, consisting of a tidal lagoon and rock pools, is located approximately 10 km north of the Clearing Area (DWER, 2022). An unnamed minor river is identified approximately 14 km east of the Clearing Area. No surface drainage features were identified as overlapping the Clearing Area. The nearest surface water feature is the Indian Ocean located approximately 140 m west of the Clearing Area, however no direct impact will occur as a result of the clearing.

2.5.3 Wetlands

The nearest wetland to the Clearing Area is Roebuck Bay, a Ramsar Wetland located approximately 3.3 km east of the Clearing Area.

2.6 Conservation Features

Environmentally Sensitive Areas (ESAs) are declared by the Minister for Environment to prevent the degradation of important environmental values such as Threatened flora, Threatened Ecological Communities (TECs) or significant wetlands.

The entire Clearing Area is mapped within an ESA due to its proximity to a vulnerable TEC (Figure 2). The '*Monsoon vine thickets (MVT) on the coastal sand dunes of Dampier Peninsula*' is located directly adjacent to the Clearing Area (DWER, 2021). The Shire of Broome have re-designed the drainage swale to avoid the MVT and have made relevant adjustments to the Clearing Area; no clearing of the MVT will occur.

No Conservation Areas are identified within or near the Clearing Area. Conservation Areas within 5 km of the Survey Area are:

- Broome Wildlife Centre located 2.2 km north of the Survey Area and is vested under the Conservation Parks and Commission of WA (Department of Biodiversity Conservation and Attractions, 2022a)
- Yawuru Nagulagun/Roebuck Bay Marine Park located 3.1 km east of the Survey Area and is vested under the Conservation Parks and Commission of WA (Department of Biodiversity Conservation and Attractions, 2022a)
- Unnamed conservation reserve located 3.7 km to north of the Survey Area and is vested under the Yawuru native Title Holders (Department of Biodiversity Conservation and Attractions, 2022a)
- Yawuru Birragun Conservation Park located 4.2 km northeast of the Survey Area and is vested under the Yawuru native Title Holders (Department of Biodiversity Conservation and Attractions, 2022a).

2.7 Flora and Vegetation

A detailed flora and vegetation survey (Appendix B) was undertaken across a 4.41 ha survey area, in accordance with the EPA's Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (2016a) for a Detailed Flora and Vegetation Survey and Desktop Assessment.

Results of the survey, which incorporates results from a Department of Climate Change, Energy, the Environment and Water (DCCEEW) Protected Matters Search Tool (PMST) database search and Nature Map database search are presented below and used for the assessment of the proposed clearing in accordance with the Native Vegetation Clearing Principles.

2.7.1 Broad Vegetation Types

Mapping of pre-European broad vegetation within Western Australia was completed on a broad scale (1:1,000,000) by Beard (1976). These vegetation types were later re-assessed by Shepherd *et al.* (2002) with some larger vegetation units divided into smaller units. Together, this pre-European database contains a total of 819 vegetation types within Western Australia.

The Shepherd *et al.* (2002) vegetation types within the Clearing Area are described below, displayed in Figure 1 and Figure 3 and their representation at a local, regional, and state level is shown in Table 1. The Clearing Area is within one broad vegetation unit:

- **Dampierland_750:** Acacia thicket with eucalypt woodland over spinifex *Acacia tumida*, *Eucalyptus tectifica*, *Corymbia grandifolia*, *Triodia pungens*, *T. bitextura*.

Table 1: Broad Vegetation Types within the State, Regional and Local Representation

Vegetation Type	Pre-European Extent (ha)	Current Extent (ha)	Remaining (%)	Current Extent Managed in DBCA ¹ Lands (%)
Vegetation Types (Shepherd <i>et al.</i>, 2002) in Western Australia				
Dampierland 750	1,231,155.50	1,225,687.52	99.56	2.78
Vegetation Types (Shepherd <i>et al.</i>, 2002) in the Dampierland Bioregion				
Dampierland 750	1,229,182.16	1,225,280.52	99.68	2.78
Vegetation Types (Shepherd <i>et al.</i>, 2002) in the Pindarland subregion				
Dampierland 750	1,221,734.45	1,217,843.72	99.68	2.80
Vegetation Types (Shepherd <i>et al.</i>, 2002) in the Shire of Broome				
Dampierland 750	1,115,559.36	1,110,131.18	99.51	3.07

¹ Department of Biodiversity Conservation and Attractions

2.7.2 Desktop Assessment

A review of results from the PMST search within a 1 km radius of the Clearing Area identified the following significant flora species:

- *Seringia exastia* (Critically Endangered).

A detailed flora and vegetation survey was conducted by 360 Environmental (Part SLR) in January 2023 (Appendix B). The results from the survey of the Clearing Area identified the following Threatened flora species:

- *Corymbia paractia* (Priority 1).

No Threatened flora pursuant to the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and/or gazetted as Threatened pursuant to the BC Act 2016 were identified as occurring within the Clearing Area.

2.7.3 Threatened and Priority Ecological Communities

Results from a PMST database search within a 1 km radius of the Clearing Area identified one Threatened Ecological Community (TEC):

- Monsoon vine thickets (MVT) on the coastal sand dunes of Dampier Peninsula (Monsoon vine thickets) TEC (Vulnerable, Endangered). This TEC is confined to coastal dunes and represents the southern-most occurrence of rainforest in Western Australia.

The MVT is located directly adjacent to the Clearing Area on the eastern bank of the drain approximately 200 m south of the surf club. The Shire of Broome have designed the drain to avoid the TEC and hence, no clearing of the MVT TEC will occur.

Review of a detailed flora and vegetation survey conducted by 360 Environmental Part of SLR (2023), identified one State-listed PEC as occurring within the Survey Area:

- *Corymbia paractia* dominated community on dunes (Priority 1).

2.7.4 Flora Composition

The survey recorded 67 taxa from 52 genera across 25 families (Appendix B). The most dominant genera was *Acacia* (6 species) and the dominant families within the Clearing Area were:

- Fabaceae (21 species)
- Malvaceae (6 species)
- Myrtaceae (6 species).

2.7.5 Threatened or Priority Flora

No Threatened flora species pursuant to the EPBC Act and/or gazetted as Threatened pursuant to the BC Act 2016 were identified as occurring within the Clearing Area.

One Priority 1 Threatened flora species listed by DBCA was recorded within the Clearing Area:

- *Corymbia paractia* (P1).

Forty-nine (49) individuals were positively identified within the Survey Area (Appendix B) and twenty-eight (28) individuals occur within the Clearing Area. The population of the Priority 1 species are shown in thirteen locations, however only seven locations occur within the Clearing Area (Figure 1).

Searches of the PMST, Nature Map and Western Australia Herbarium (WAHERB) databases within a 5 km radius of the Clearing Area identified the following Priority flora species, however a post-survey likelihood of occurrence indicated a low likelihood of occurrence (Appendix B):

- *Jacquemontia* sp. Broome (A.A. Mitchell 3028) (P1)
- *Thespidium basiflorum* (P1)
- *Gomphrena pusilla* (P2)
- *Acacia monticola* x *tumida* var. *kulparn* (P3)
- *Glycine pindanica* (P3)
- *Goodenia byrnesii* (P3)
- *Polymeria* sp. Broome (K.F. Kenneally 9759) (P3)
- *Terminalia kumpaja* (P3).

2.7.6 Introduced Flora

Eight introduced species were recorded within the Clearing Area, representing 13.8% of the total taxa recorded. One introduced flora species listed as a Declared Pest under the *Biosecurity and Agriculture Management Act 2007* (BAM Act) (Department of Primary Industries and Regional Development, 2021) was identified as occurring within the Clearing Area. No Weeds of National Significance (WoNS) by the Department of Agriculture Water and the Environment (DAWE) (2021) were identified within the Clearing Area. Table 2 presents the identified introduced flora within the Clearing Area.

