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Cable Beach

Native Vegetation Clearing Permit Supporting Information

Prepared for

Shire of Broome

October 2022

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 Josh Byrne and Associates on behalf of the Shire of Broome (the Shire) to prepare a Native Vegetation Clearing Permit (NVCP) application for clearing associated with the re-development of the Cable Beach foreshore ('the Project'). The area to be cleared consists of 1.3 ha ('the Clearing Area') and is located at Cable Beach Reserve on the western edge of the town of Broome, approximately 2,240 km north of Perth (Figure 1). The Project is situated on Crown Land (vested with the Shire) on Lot 2789, Cable Beach Road, Cable Beach.

The Project (Appendix A) was adopted by the Shire of Broome Council in September 2017 and includes recommendations from Broome Townsite's *Coastal Hazard Risk Management and Adaptation Plan* (CHRMAP) (Appendix B). The Cable Beach shoreline is identified as having an extreme level of risk due to the certainty it will be impacted by coastal erosion in the coming decades. Included is the current significant risk of a 1 in 100-year storm event potentially resulting in an approximate 30 m loss to coastal dunes, shoreline erosion and severe impacts to Shire infrastructure including beach access, pathways, landscaping, and foreshore reserves.

The short-term impact resulting from the proposal will enable reprofiling of the dune with a goal of revegetating to improve long-term coastal stability for Cable Beach. The Project will reduce longshore erosion and increase dune stability.

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.

1.2 Purpose of Clearing Permit Application

The purpose of this NVCP supporting document is to present the results of an assessment of the clearing aspects of this proposal 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 is proposed to commence in April 2023 with clearing of the dune related to this portion of the proposed Cable Beach Foreshore Redevelopment 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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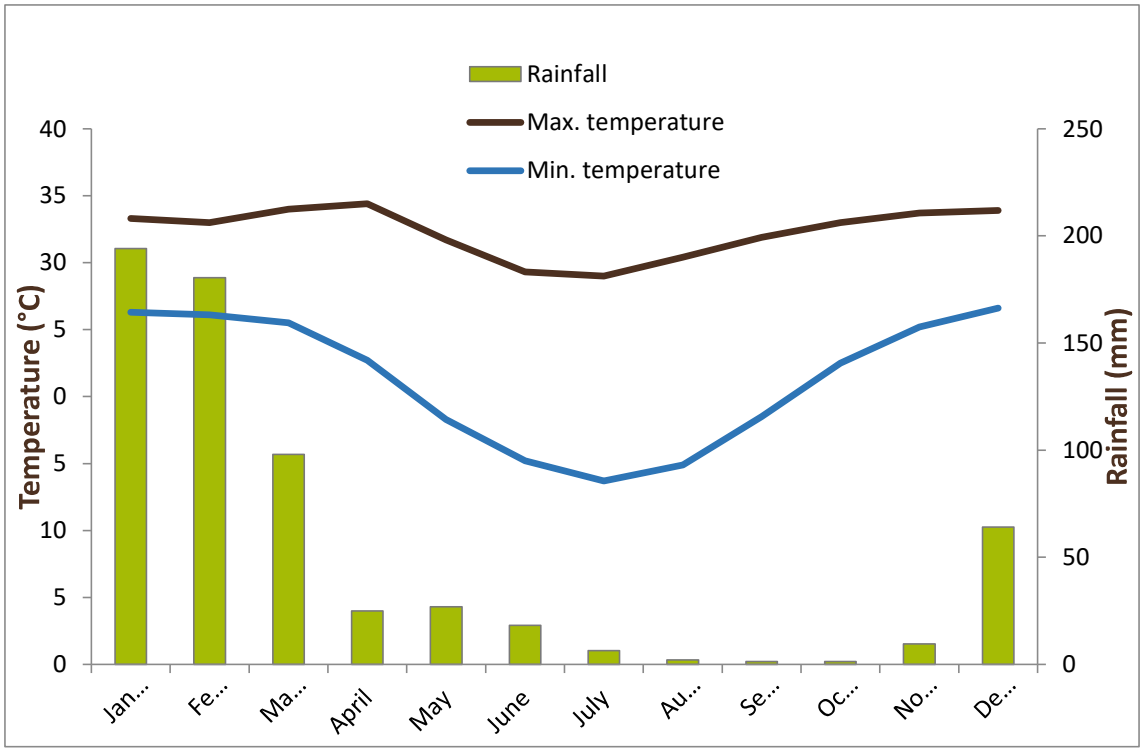
2 Site Overview

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 from the Project. Data statistics have been collected since 1939 to 2022. 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, 2021). Broome receives rainfall 35.1 days annually with an average annual mean rain of 623.5 mm (Graph 1).