Table 2: Introduced Flora species within the Clearing Area

Species	Common Name	Status under BAM Act	WoNS
<i>*Azadirachta indica</i>	Neem tree	Declared Pest – s22(2)	No
<i>*Cenchrus ciliaris</i>	Buffel Grass	Permitted – s11	No
<i>*Cenchrus biflorus</i>	Gallon's Curse	Permitted – s11	No
<i>*Clitoria ternatea</i>	Butterfly Pea	Permitted – s11	No
<i>*Leucaena leucocephala</i>	Leucaena	Permitted – s11	No
<i>*Mesosphaerum suaveolens</i>	Pignut, Mintweed	Permitted – s11	No
<i>*Passiflora foetida</i>	Stinking Passion Flower	Permitted – s11	No
<i>*Passiflora foetida var. hispida</i>		Permitted – s11	No
<i>*Stylosanthes hamata</i>	Verano Stylo	Permitted – s11	No

2.7.7 Vegetation Types

Results from the survey identified four vegetation types described and mapped across one landform within the Clearing Area, however disturbed/cleared areas were identified that included littering, walking tracks, historical clearing, weeds, and infrastructure (Figure 3; Appendix B). The four vegetation types were described as:

- AiTmSh (0.58 ha): **Azadirachta indica*, *Terminalia ferdinandiana*, *Melaleuca ?nervosa* mid isolated trees over *Terminalia ferdinandiana* low woodland over *Lysiphyllum cunninghamii* tall shrubs over *Adriana tomentosa var. tomentosa* low open shrubland over *Triodia microstachya* hummock grassland over **Stylosanthes hamata* open forbland
- TpTmCc (0.18 ha): *Terminalia petiolaris* low open woodland including *Terminalia ferdinandiana* low isolated trees over *Flueggea virosa subsp. melanthesoides* and *Gyrocarpus americanus subsp. pachyphyllus* tall open shrubs over (*Corymbia ?paractia*), *Exocarpos latifolius*, and *Sersalisia sericea* isolated trees over *Triodia microstachya*, low hummock grassland **Cenchrus ciliaris* low tussock grassland mosaic
- CpTfAtTm (0.88 ha): *Corymbia paractia*, *Corymbia greeniana* isolated clumps of trees over *Terminalia ferdinandiana*, *Lysiphyllum cunninghamii* over *Acacia colei var. colei* (*Acacia plectocarpa*) open shrubland over *Adriana tomentosa var. tomentosa* low open shrubland over *Triodia microstachya* open hummock grassland
- Planted mixed native and non-endemic species (0.36 ha)
- Cleared (1.88 ha)

The vegetation types CpTfAtTm and TpTmCc, both adjacent to the main drain, were considered analogous to the Priority 1 ecological community '*Corymbia paractia* dominated community on

dunes' which was recorded by DBCA as occurring in the Clearing Area. However, given the proposed small clearing area, impacts are not considered significant.

2.7.8 Vegetation Condition

Results from the survey assessed vegetation condition within the Proposed Clearing Area which ranged from Cleared to Good. The Proposed Clearing Area comprised the following (Figure 4; Appendix B):

- Cleared (1.88 ha / 49%)
- Completely Degraded (0.36 ha / 9%)
- Poor (0.65 ha / 17%)
- Good (0.96 ha / 25%).

Evidence of disturbance due to clearing for infrastructure such as car parks, storm basins and drains was identified via site assessment by 360 Environmental (2023) resulting in a modified area. Degraded areas were confined to a section of dune, impacted by human trampling and weeds. Areas classified as being in 'Poor' condition included native vegetation adjacent to planted areas, where introduced species had encroached (360 Environmental, 2023).

2.8 Fauna

Results of a PMST database search were used to identify the significant fauna values that may occur within the Clearing Area. Results are presented below and used for the assessment of the proposed clearing against the ten Native Vegetation Clearing Principles.

2.8.1 Desktop Assessment

The results of the PMST database search and review of a Nature Map database search conducted by 360 Environmental (Appendix B) identified 15 listed threatened species and 37 migratory bird species as potentially occurring within a 5 km radius of the Clearing Area (Table 3 and Table 4). This total comprised of 46 birds, five (5) mammals and three (3) reptiles.

Most of the conservation significant fauna species identified in the database search are marine or wetland dependent species that require specific habitats (open water or wetlands). The Clearing Area does not contain these specific habitats. These species are identified in Table 3. A full list of species pursuant to the PMST database search can be found in Appendix C.

Table 3: Threatened fauna species that may occur within 5 km of the Clearing Area

Species	Common Name	Conservation Status	
		EPBC Act	BC Act
Birds			
<i>Charadrius leschenaultii</i>	Greater Sand Plover, Large Sand Plover	VU	VU
<i>Erythrotriorchis radiatus</i>	Red Goshawk	-	VU
<i>Falco hypoleucos</i>	Grey Falcon	-	VU
<i>Falco peregrinus</i>	Peregrine Falcon	-	OS
<i>Limosa lapponica menzbieri</i>	Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit	-	CR
<i>Papasula abbotti</i>	Abbott's Booby	EN	EN
<i>Polytelis alexandrae</i>	Princess Parrot, Alexandra's Parrot	-	VU
<i>Rostratula australis</i>	Australian Painted Snipe	EN	EN
<i>Tyto novaehollandiae kimberli</i>	Masked Owl (northern)	-	VU
Mammals			
<i>Macroderma gigas</i>	Ghost Bat	-	VU
<i>Macrotis lagotis</i>	Greater Bilby	-	VU
<i>Saccolaimus saccolaimus nudicluniatu</i> s	Bare-rumped Sheath-tailed Bat, Bare-rumped Sheath-tail Bat	-	VU
<i>Trichosurus vulpecula arnhemensis</i>	Northern Brushtail Possum	VU	VU
<i>Ozimops cobourgianus</i>	Northern Coastal Free-tailed Bat	-	P1
Reptile			
<i>Lerista separanda</i>	Dampierland Plain Slider	-	P2
<i>Simoselaps minimus</i>	Dampierland Burrowing Snake	-	P2
<i>Varanus sparnus</i>	Dampierland Goanna	P1	-

A PMST database search (Appendix C) and review of a Nature Map database search conducted by 360 Environmental (Appendix B) identified several migratory bird species within a 5 km radius of the Clearing Area. These species are identified in Table 4 with their respective likelihood of occurrence.

Table 4: Migratory Bird Species likely to occur within a 5 km radius of the Clearing Area

Species	Common Name	Likelihood
Migratory Marine Species		
<i>Anous stolidus</i>	Common Noddy	Species or species habitat likely to occur within area
<i>Apus pacificus</i>	Fork-tailed Swift	Species or species habitat likely to occur within area
<i>Calidris falcinellus</i>	Broad-billed Sandpiper	Species or species habitat may occur within area
<i>Calonectris leucomelas</i>	Streaked Shearwater	Species or species habitat known to occur within area
<i>Chlidonias leucopterus</i>	White-winged BlackTern	Species or species habitat may occur within area
<i>Fregata ariel</i>	Lesser Frigatebird	Species or species habitat known to occur within area
<i>Fregata minor</i>	Great Frigatebird	Species or species habitat known to occur within area
<i>Phaethon lepturus</i>	White-tailed Tropicbird	Species or species habitat likely to occur within area
<i>Pluvialis fulva</i>	Pacific Golden Plover	Species or species habitat known to occur within area
<i>Sternula albifrons</i>	Little Tern	Foraging, feeding related behaviour known to occur within area
<i>Thalasseus bergii</i>	Crested Tern	Species or species habitat may occur within area
Migratory Terrestrial Species		
<i>Cecropis daurica</i>	Red-rumped Swallow	Species or species habitat may occur within area
<i>Cuculus optatus</i>	Oriental Cuckoo	Species or species habitat known to occur within area
<i>Cuculus saturatus optatus</i>	Horsfield's Cuckoo, Oriental Cuckoo	Species or species habitat known to occur within area
<i>Hirundo rustica</i>	Barn Swallow	Species or species habitat known to occur within area
<i>Motacilla cinerea</i>	Grey Wagtail	Species or species habitat may occur within area
<i>Motacilla flava</i>	Yellow Wagtail	Species or species habitat known to occur within area
<i>Numenius minutus</i>	Little Curlew	Species or species habitat known to occur within area

Species	Common Name	Likelihood
<i>Plegadis falcinellus</i>	Glossy Ibis	Species or species habitat known to occur within area
Migratory Wetland Species		
<i>Actitis hypoleucos</i>	Common Sandpiper	Species or species habitat known to occur within area
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	Species or species habitat known to occur within area
<i>Calidris canutus</i> (EN)	Red Knot	Species or species habitat known to occur within area
<i>Calidris ferruginea</i> (CR)	Curlew Sandpiper	Species or species habitat known to occur within area
<i>Calidris melanotos</i>	Pectoral Sandpiper	Species or species habitat may occur within area
<i>Calidris ruficollis</i>	Red-necked Stint	Species or species habitat may occur within area
<i>Calidris subminuta</i>	Long-toed Stint	Species or species habitat may occur within area
<i>Charadrius leschenaultia</i> (VU)	Greater Sand Plover	Species or species habitat known to occur within area
<i>Charadrius veredus</i>	Oriental Plover	Species or species habitat may occur within area
<i>Gelochelidon nilotica</i>	Gull-billed Tern	Species or species habitat may occur within area
<i>Glareola maldivarum</i>	Oriental Pratincole	Species or species habitat may occur within area
<i>Hydroprogne caspia</i>	Caspian Tern	Species or species habitat may occur within area
<i>Limnodromus semipalmatus</i>	Asian Dowitcher	Species or species habitat likely to occur within area
<i>Limosa lapponica</i>	Bar-tailed Godwit	Species or species habitat known to occur within area
<i>Numenius madagascariensis</i> (CR)	Eastern Curlew	Species or species habitat known to occur within area
<i>Pandion haliaetus</i>	Osprey	Breeding known to occur within area
<i>Tringa nebularia</i>	Common Greenshank	Species or species habitat likely to occur within area
<i>Tringa glareola</i>	Wood Sandpiper	Species or species habitat may occur within area
<i>Tringa stagnatilis</i>	Marsh Sandpiper	Species or species habitat may occur within area

2.8.2 Survey Results

A basic fauna survey was completed in January 2023 and included revision of consolidated results obtained from available datasets, to identify fauna species within the area and then a likelihood of occurrence within the area was undertaken (Appendix B). The terrestrial vertebrate fauna survey comprised a total of 42 fauna species from 25 families, including 34 bird species and eight reptile species. No mammals or amphibians were recorded during the field survey. No significant bird species were recorded. One significant reptile species was observed in the Survey Area, a juvenile Saltwater Crocodile (*Crocodylus porosus*) listed as Migratory under the BC Act and Migratory and Marine under the EPBC Act. The survey concluded that the conservation significant reptile is likely to have originated from a nearby captive population and washed into the Survey Area during recent flooding events.

2.8.3 Conservation Significance Fauna and Likelihood of Occurrence

No Priority fauna species of conservation significance were identified as occurring within a 1 km radius of the Clearing Area. Twenty-five migratory bird species are subject to international agreements comprising of the Japan-Australia Migratory Bird Agreement (JAMBA), the China-Australia Migratory Bird Agreement (CAMBA) and the Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA).

The likelihood of occurrence assessment within the Clearing Area for conservation significant and migratory fauna species identified by the databases search consist of:

- 20 species known to occur (17 bird species, one mammal species)
- 9 species likely to occur (8 bird species, one mammal species)
- 8 species that may occur (8 bird species, 2 mammal species).

2.8.4 Fauna Habitat

A review of a basic fauna survey conducted by 360 Environmental Pty Ltd (Part SLR) (2023) identified seven broad fauna habitats (excluding cleared areas). Evidence of erosion, litter, weeds, and walking tracks were recorded as contributions to prolific disturbance including previous clearing for a stormwater drain. All habitats, bar the Vine Thicket habitat which will not be cleared, are found in similar or better quality and quantity in the surrounding area. Additionally, the total clearing of 1.64 ha of Native Vegetation, will not significantly impact fauna habitats given the area is fragmented by litter and walking tracks, cleared areas (49%), a man-made drainage basin and none-native planted vegetation. Appendix B and Table 5 describes the identified fauna habitats within the Survey Area.

Table 5: Fauna habitats within the Survey Area.

Fauna Habitat	Description
Mixed Shrubland	Isolated <i>Corymbia</i> and <i>Terminalia</i> trees over mixed <i>Adriana</i> , <i>Acacia</i> and <i>Lysiphyllum</i> shrubs over <i>Triodia</i> hummocks. The vegetation was mostly in good condition, however, it was impacted by litter and walking tracks.
Drainage Line	A single linear drainage strip that travels the length of the Survey area in a North to South direction. This habitat lacks overstorey vegetation but contains isolated <i>Corymbia</i> sp. and <i>Acacia</i> spp. Ground cover is sparse, but typically contains <i>Triodia</i> hummocks on substrates ranging from sand to sandy-clay.
Temporary Open Water	A man-made drainage basin that is an open area of loamy ground that fills with water after rainfall. Storm water drains lead into this area. The temporary open water habitat provides waterbirds and shorebirds with suitable habitat. When dry, this area provides limited value to native fauna species.
Vine Thicket	Isolated <i>Ficus aculeata</i> trees over <i>Terminalia</i> spp. and <i>Sersalisia sericea</i> low woodland over mixed shrubs.
Hummock Grassland	<i>Canavalia rosea</i> vine over <i>Spinifex longifolius</i> closed hummock grassland.
Lawn	Open grassed area.
Planted Trees	Introduced trees over mixed shrubs and/or cleared ground.

2.8.5 Introduced Fauna

One introduced fauna species were recorded during the fauna survey, the Asian House Gecko (*Hemidactylus frenatus*).

2.9 Aboriginal heritage

According to the Department of Planning, Lands and Heritage (DPLH), Aboriginal Heritage Inquiry System (AHIS) data register, one registered and one lodged Aboriginal Heritage site is identified within the Clearing Area (Figure 2). These include the following:

- Billigungurru (12839) – ceremonial, mythological, camp, male access only (Registered)
- Illangarami (12886) – mythological, no gender restrictions apply (Lodged).

There is one native title claim (WCD 2006/001) over the Clearing Area (Landgate, 2022). This claim has been determined by the Federal Court on behalf of the claimant group. The registered Native Title Body Corporate is the Yawuru Native Title Holders Aboriginal Corporation (National Native Title Tribunal, 2022).

2.10 Bushfire Risk

According to the Department of Fire and Emergency Services (DFES) data register (2021), the mid and southern section of the Clearing Area are within a Bushfire Prone Area (Figure 3).

3 Stakeholder Consultation

Consultation has been undertaken with key stakeholders, including:

- EPA Services
- DWER
- DBCA
- Department of Climate Change, Energy, the Environment and Water (DCCEEW)
- Dinosaur Coast Management Group (DCMG)
- Nyamba Buru Yawuru (NBY)
- Goolarabooloo.

A summary of consultation relevant to the NVCP is provided in Table 5.