Graph 1: Climate Statistics for Broome Airport (Station No. 003003; Bureau of Meteorology, 2021).

2.2 Topography

The topography is variable across the Clearing Area and ranges from 4.5 m Australian Height Datum (AHD) to 15 m AHD. The highest elevation point is on the southern side and the lower point is on the north side of the Clearing Area (Google Earth Pro, 2022).

2.3 Interim Biogeographic Regionalisation of Australia

The Interim Biogeographic Regionalization 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 flavescens* woodland with *Acacia tumida* (pindan wattle) open-scrub and *Chrysopogon* spp. (ribbon grass) and *Triodia bitextura* grasses. These are supported by *Eucalyptus tetrodonta* (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 (Figure 2). 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%) (Figure 2).

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 waters are stored in local depressions. Inundation from ocean flooding events is rare; the local drainage network is the dominant flood mechanism for Broome Township.

An unnamed 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 70 m west of the Clearing Area however no direct impact will occur as a result of the clearing. Surface water features identified nearest to the Clearing Area includes Roebuck, located approximately 3.2 km northeast of the Clearing Area and Coconut Wells, located approximately 12 km north of the Clearing Area (DWER, 2022).

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 TEC. The Monsoon vine thickets (MVT) TEC is located adjacent to the Clearing Area (DWER, 2021). No Conservation Areas are identified within or near the Clearing Area. The nearest conservation area is identified as Point Coulomb Nature Reserve approximately 44 km north of the Clearing Area.

2.7 Flora and Vegetation

A desktop search included a review of a reconnaissance flora and vegetation survey conducted by Focused Vision (2019) to identify potential conservation significant flora and ecological communities within the Clearing Area (Appendix C). The Flora and Vegetation Survey was undertaken 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 and a Department of Climate Change, Energy, the Environment and Water (DCCEEW) Protected Matters Search Tool (PMST) database search are presented below and for the assessment of the proposed clearing in accordance with the Ten 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 2 and 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 *et al.*, 2002) in Western Australia				
Dampierland 750	1,231,155.50	1,225,687.52	99.56	2.78
Vegetation Types (Shepherd *et al.*, 2002) in the Dampierland Bioregion				
Dampierland 750	1,229,182.16	1,225,280.52	99.68	2.78
Vegetation Types (Shepherd *et al.*, 2002) in the Pindanland subregion				
Dampierland 750	1,221,734.45	1,217,843.72	99.68	2.80
Vegetation Types (Shepherd *et al.*, 2002) in the Shire of Broome				
Dampierland 750	1,115,559.36	1,110,131.18	99.51	3.07

2.7.2 Desktop Assessment

A single-phase reconnaissance flora and vegetation survey was conducted by Focused Vision in March 2019 (Appendix C). The results from the survey and the PMST database search within a 1 km radius of the Clearing Area identified:

- One Threatened species
- Three Priority 1 species
- One Priority 2 species
- Thirteen Priority 3 species
- One Priority 4 species

No Threatened flora protected under the *Biodiversity Conservation Act 2016* (BC Act) or under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) were identified as occurring within the Clearing Area. No Priority flora 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):

[1] Department of Biodiversity Conservation and Attractions

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

The MVT was not identified as occurring within the Clearing Area.

2.7.4 Flora Composition

Focused Vision (2019) recorded the following dominant families within the Clearing Area:

- Poaceae (one species)
- Convolvulaceae (two 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 were identified as occurring within the Clearing Area. No DBCA listed Priority flora species were recorded within the Clearing Area.