Table 5: Consultation Summary

Date of Consultation	Stakeholder	Description of Consultation	Outcome
2019-2023	NBY (Julie Melbourne, Dean Mathews, and Andrew Burke).	Extensive consultation and correspondence with NBY including involvement in design of project. Submission of the 85% Detailed Designs on 14 th November 2022. A meeting held on the 7 th and 15 th December 2022 whereby clearing to establish drainage volume and swale widening were discussed.	An agreement by both parties that during clearing cultural monitors are present. Supportive of the clearing associated with drainage volume and swale re-widening. Letter of none-opposition issued by NBY to Shire of Broome for the project and related Section 18 application, with conditions that have been agreed by both parties.
2023	DBCA (Will Bennet, DBCA Manager of adjacent Minyrr Park; Bruce Greatwich, DBCA, Nature Conservation Coordinator [West Kimberley])	Discussions relating to drain clearing and re-widening works.	Supportive of clearing associated with the drain and re-widening works with appropriate controls. Controls discussed included weeding the drain prior to clearing, mulching the cleared native vegetation and re-spreading it to promote native seed growth.
2023	DBCA	Discussion to sort clarification on the PEC definition.	The avoidance of clearing to TECs.

Date of Consultation	Stakeholder	Description of Consultation	Outcome
2022	DAWE (now DCCEEW)	Pre-referral meeting to discuss potential impacts to matters of national environmental significance (MNES) A meeting held on the 31/08/2022 presented amended design and outcomes of further consultation with Yawuru and the DCMG.	The key MNES were agreed to be Threatened Species (MVT) and values of the West Kimberley Heritage Listing (dinosaur footprints). It was acknowledged that the self-assessment process indicated there would not be a significant impact to MNES.
2022	EPA Services	Presented amended design and outcomes of further consultation with Yawuru and the DCMG.	It was agreed that based on the information provided that the project would be unlikely to have a significant impact on environmental factors and that it would not warrant a referral under Part IV of the EP Act.
2022	DWER	Meeting to inform of the decision not to refer under the EP Act nor EPBC Act and that a NVCP would be submitted. Scoping meeting held on 23/02/2023.	Include a summary of the relevant consultation undertaken to date to assist with the assessment process. Scoping meeting to discuss the outcome of the flora and vegetation survey, avoidance of TEC, and timing of the NVCP application.
2022	Goolarabooloo	Site walk to detail proposed clearing. Extensive consultation and correspondence with members through the development of the project.	Agreement of proposed clearing by the Shire of Broome. General support for the project with conditions agreed by both parties.
2023	DWER	Meeting to discuss future NVCP and process of assessment aside a Part IV EP Act referral. DWER provided a review of site survey data and recommendations on PEC requiring advice from DBCA.	Surveys used to support the NVCP application must be undertaken in accordance with EPA Technical Guidance.

4 Environmental Management Measures

To minimise the potential impacts from the activities associated with the application, the following environmental management measures will be implemented:

- Induction of all contractors and/or internal personnel undertaking the clearing in accordance with the Shire of Broome procedures.
- GPS coordinates of the Clearing Area to be supplied to contractors undertaking the clearing activities inclusive of the avoidance of the MVT identified adjacent to the Clearing Area.
- Prior to clearing and earthworks commencing within the Clearing Area, the area will be clearly demarcated (by barrier tape or star pickets) to ensure that no over clearing occurs beyond the permitted area, particularly where the MVT TEC and/or *Corymbia paractia* (P1) PEC is adjacent to the Clearing Area.
- Vegetation clearing will be scheduled to occur immediately before planned revegetation works to minimise the potential for dust, where practicable. The use of a water cart or other means of wetting will be made available.
- Where the MVT is located directly adjacent to the Project activity area in the north, MVT species will be planted to serve as a buffer to protect the existing MVT edges from disturbance.
- Ensure all tubestock used in landscaping activities are sourced from a certified Dieback free nursery and are locally sourced species representative of the area. Tubestock will be quarantined if they are not sourced from local nurseries.
- A pre-clearing fauna inspection will be performed prior to the clearing for possible nests, and fauna relocation for species that are slow-moving by a licensed fauna handler, if deemed necessary.
- Weed hygiene measures are to be implemented to minimise the risk of spread or introduction of new weed species to the Clearing Area by:
 - Check all vehicles, machinery, equipment, and personnel for weed contamination and include washdown stations for removal of plant material prior to entering and exiting the Clearing Area
 - Ensure weed free tubestock is used in landscaping or plants of low weed risk
 - Ongoing weed management maintenance by the Shire of Broome by use of steam as an alternative to chemicals if available.
- Landscape planting will be undertaken by the Shire of Broome Parks and Gardens division in consultation with Yawuru, Goolarabooloo, and DBCA, where relevant.
- Cultural monitors will be consulted and present if and when required by Section 18 approval.

- The Shire of Broome will undertake an activity notice and site survey with Traditional Owners prior to clearing.
- Mulching of the cleared native vegetation and re-spreading after weed removal to stabilize the swale.
- Vehicle access points to the swale will be limited to ensure minimal disturbance.
- Disposal / reuse of excavated material and stockpiling in the existing basin.

5 Assessment Against the Ten Clearing Principles

The proposed clearing of 1.64 ha native vegetation has been assessed against the ten clearing principles as defined in Schedule 5 of the EP Act and outlined in DER's Guide to Assessment: Clearing of Native Vegetation under the EP Act, taking into consideration the current extent and condition of the native vegetation on the site. This assessment is presented in Table 6.

Table 6: Assessment Against the Ten Clearing Principles

Principle	Assessment
Principle (a) – Native vegetation should not be cleared if it comprises a high level of biological diversity	<p>Assessed Outcome: The proposed clearing is <u>unlikely to be</u> at variance with this principle.</p> <p>Given the above results from the desktop and field surveys, the Clearing Area does not contain a higher level of flora biological diversity compared to the surrounding area. Significant impacts to fauna species are considered unlikely given the presence of fauna habitats in similar or better quality and quantity in the surrounding area and given the area is disturbed/cleared which reduces the value of flora and vegetation. Given appropriate implementation of environmental management measures, significant impacts to fauna species are considered unlikely. The clearing of 1.64 ha of native vegetation will not impact the level of biodiversity of the Clearing Area and its surroundings.</p> <p>The Clearing Area is located within the Pindanland subregion of the IBRA Dampierland Bioregion. The Pindanland subregion comprises sandplains of the Dampier Peninsula that includes fine-textured sand-sheets with subdued dunes. It is a coastal, semi-arid basin comprising of mangroves, coastal dune communities, and grasslands with scattered low trees (Graham, 2001).</p> <p>The following vegetation is consistent with the Pindanland subregion: <i>Eucalyptus tectifica</i> (Darwin Box), <i>Corymbia flavescentes</i> woodland with <i>Acacia tumida</i> (Pindan Wattle) open-scrub and <i>Chrysopogon</i> spp. (Ribbon Grass) and <i>Triodia bitextura</i> grasses. These are supported by <i>Eucalyptus tetradonta</i> (Darwin Stringybark), <i>Eucalyptus miniata</i> (Darwin Woollybutt), <i>Melaleuca citrolens</i> (Lemon-scented Teatree) and <i>Melaleuca</i> spp. (Paperbark) low woodland with sparse <i>Chrysopogon fallax</i> (Golden Beard Grass) tussock grasses (Graham, 2001).</p> <p>Four vegetation types were mapped within the clearing area (360 Environmental 2023):</p> <ul style="list-style-type: none"> • AiTmSh (0.58 ha): *Azadirachta indica, Terminalia ferdinandiana, Melaleuca ?nervosa mid isolated trees over Terminalia ferdinandiana low woodland over Lysiphyllum cunninghamii tall shrubs over Adriana tomentosa var. tomentosa low open shrubland over Triodia microstachya hummock grassland over *Stylosanthes hamata open forbland.