2.7.6 Introduced Flora

Two introduced species were recorded within the Clearing Area. No introduced flora species listed as Declared Pests under the *Biosecurity and Agriculture Management Act 2007* (BAM Act) (DPIRD, 2021) or identified as Weeds of National Significance (WoNS) by the Department of Agriculture Water and the Environment (DAWE) (2021) were identified within the Clearing Area. Table 2 shows 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
*Cenchrus ciliaris	Buffel Grass	-	No
*Casuarina obesa	Kapok Bush	-	No

2.7.7 Vegetation Types

Flora and vegetation types in the Clearing Area are defined as dense Hummock Grasslands of *Spinifex longifolius* with *Ipomoea pes-caprae* subsp. *Brasiliensis* (Focused Vision, 2019).

2.7.8 Vegetation Condition

Focused Vision (2019) assessed vegetation condition against the currently accepted adaptation of the Keighery (1994) and Trudgen (1988) condition scales. The Clearing Area was assessed as 'Degraded' (approximately 85%) with some areas noted as 'Degraded to Completely Degraded' (approximately 15%). Evidence of disturbance indicated by cleared areas due to intense accessibility by recreational users of the area was identified via site assessment by Focused Vision (2019) resulting in a highly modified area with low floral diversity.

2.8 Fauna

A desktop review of an EPBC Act PMST database search was 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 identified 18 listed threatened species and 21 migratory bird species as potentially occurring within a 1 km radius of the Clearing Area (Table 3 and Table 4). This total comprised of:

- 32 birds
- 5 mammals
- 2 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) for wading. The Clearing Area does not contain these specific habitats but is within the vicinity of the shoreline part of Cable Beach. These species are identified in Table 3. A full list of species can be found in Appendix D.

Table 3: Threatened Fauna species that may occur within a 1 km radius of the Clearing Area

Species	Common Name	Conservation Status	
		EPBC Act	BC Act
Birds			
Erythrura gouldiae	Gouldian Finch	EN	P4
Falco hypoleucos	Grey Falcon	VU	-
Limosa lapponica menzbieri	Northern Siberian Bar-tailed Godwit	CR	CR
Papasula abbotti	Abbott's Booby	EN	-
Polytelis alexandrae	Princess Parrot	VU	P4
Rostratula australis	Australian Painted Snipe	EN	EN
Tyto novaehollandiae kimberli	Masked Owl	VU	P1
Mammals			
Macroderma gigas	Ghost Bat	VU	VU
Macrotis lagotis	Greater Bilby	VU	VU
Saccolaimus saccolaimus nudicluniatus	Bare-rumped Sheath-tailed Bat	VU	P3
Trichosurus vulpecula arnhemensis	Northern Brushtail Possum	VU	VU

Xeromys myoides	Water Mouse	VU	-
Reptile			
Chelonia mydas	Green Turtle	MI, VU	VU
Natator depressus	Flatback Turtle	MI, VU	VU

A DCCEEW PMST database search (Appendix D) identified several migratory bird species within a 1 km radius of the Clearing Area. These species are identified below in Table 4 with their respective likelihood of occurrence. Four (4) were identified as conservation significant.

Table 4: Migratory Bird Species likely to occur within a 1 km radius of the Clearing Area

Species	Common Name	Likelihood
Migratory Marine Species		
Anous stolidus	Common Noddy	Species or species habitat likely to occur within area
Apus pacificus	Fork-tailed Swift	Species or species habitat likely to occur within area
Calonectris leucomelas	Streaked Shearwater	Species or species habitat known to occur within area
Fregata ariel	Lesser Frigatebird	Species or species habitat known to occur within area
Fregata minor	Great Frigatebird	Species or species habitat known to occur within area
Phaethon lepturus	White-tailed Tropicbird	Species or species habitat likely to occur within area
Sternula albifrons	Little Tern	Foraging, feeding related behaviour known to occur within area
Migratory Terrestrial Species		
Cecropis daurica	Red-rumped Swallow	Species or species habitat may occur within area
Cuculus optatus	Oriental Cuckoo	Species or species habitat known to occur within area
Hirundo rustica	Barn Swallow	Species or species habitat known to occur within area
Motacilla cinerea	Grey Wagtail	Species or species habitat may occur within area
Motacilla flava	Yellow Wagtail	Species or species habitat known to occur within area
Migratory Wetland Species		