- TpTmCc (0.18 ha): *Terminalia petiolaris* low open woodland including *Terminalia ferdinandiana* low isolated trees over *Flueggea virosa* subsp. *melanthesoides* and *Gyrocarpus americanus* subsp. *pachyphyllus* tall open shrubs over (*Corymbia* ?*paractia*), *Exocarpos latifolius*, and *Sersalisia sericea* isolated trees over *Triodia microstachya*, low hummock grassland **Cenchrus ciliaris* low tussock grassland mosaic.

- CpTfAtTm (0.88 ha): *Corymbia paractia*, *Corymbia greeniana* isolated clumps of trees over *Terminalia ferdinandiana*, *Lysiphyllum cunninghamii* over *Acacia colei* var. *colei* (*Acacia plectocarpa*) open shrubland over *Adriana tomentosa* var. *tomentosa* low open shrubland over *Triodia microstachya* open hummock grassland.

- Planted mixed native and non-endemic species (0.36 ha).

Vegetation condition within the Clearing Area ranged from Cleared to Good condition, with the majority of vegetation in similar or better quality and quantity in the surrounding area (360 Environmental 2023).

No Threatened Ecological Communities occur within the Clearing Area, however the Monsoon Vine Thickets (MVT) on the coastal sand dunes of Dampier Peninsula Threatened Ecological Community (TEC), listed as Endangered pursuant to the EPBC Act is recorded as occurring directly adjacent to the Clearing Area, on the eastern bank of the drain approximately 200 m south of the surf club. The Shire of Broome have designed the drain to avoid the TEC and hence no clearing of the MVT TEC will occur.

The vegetation types CpTfAtTm and TpTmCc, both adjacent to the main drain, were considered analogous to the Priority 1 ecological community '*Corymbia paractia* dominated community on dunes' which was recorded by DBCA as occurring in the Clearing Area. However, given the proposed small clearing area, impacts are not considered significant.

No Threatened flora species pursuant to the EPBC Act 1999 and/or gazetted as Threatened Flora pursuant to the BC Act 2016 were identified by the database searches or recorded within the Clearing Area.

One Priority 1 Threatened flora species *Corymbia paractia*, listed by DBCA was recorded within the Clearing Area. A total of 49 individuals were positively identified and recorded in two vegetation types (TpTmCc and CpTfAtTm) within the Survey Area, with 28 individuals occurring within the Clearing Area (360 Environmental 2023). *Corymbia paractia* co-occurs with the more common species *Corymbia greeniana* and the respective vegetation units are found beyond the Survey Area within the Broome peninsula and surrounding Pindan plains (Department of Biodiversity Conservation and Attractions, 2020). The proposed clearing, including the clearing of 28 *Corymbia paractia* individuals, is unlikely to have a significant impact on the conservation status of the flora species (360 Environmental 2023). The proposed clearing is unlikely to be at variance to this Principle.

One significant fauna species, a juvenile Saltwater Crocodile (*Crocodylus porosus*), was observed on the boundary of the Clearing Area (360 Environmental, 2023). However, the habitat found within the Clearing Area is very unfavourable for Saltwater Crocodiles and it is highly unlikely the individual is a permanent resident to the area and was likely washed into the

Principle	Assessment
	<p>Clearing Area by flood waters from widespread flooding in the area two weeks prior to the field survey (360 Environmental 2023)</p> <p>Four (4) fauna habitats were recorded in the Clearing Area, all of which are found in similar or better quality and quantity in the surrounding area. Identified habitats were indicated to have limited or temporary value to native fauna species. The vegetation association, fauna habitat and landform types present within the Clearing Area, are well represented in surrounding areas including Conservation Areas which are identified within five km of the Clearing Area:</p> <ul style="list-style-type: none"> • Broome Wildlife Centre located 2.2 km north of the Survey Area and is vested under the Conservation Parks and Commission of WA (Department of Biodiversity Conservation and Attractions, 2022a) • Yawuru Nagulagun/Roeback Bay Marine Park located 3.1 km east of the Survey Area and is vested under the Conservation Parks and Commission of WA (Department of Biodiversity Conservation and Attractions, 2022a) • Unnamed conservation reserve located 3.7 km to north of the Survey Area and is vested under the Yawuru native Title Holders (Department of Biodiversity Conservation and Attractions, 2022a) • Yawuru Birragun Conservation Park located 4.2 km northeast of the Survey Area and is vested under the Yawuru native Title Holders (Department of Biodiversity Conservation and Attractions, 2022a). <p>The Clearing Area is unlikely to represent an area of higher biodiversity than surrounding areas, in either a local or regional context. The proposed clearing of 1.64 ha of native vegetation is unlikely to be at variance to this Principle.</p>
Principle (b) – Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a significant habitat for fauna indigenous to Western Australia	<p>Assessed Outcome: The proposed clearing is <u>unlikely to be</u> at variance with this principle.</p> <p>Four broad fauna habitats were identified and mapped within the Clearing Area:</p> <ul style="list-style-type: none"> • Mixed Shrubland • Planted Trees • Temporary Open Water • Drainage Line • Cleared. <p>The Temporary Open Water and Mixed Shrubland habitats provide the most value to native fauna. After rainfall events, the Temporary Open Water habitat provides quality habitat to water and shore birds, however, local populations are unlikely to be reliant on it as much larger and better-quality naturally occurring foraging habitat exists within 20km of the Clearing Area. The Mixed Shrubland habitat provides habitat for numerous native fauna species, however given the current land use is</p>

Principle	Assessment
	<p>surrounded by infrastructure that includes carparks, walking paths, (paved and unpaved), and walking bridges, it is unlikely the area will provide maintenance of a significant habitat for indigenous fauna species.</p> <p>Habitat condition varied throughout the Clearing Area. Temporary Open Water and Drainage Line habitats were Good to Disturbed in quality, and the Mixed Shrubland habitat was in Very Good to Good quality. All fauna habitats recorded are found in similar or better quality and quantity in the surrounding areas including Conservation Areas which are identified within 5 km of the Clearing Area:</p> <ul style="list-style-type: none"> • Broome Wildlife Centre located 2.2 km north of the Survey Area and is vested under the Conservation Parks and Commission of WA (Department of Biodiversity Conservation and Attractions, 2022a) • Yawuru Nagulagun/Roebuck Bay Marine Park located 3.1 km east of the Survey Area and is vested under the Conservation Parks and Commission of WA (Department of Biodiversity Conservation and Attractions, 2022a) • Unnamed conservation reserve located 3.7 km to north of the Survey Area and is vested under the Yawuru native Title Holders (Department of Biodiversity Conservation and Attractions, 2022a) • Yawuru Birragun Conservation Park located 4.2 km northeast of the Survey Area and is vested under the Yawuru native Title Holders (Department of Biodiversity Conservation and Attractions, 2022a) <p>Considering this, the clearing of 1.64 ha of native vegetation is unlikely to impact habitat significant for fauna.</p> <ul style="list-style-type: none"> • A desktop assessment identified 46 birds, five (5) mammals and three (3) reptiles within a 5 km radius of the Clearing Area. Most of the conservation significant fauna species identified in the database search are marine or wetland dependent species that require specific habitats (open water or wetlands) for wading. The Clearing Area does not contain these specific habitats and no adverse impacts will result from the proposed clearing. Furthermore, a terrestrial vertebrate fauna survey completed by 360 Environmental (2023) comprised a total of 42 fauna species from 25 families, including 34 bird species and eight reptile species. No mammals or amphibians were recorded during the field survey. No significant bird species were recorded. Most of the conservation significant fauna species identified in the database search are marine or wetland dependent species that require specific habitats (open water or wetlands). The Clearing Area does not contain suitable species habitats and therefore proposed clearing will not impact on biodiversity. <p>Four species were identified as having a high likelihood of occurrence within the Clearing Area: the Barn Swallow, Little Curlew, Osprey and Pacific Swift. These species are unlikely to be dependent on resources within the Clearing Area due to greater availability of better-quality suitable habitat immediately outside the Clearing Area (360 Environmental 2023) One significant fauna species, a juvenile Saltwater Crocodile (<i>Crocodylus porosus</i>), was observed on the boundary of the Clearing Area (360 Environmental 2023). The habitat found within the Clearing Area is very unfavourable for Saltwater Crocodiles.</p>

Principle	Assessment
	<p>Considering this, it is highly unlikely the individual is a permanent resident to the area and was likely washed into the Clearing Area by flood waters from widespread flooding in the area two weeks prior to the field survey.</p> <p>The clearing of 1.64 ha of native vegetation is unlikely to impact on habitat significant for fauna. The proposed clearing is unlikely to be at variance to this Principle.</p>
Principle (c) – Native vegetation should not be cleared if it includes, or is necessary for the continued existence of rare flora	<p>Assessed Outcome: The proposed clearing is unlikely to be at variance with this Principle.</p> <p>No Threatened flora species pursuant to the EPBC Act 1999 and/or gazetted as Threatened Flora pursuant to the BC Act 2016 were identified by the database searches or recorded within the Clearing Area. One Priority 1 Threatened flora species listed by DBCA, Cable Beach Ghost Gum (<i>Corymbia paractia</i>), was recorded within the Clearing Area. A total of 49 individuals were positively identified and recorded in two vegetation types (TpTmCc and CpTfAtTm) within the Survey Area, with 28 individuals occurring within the Clearing Area (360 Environmental 2023). <i>Corymbia paractia</i> co-occurs with the more common species <i>Corymbia greeniana</i> and the respective vegetation units are found beyond the Survey Area within the Broome peninsula and surrounding Pindan plains (Department of Biodiversity Conservation and Attractions, 2020).</p> <p>The proposed clearing, including the clearing of 28 <i>Corymbia paractia</i> individuals, is unlikely to have a significant impact on the conservation status of the flora species (360 Environmental 2023). The proposed clearing is unlikely to be at variance to this Principle.</p>
Principle (d) – Native vegetation should not be cleared if it comprises the whole or a part of or is necessary for the maintenance of a Threatened Ecological Community (TEC).	<p>Assessed Outcome: The proposed clearing is unlikely to be at variance with this Principle.</p> <p>There are no Threatened Ecological Communities within the Clearing Area.</p> <p>A 2023 vegetation survey by 360 Environmental recorded the Vulnerable Monsoon Vine Thickets (MVT) on the coastal sand dunes of Dampier Peninsula TEC, listed as Endangered pursuant to the EPBC Act, as occurring directly adjacent to the Clearing Area, north of the surf club and on the eastern bank of the drain approximately 200 m south of the surf club. The Shire of Broome have designed the drain to avoid the TEC. No clearing of the MVT TEC will occur.</p> <p>The clearing of 1.64 ha of native vegetation will not impact any TECs or vegetation necessary for the continued existence of a TEC.</p> <p>The proposed clearing is unlikely to be at variance to this Principle.</p>

Principle	Assessment
Principle (e) – Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared	<p>Assessed Outcome: The proposed clearing is <u>not</u> at variance with this Principle.</p> <p>The Clearing Area is located within the Dampierland IBRA Bioregion. Approximately 99% of the pre-European vegetation still exists in the IBRA Dampierland Bioregion (Table 1). The Clearing Area is broadly mapped as vegetation association Dampierland_750. Approximately 99% of the pre-European extent of Dampierland_750 remains uncleared at a State, Bioregion, Subregion and Shire level (Table 1). The vegetation within the Clearing Area therefore does not represent a significant remnant of native vegetation within an area that has been extensively cleared</p> <p>The clearing of 1.64 ha of native vegetation will not impact on the remnant native vegetation within the area. The proposed clearing is unlikely to be at variance to this Principle.</p>
Principle (f) – Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland	<p>Assessed Outcome: The proposed clearing is <u>unlikely to be</u> at variance with this Principle.</p> <p>A review of available surface water feature mapping did not identify any surface watercourses, rivers, creeks, or streams that intersect the Clearing Area (DWER, 2021a). The Clearing Area is however located adjacent to the Indian Ocean (Figure 1)</p> <p>No Ramsar wetlands were identified within a 1 km radius of the Clearing Area. The DBCA geomorphic wetlands mapping did not identify any wetlands within the Clearing Area.</p> <p>Vegetation within the Clearing Area is not considered to be associated with a watercourse or wetland or representative of riparian vegetation. The proposed clearing 1.64 ha of native vegetation will not impact any associated watercourse or wetland. The proposed clearing is unlikely to be at variance to this Principle.</p>
Principle (g) – Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation	<p>Assessed Outcome: The proposed clearing is <u>unlikely to be</u> at variance with this Principle.</p> <p>The (then) DER has defined land degradation as including the following (Department of Environment Regulation, 2014).</p> <ul style="list-style-type: none"> • Land Capability • Soil erosion (caused by wind and water erosion due to vegetation clearing) • Nutrient Export • Salinity • Waterlogging/flooding. <p>Vegetation condition within the Clearing Area predominantly ranged from Completely Degraded to Very Good, however given the current land use is surrounded by infrastructure that includes carparks, walking paths, (paved and unpaved), and walking bridges, it is unlikely the proposed clearing is likely to cause appreciable land degradation. The areas proposed for clearing are not mapped within the flood risk areas.</p>

Principle	Assessment
	A desktop review of the DWER Acid Sulfate Soil mapping database did not identify a risk of acid sulphate soils (ASS) within the proposed Clearing Area. The proposed clearing of 1.64 ha of native vegetation is not likely to cause appreciable land degradation. The proposed clearing is unlikely to be at variance to this Principle.
Principle (h) – Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area	<p>Assessed Outcome: The Proposal is <u>unlikely to be</u> at variance with this Principle.</p> <p>There are no conservation areas within the Clearing Area. Conservation Areas which are identified within 5 km of the Clearing Area:</p> <p>Broome Wildlife Centre located 2.2 km north of the Survey Area and is vested under the Conservation Parks and Commission of WA (Department of Biodiversity Conservation and Attractions, 2022a).</p> <p>Yawuru Nagulagun/Roebuck Bay Marine Park located 3.1 km east of the Survey Area and is vested under the Conservation Parks and Commission of WA (Department of Biodiversity Conservation and Attractions, 2022a).</p> <p>Unnamed conservation reserve located 3.7 km to north of the Survey Area and is vested under the Yawuru native Title Holders (Department of Biodiversity Conservation and Attractions, 2022a).</p> <p>Yawuru Birragun Conservation Park located 4.2 km northeast of the Survey Area and is vested under the Yawuru native Title Holders (Department of Biodiversity Conservation and Attractions, 2022a).</p> <p>A mapped ESA, which comprises an occurrence of the ‘Monsoon Vine Thickets on coastal sand dunes of Dampier Peninsula’, and a buffer associated with the Species-rich faunal community of the intertidal mudflats of Roebuck Bay TEC (Roebuck Bay mudflats) is identified in the desktop review, however the Roebuck Bay mudflats themselves are a mapped ESA occurring approximately 2.9 km east of the Clearing Area. The proposed clearing of 1.64 ha of native vegetation will not impact on conservation areas as there is a substantial distance from the proposed Clearing Area and the environmental management measures will further reduce any derived impacts to the surrounding environment.</p> <p>The proposed clearing is unlikely to impact on the environmental values of any adjacent or nearby conservation areas. The proposed clearing is unlikely to be at variance to this Principle.</p>
Principle (i) – Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in	<p>Assessed Outcome: The Proposal is <u>unlikely to be</u> at variance with this Principle.</p> <p>There are no Public Drinking Water Source Areas (PDWSA) within or in close proximity to the Clearing Area. There are no permanent watercourses or wetlands within the area proposed to clear. The long-term annual average rainfall is 627.6 mm (Graph 1) (Bureau of Meteorology, 2023). The proposed clearing is unlikely to result in significant changes to surface water flows.</p>