Actitis hypoleucos	Common Sandpiper	Species or species habitat known to occur within area
Calidris acuminata	Sharp-tailed Sandpiper	Species or species habitat known to occur within area
Calidris canutus (EN)	Red Knot	Species or species habitat known to occur within area
Calidris ferruginea (CR)	Curlew Sandpiper	Species or species habitat known to occur within area
Calidris melanotos	Pectoral Sandpiper	Species or species habitat may occur within area
Charadrius leschenaultia (VU)	Greater Sand Plover	Species or species habitat known to occur within area
Charadrius veredus	Oriental Plover	Species or species habitat may occur within area
Glareola maldivarum	Oriental Pratincole	Species or species habitat may occur within area
Limnodromus semipalmatus	Asian Dowitcher	Species or species habitat likely to occur within area
Limosa lapponica	Bar-tailed Godwit	Species or species habitat known to occur within area
Numenius madagascariensis (CR)	Eastern Curlew	Species or species habitat known to occur within area
Pandion haliaetus	Osprey	Breeding known to occur within area
Tringa nebularia	Common Greenshank	Species or species habitat likely to occur within area

2.8.2 Conservation Significance Fauna and Likelihood of Occurrence

Four (4) Priority fauna species of conservation significance were identified as occurring within a 1 km radius of the Clearing Area:

- One Priority 1 species
- No Priority 2 species
- One Priority 3 species
- Two Priority 4 species

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 (16 bird species, 2 mammal species, 2 reptile species)
- 9 species likely to occur (8 bird species, one mammal species)
- 10 species that may occur (8 bird species, 2 mammal species).

2.8.3 Fauna Habitat

One broad fauna habitat was identified and mapped within the Clearing Area. The coastal dune, Foredune (FD) Fauna Habitat is continuous throughout the Clearing Area (Appendix C) consisting of dense hummock grasslands of *Spinifex longifolius* with *Ipomoea pescaprae* subsp. *brasiliensis.*

Nesting Flatback and Green turtles have been recorded within and adjacent to the project area in the annual DBCA Cable Beach Volunteer Turtle Monitoring Program (Appendix E). The Program conducted during 2021/2022 recorded 56 turtle nests consisting of Flatback turtles (*Natator depressus*), Green turtles (*Chelonia mydas*) and one unidentified nest (Appendix E).

Vehicle traffic is the largest source of disturbance impacting turtle nests. Light pollution and coastal development around nesting beaches has the potential to reduce the reproductive success through direct mortality where nests are destroyed or reducing the availability and/or quality of nesting habitat.

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 1). These include the following:

- Cable Beach 5 (14557) - artefacts midden, camping, mythological, no gender restrictions apply (Lodged)
- Illangarami (12886) – mythological, no gender restrictions apply (Lodged).

There is one native title claim (WC 1999/023) 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 Emergence Services (DFES) data register (2021), the northern and southern sections of the Clearing Area are within a Bushfire Prone Area (Figure 1).

3 Stakeholder Consultation

Extensive consultation has been undertaken with key stakeholders, including:

- EPA Services
- DWER
- 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
2019-2022	NBY	Extensive consultation and correspondence with NBY and members/public through the development of the project.	Letter of agreement issued by NBY to Shire of Broome detailing support for the project and related Section 18 application, with conditions that have been agreed by both parties.
2022	Goolarabooloo	Extensive consultation and correspondence with members through the development of the project	General support for the project with conditions agreed by both parties.
7/04/2022	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.	Surveys used to support the NVCP application must be undertaken in accordance with EPA Technical Guidance
26/04/2022	DAWE (now DCCEEW)	Pre-referral meeting to discuss potential impacts to matters of national environmental significance (MNES)	The key MNES were agreed to be Threatened Species (MVT) and values of the West Kimberley Heritage Listing (dinosaur footprints)
3/05/2022	EPA Services	Pre-referral meeting to discuss potential impacts to key factors	The key factors were agreed to be Flora and Vegetation and Social Surroundings.
31/08/2022	DCCEEW	Presented amended design and outcomes of further consultation with Yawuru and the DCMG.	It was acknowledged that the self-assessment process indicated there would not be a significant impact to MNES.

Date of Consultation	Stakeholder	Description of Consultation	Outcome
5/09/2022	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.
27/09/2022	DWER	Meeting to inform of the decision not to refer under the EP Act nor EPBC Act and that a NVCP would be submitted.	Include a summary of the relevant consultation undertaken to date to assist with the assessment process.