Principle	Assessment
the quality of surface or underground water	Given that the proposed works will not interact with groundwater and the absence of surface watercourses across the Clearing Area, the proposed clearing will not cause deterioration in the quality of surface or ground water. The proposed clearing is unlikely to be at variance to this Principle.
Principle (j) – Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding	<p>Assessed Outcome: The Proposal is <u>unlikely to be</u> at variance with this Principle.</p> <p>The areas proposed for clearing are not mapped within the flood risk areas.</p> <p>The topography is variable across the Clearing Area and ranges from 13m Australian Height Datum (AHD) to 17 m AHD.</p> <p>No watercourses are identified within the Clearing Area. No surface water features are mapped within the Clearing Area.</p> <p>Given the free-draining nature of the soils within the Clearing Area it is unlikely that the proposed clearing will significantly exacerbate the incidence or intensity of nature flood events.</p> <p>The proposed clearing is unlikely to be at variance to this Principle.</p>

6 Summary of Assessment

The assessment determined that the clearing of 1.64 ha of native vegetation for the proposed Cable Beach Foreshore Redevelopment Project is not at variance to any of the ten Clearing Principles. This is the second application for this Project and its purpose is primarily for clearing to facilitate the maintenance of an existing drainage swale.

Vegetation within the project area has been greatly altered by the adjacent land use activities and infrastructure that includes car parks, walking paths (paved and unpaved), and bridges. The Clearing Area has low value to most conservation significant fauna species and overall fauna assemblages that occur in the broader area due to the proximity of conservation areas within a 5 km buffer that provide more favorable and better-quality vegetation.

In conclusion, based on the assessment against the Clearing Principles utilising available information, the proposed clearing of 1.64 ha of native vegetation is not considered significant. The Clearing Area has already been relatively fragmented due to surrounding land uses and the proposed Clearing Area does not intersect key environmental values likely to cause detrimental impacts. The implementation of the proposed environmental management measures will ensure the risk of impacts are mitigated to an acceptable level.

7 Limitations

This report is produced strictly in accordance with the scope of services set out in the contract or otherwise agreed in accordance with the contract. 360 Environmental makes no representations or warranties in relation to the nature and quality of soil and water other than the visual observation and analytical data in this report.

In the preparation of this report, 360 Environmental has relied upon documents, information, data, and analyses ('client's information') provided by the client and other individuals and entities. In most cases where client's information has been relied upon, such reliance has been indicated in this report. Unless expressly set out in this report, 360 Environmental has not verified that the client's information is accurate, exhaustive, or current and the validity and accuracy of any aspect of the report including, or based upon, any part of the client's information is contingent upon the accuracy, exhaustiveness, and currency of the client's information. 360 Environmental shall not be liable to the client or any other person in connection with any invalid or inaccurate aspect of this report where that invalidity or inaccuracy arose because the client's information was not accurate, exhaustive, and current or arose because of any information or condition that was concealed, withheld, misrepresented, or otherwise not fully disclosed or available to 360 Environmental.

Aspects of this report, including the opinions, conclusions, and recommendations it contains, are based on the results of the investigation, sampling and testing set out in the contract and otherwise in accordance with normal practices and standards. The investigation, sampling and testing are designed to produce results that represent a reasonable interpretation of the general conditions of the Clearing Area that is the subject of this report. However, due to the characteristics of the Clearing Area, including natural variations in Clearing Area conditions, the results of the investigation, sampling and testing may not accurately represent the actual state of the whole Clearing Area at all points.

It is important to recognise that Clearing Area conditions, including the extent and concentration of contaminants, can change with time. This is particularly relevant if this report, including the data, opinions, conclusions, and recommendations it contains, are to be used a considerable time after it was prepared. In these circumstances, further investigation of the Clearing Area may be necessary.

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Figures

Figure 1: Proposed Clearing Area and Native Vegetation Impacted by Proposed Clearing

Figure 2: ESAs and Conservation Areas.

Figure 3: Vegetation Mapping and Priority Flora Locations.

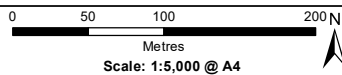
Figure 4: Vegetation Condition.

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Legend

- Survey Area
- Cadastre
- Proposed Clearing Area
- Priority Flora Locations
 - Corymbia paractia* (P1)
- Native Vegetation Types
 - CpTfAtTm
 - AiTmSh
 - TpTmCc



- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS

LOCALITY MAP



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PROJECT ID
5782

DATE
12/04/2023

HORIZONTAL DATUM AND PROJECTION
GCS GDA 1994

CREATED	CHECKED	APPROVED	REVISION
ENVIRONMAPS	NP	NP	0

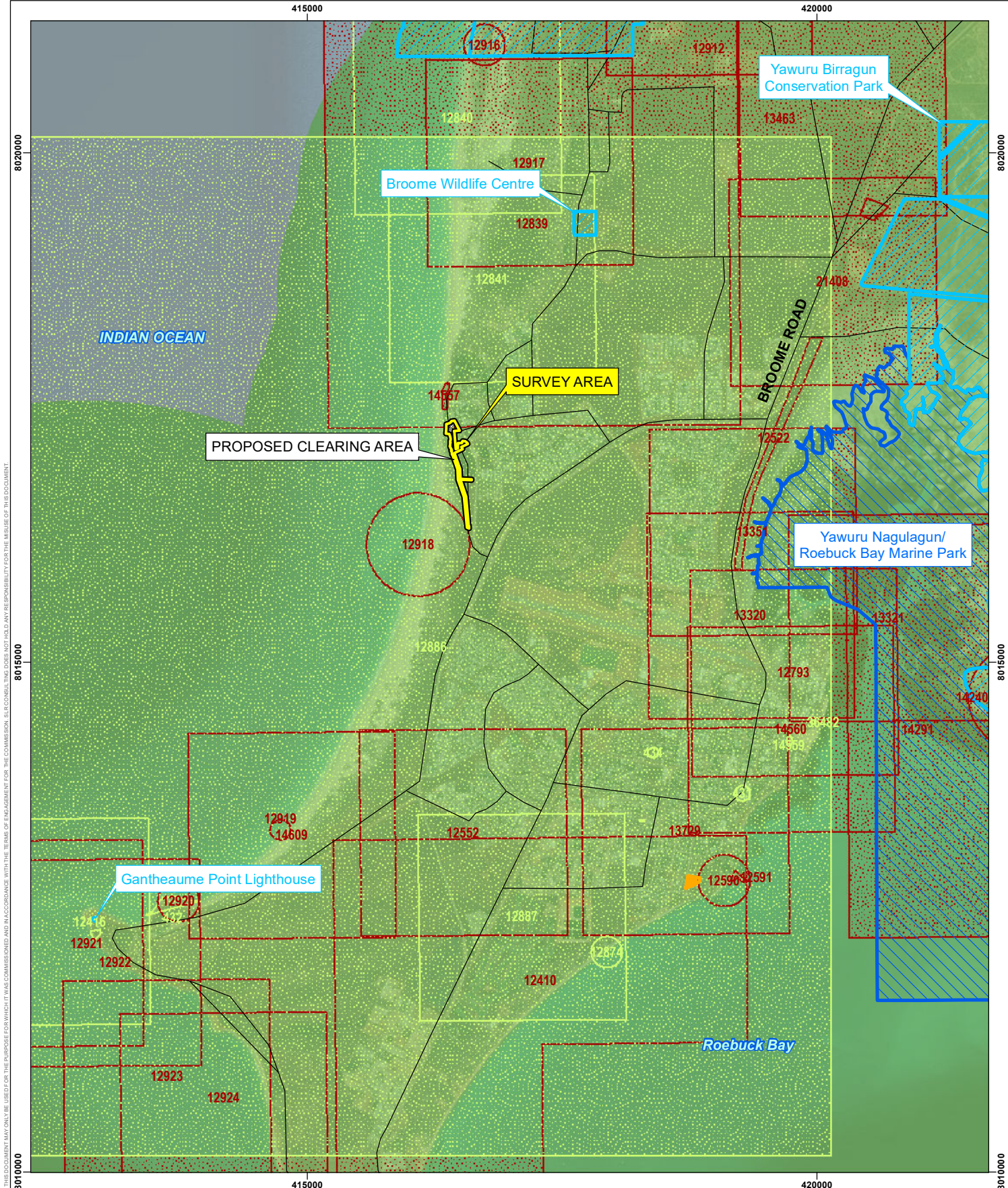
Broome Shire Council
Cable Beach Broom, W.A.