4 Environmental Management Measures

To minimize the risk of impact 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 contractor undertaking the clearing activities
- 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
- 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
- Ensure all tubestock used in landscaping activities are sourced from a certified Dieback free nursery and are locally sourced species representative of the area
- A pre-clearing fauna inspection will be performed immediately prior to clearing and identified fauna species will be relocated by a fauna handler to minimise impacts to fauna that may occur within the clearing Area
- 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 Shire of Broome
- Landscape planning will be undertaken by qualified professionals in consultation with the Shire Parks and Gardens division, Yawuru, Goolarabooloo, and DBCA, where relevant.
- All associated infrastructure for the Project will be contained within the Clearing Area with the following management measures:
    - Lighting to be aimed downward and away from the beach
    - Low glare luminaires
    - Clearing and vehicle access to the Clearing Area will be conducted outside turtle nesting season and/or clearing will cease during nesting season to minimise impacts (8pm to 6am)

    - No construction activities creating significant ground vibration (e.g. piling/drilling) adjacent to turtle nesting area
- The Shire of Broome will undertake an activity notice and site survey with Traditional Owners prior to clearing.

5 Assessment Against the Ten Clearing Principles

The proposed clearing of 1.3 ha 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	**Assessed Outcome:** The proposed clearing is **unlikely to be** at variance with this principle. 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 appropriate implementation of environmental management measures. The clearing of 1.3 ha will not impact the level of biodiversity of the Clearing Area and its surroundings. 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). The following vegetation is consistent with the Pindanland subregion: *Eucalyptus tectifica* (Darwin Box), *Corymbia flavescens* woodland with *Acacia tumida* (Pindan Wattle) open-scrub and *Chrysopogon* spp. (Ribbon Grass) and *Triodia bitextura* grasses. These are supported by *Eucalyptus tetrodonta* (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). The vegetation of the Clearing Area was identified as dense Hummock Grasslands of *Spinifex longifolius* with *Ipomoea pes-caprae* subsp. *brasiliensis* (Focused Vision, 2019). The overall vegetation condition is considered to be 'Degraded', with some areas being 'Degraded to Completely Degraded' (Focused Vision, 2019). No Threatened or Priority Ecological Communities were identified as potentially occurring within the Clearing Area, however the Monsoon Vine Thickets (MVT) on the coastal sand dunes of Dampier Peninsula (Monsoon Vine Thickets) TEC listed as Endangered pursuant to the EPBC Act and Vulnerable pursuant to the BC Act is recorded as occurring within 1 km of the Clearing Area (Appendix C). None of the vegetation types mapped and described within the Clearing Area are representative of any TECs or PECs.

Principle	Assessment
	A desktop assessment identified 9 conservation significant flora species as potentially occurring within 1 km of the Clearing Area. The identified species comprised of one Threatened species, three Priority 1 species, one Priority 2 species, thirteen Priority 3 species and one Priority 4 species. No Threatened or Priority Flora were recorded within the Clearing Area and none of the species potentially present are locally or regionally restricted. The proposed clearing is unlikely to have a significant impact on the conservation status of flora species potentially present. A desktop assessment identified 18 listed threatened species and 21 migratory bird species as potentially occurring within the Clearing Area. This includes 32 bird species, 5 mammal species and 2 reptile species. The proposed clearing of 1.3 ha of vegetation in the Clearing Area is unlikely to significantly impact on the 32 bird species of conservation significance due to their transient behaviour and ability to travel to different coastal locations. Similarly, mammal species have the ability to locate to different coastal locations that includes vegetation of a higher condition in comparison to the 'Degraded' and 'Completely Degraded' vegetation of the Clearing Area. Fauna habitat favourable to nesting turtles was identified within the Clearing Area and surrounds. The vegetation within the Clearing Area is considered to be in Degraded condition and therefore would be unlikely to provide significant nesting habitat for turtles. Neither of the turtle species identified during the desktop assessment were considered to be reliant upon the Clearing Area for habitat. Faunal assemblages were considered to be typical of the broad fauna habitat present within the Clearing Area and within the Dampierland bioregion. The vegetation association, fauna habitat and landform types present within the Clearing Area, are well represented in surrounding areas. The Clearing Area is unlikely to represent an area of higher biodiversity than surrounding areas, in either a local or regional context.
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	**Assessed Outcome:** The proposed clearing is **unlikely to be** at variance with this principle. One broad fauna habitat was identified and mapped within the Clearing Area; Coastal Dune Habitat. The Coastal Dune Habitat contains limited microhabitat opportunities and is of low value to most conservation significant fauna species and overall fauna assemblages that occur in the broader area. The Coastal Dune Habitat is described as: • Acacia thicket with eucalypt woodland over spinifex *Acacia tumida, Eucalyptus tectifica, Corymbia grandifolia, Triodia pungens, T. bitextura.* Focused Vision (2019) defined vegetation within the Clearing Area as dense Hummock Grasslands of *Spinifex longifolius* with *Ipomoea pes-caprae* subsp. brasiliensis. Vegetation condition was identified as 'Degraded' with some areas noted 'Degraded to Completely Degraded'. Vegetation noted to be in 'Degraded to Completely Degraded' condition would not provide or contribute as significant fauna habitat.

Principle	Assessment
	A desktop assessment identified 18 listed threatened species and 21 migratory bird species as potentially occurring within the Clearing Area, comprising of: • 32 bird species • 5 mammal species • 2 reptile species • No amphibian species. A total of 21 migratory bird species subject to international agreement, were identified in the 1 km radius DCCEEW PMST database search (Appendix D). Most of the conservation significant fauna species identified in the database 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 but is within the vicinity of the shoreline part of Cable Beach. There are 32 conservation significant bird species that are considered as possibly occurring within the Clearing Area due to suitable foraging, breeding and/or roosting habitat, with the majority of these birds being migratory species. These species are considered to be infrequent visitors and none would be dependent on the Clearing Area for nesting, breeding or foraging habitat. The Clearing Area is unlikely to provide habitat significant to any of these species as they are all highly mobile and there is an abundance of similar habitat within proximity of the Clearing Area. Fauna habitat favourable to nesting turtles was identified within the Clearing Area and surrounds. The vegetation within the Clearing Area is considered to be in Degraded condition and therefore would be unlikely to provide significant nesting habitat for turtles. Indirect disturbance to surrounding turtle nesting habitat would be minimised through Environmental Management Measures as outlined in Section 4. The clearing of 1.3 ha of degraded vegetation is unlikely to impact on habitat significant for fauna.
Principle (c) – Native vegetation should not be cleared if it includes, or is necessary for the continued existence of rare flora	**Assessed Outcome:** The proposed clearing is **unlikely to be** at variance with this Principle. There are no known records of Threatened or Priority listed Flora within the Clearing Area (Appendix C). Flora surveys of the Clearing Area did not record any species of Threatened flora (Focused Vision, 2019). The vegetation association within the Clearing Area is common and widespread within the region and the vegetation proposed to be cleared is unlikely to be necessary for the continued existence of any species of Threatened Flora.
Principle (d) – Native vegetation should not be	**Assessed Outcome:** The proposed clearing is **unlikely to be** at variance with this Principle.

Principle	Assessment
cleared if it comprises the whole or a part of or is necessary for the maintenance of a Threatened Ecological Community (TEC).	The Monsoon vine thickets (MVT) on the coastal sand dunes of Dampier Peninsula (Monsoon Vine Thickets) TEC listed as Endangered pursuant to the EPBC Act and Vulnerable pursuant to the BC Act is recorded as occurring within 1 km of the Clearing Area (Appendix C). The Clearing Area is identified as an ESA as it is located within the buffer of the MVT TEC however no MVT was identified as overlapping the Clearing Area. A vegetation survey conducted by Focused Vision (2019) did not record any vegetation considered representative of a TEC, or PEC within the Clearing Area. The clearing of 1.3 ha will not impact any TECs or vegetation necessary for the continued existence of a TEC.
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	**Assessed Outcome:** The proposed clearing is **not** at variance with this Principle. 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. The clearing of 1.3 ha native vegetation will not impact on the remnant native vegetation within the area.
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	**Assessed Outcome:** The proposed clearing is **unlikely to be** at variance with this Principle. 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). 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. Vegetation within the Clearing Area is not considered to be associated with a watercourse or wetland or representative of riparian vegetation. The proposed clearing of 1.3 ha of vegetation will not impact any associated watercourse or wetland.
Principle (g) – Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation	**Assessed Outcome:** The proposed clearing is **unlikely to be** at variance with this Principle. The (then) DER has defined land degradation as including the following (Department of Environment Regulation, 2014). • Land Capability • Soil erosion (caused by wind and water erosion due to vegetation clearing) • Nutrient Export • Salinity