Clearing Permit

Figure 1
Native Vegetation Impacted
by Proposed Clearing

- AERIAL PHOTOGRAPHY SOURCED LANDGATE

C:\GIS\Jobs\360\5782 - Cable Beach Clearing Permit\Figures\5782_F04 Native Vegetation Impacted by Proposed Clearing_230412.mxd



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Legend

- Survey Area
- Proposed Clearing Area
- Environmentally Sensitive Area
- Section 5(1)(g) Reserve
- Section 5(1)(h) Reserve
- Marine Park

 Registered Site Lodged

Legislated Lands and Waters (DBCAs)

Section 5(1)(g) Reserve

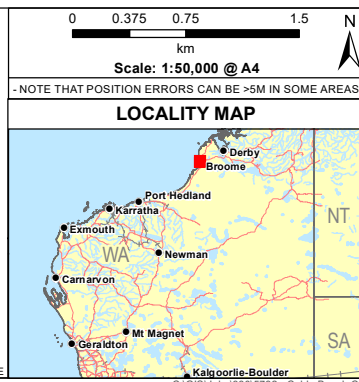
Section 5(1)(h) Reserve

Marine Park

Aboriginal Heritage Places

Registered Site

Lodged



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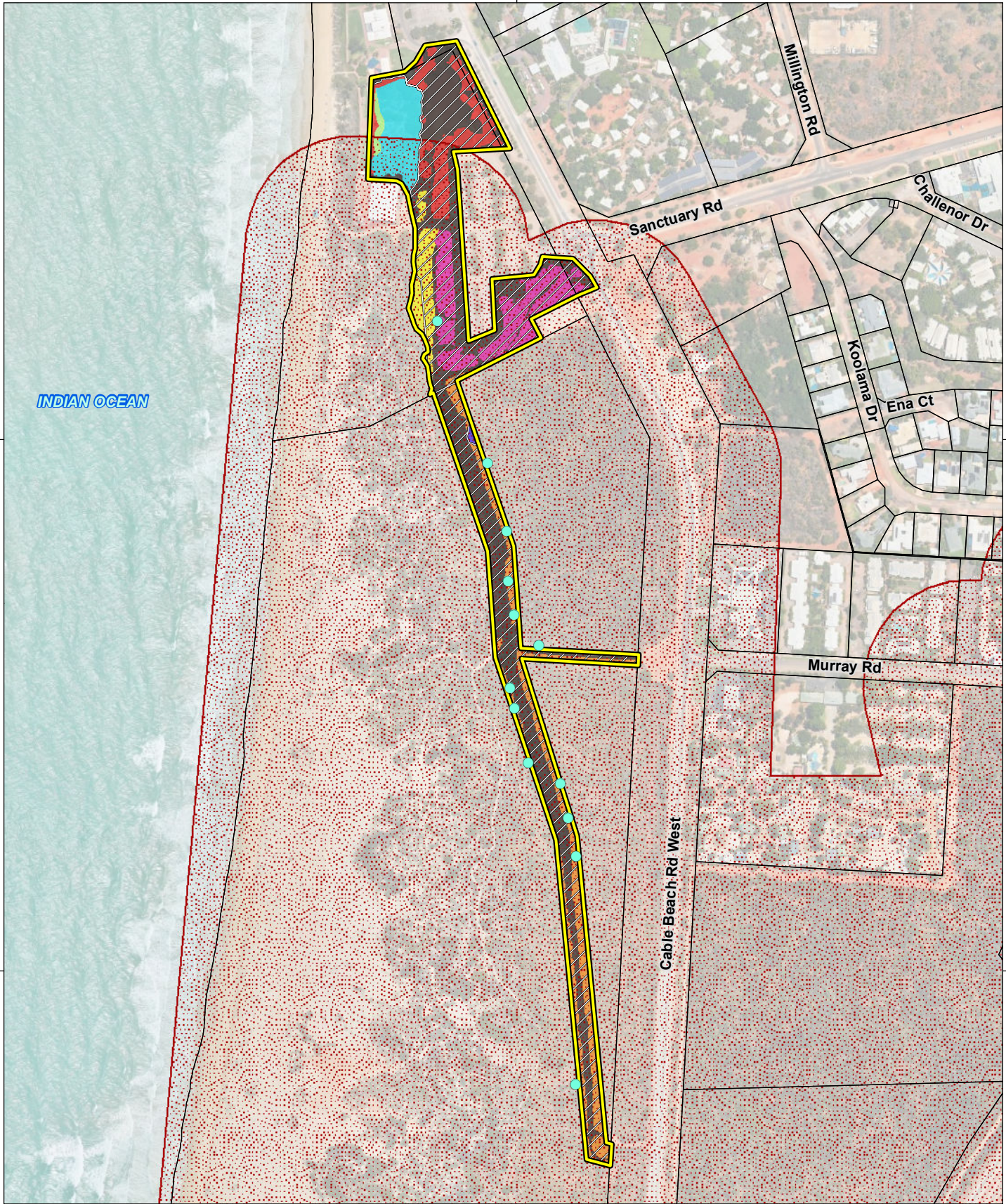
PROJECT ID 5782		DATE 12/04/2023	
HORIZONTAL DATUM AND PROJECTION GCS GDA 1994			
CREATED ENVIRONMAPS	CHECKED NP	APPROVED NP	REVISION 0

Broome Shire Council
Cable Beach Broom, W.A.

Clearing Permit

Figure 2
ESAs and Conservation Areas

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Legend

Survey Area

Cadastre

Proposed Clearing Area

Bush Fire Prone Area
(additional planning and
building requirements may
apply to development on
this site)

Priority Flora Locations

Corymbia paractia (P1)

Vegetation Types

AiTmSh

CpTfAtTm

CrSI

Planted mixed native and
non-endemic species

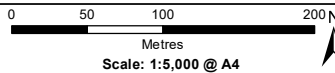
TpTmCc

VT1

VT2

Cleared

- AERIAL PHOTOGRAPHY SOURCED LANDGATE



- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS

LOCALITY MAP



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CREATED	CHECKED	APPROVED	REVISION
ENVIRONMAPS	NP	NP	0

Broome Shire Council
Cable Beach Broom, W.A.

Clearing Permit

Figure 3
Vegetation Mapping and
Priority Flora Locations

C:\GIS\Jobs\360\5782 - Cable Beach Clearing Permit\Figures\5782_F02 Vegetation Mapping and Priority Flora Locations_230412.mxd

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Legend

Survey Area

Cadastre

Proposed Clearing Area

Declared Plants

Azadirachta indica.

Vegetation Condition

Very Good

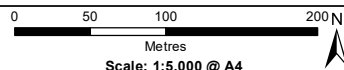
Good

Poor

Degraded

Completely Degraded

Cleared



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GCS GDA 1994

CREATED	CHECKED	APPROVED	REVISION
ENVIRONMAPS	NP	NP	0

Broome Shire Council
Cable Beach Broom, W.A.

Clearing Permit

Figure 4
Vegetation Condition

- AERIAL PHOTOGRAPHY SOURCED LANDGATE

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