Principle	Assessment
	• Waterlogging/flooding. Vegetation condition was identified as 'Degraded' with some areas noted 'Degraded to Completely Degraded' (Focused Vision, 2019). The Cable Beach shoreline is identified as having an extreme level of risk due to the certainty it will be impacted by coastal erosion in the coming decades, exacerbated by the vegetation condition. The current significant risk of a 1 in 100-year storm event will potentially result in an approximate 30 m loss to coastal dunes, shoreline erosion and severe impacts to Shire infrastructure including beach access, pathways, landscaping, and foreshore reserves. The proposed clearing of the Clearing Area will enable reprofiling of the dune with a goal to revegetate the dune to improve long-term coastal stability for Cable Beach. The Project will reduce longshore erosion, degradation and increase dune stability.
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	**Assessed Outcome:** The Proposal is **unlikely to be** at variance with this Principle. There are no conservation areas within the Clearing Area. The nearest DBCA managed land or waters is Roebuck Bay Marine Park located approximately 2.85 km east of the Clearing Area. The proposed clearing is unlikely to impact on the environmental values of any adjacent or nearby conservation areas.
Principle (i) – Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water	**Assessed Outcome:** The Proposal is **unlikely to be** at variance with this Principle. 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 623.5 mm (Graph 1) (Bureau of Meteorology, 2021). The proposed clearing is unlikely to result in significant changes to surface water flows. 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.

Principle	Assessment
Principle (j) – Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding	**Assessed Outcome:** The Proposal is **unlikely to be** at variance with this Principle. The 100 Year ARI floodplain and flood fringe mapping identified the Clearing Area and the surrounding as being within a flood risk area (DWER, 2016). The Project includes recommendations from the Broome Townsite's *Coastal Hazard Risk Management and Adaptation Plan* (CHRMAP). The short-term impact resulting from clearing of the Clearing Area, will enable reprofiling of the dune with a goal to revegetate the dune to improve long-term coastal stability for Cable Beach. The Project will reduce longshore erosion and increase dune stability. The topography is variable across the Clearing Area and ranges from 4.5 m Australian Height Datum (AHD) to 15 m AHD. No watercourses are identified within the Clearing Area. No surface water features are mapped within the Clearing Area. 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.

6 Summary of Assessment

The assessment determined that the clearing of 1.3 ha of native vegetation for the proposed redevelopment of the Cable Beach foreshore is unlikely to be at variance to be at variance with any of the Ten Clearing Principles.

The Clearing Area contains coastal dune habitat and has limited microhabitat opportunities. Due to vegetation being in 'Degraded' to 'Completely Degraded' condition, the area was identified as being unnecessary for the continued existence of Threatened flora or fauna species, Threatened Ecological Communities or Priority Ecological Communities. The Clearing Area has low conservation value to most significant fauna species and overall fauna assemblages that occur in the broader area.

Database searches identified 18 listed threatened species and 21 migratory bird species as potentially occurring within a 1 km radius of the Clearing Area. However, due to the transient behaviour, ability to fly or relocate to different coastal locations, and an abundance of suitable habitat surrounding the Clearing Area, the proposed clearing is unlikely to result in a significant impact to mammal and bird species. The implementation of Environmental Management Measures (Section 4 of this document) will minimize the risk of impacts from clearing activities and significant impacts to species are considered unlikely.

In summary, based on the outcomes from the desktop and field assessments, it is considered that the proposal to clear 1.3 ha of native vegetation will not result in a significant environmental impact.

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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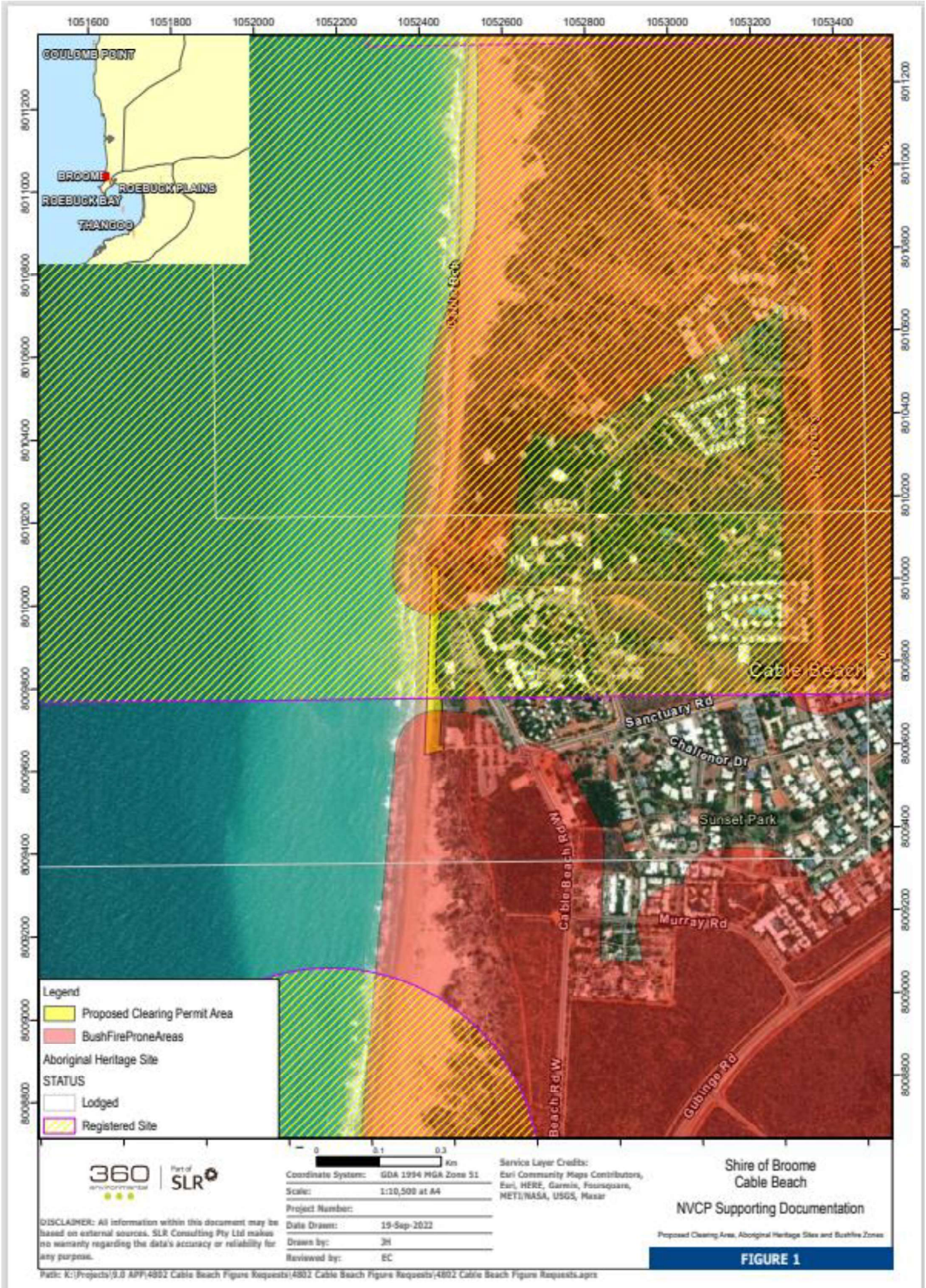
Figures


COULOMB POINT
BROOME
ROEBUCK PLAINS
ROEBUCK BAY
THANGOO
Cable Beach
Sanctuary Rd
Challenor Dr
Sunset Park
Cable Beach Rd W
Murray Rd
Beach Rd W
Gubinge Rd
Legend
Proposed Clearing Permit Area
BushFirePoneAreas
Aboriginal Heritage Site
STATUS
Lodged
Registered Site
Km
Coordinate System: GDA 1994 MGA Zone 51
Scale: 1:10,500 at A4
Project Number:
Date Drawn: 19-Sep-2022
Drawn by: JH
Reviewed by: EC
Service Layer Credits: Esri Community Maps Contributors, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS, Maxar
Shire of Broome
Cable Beach
NVCP Supporting Documentation
Proposed Clearing Area, Aboriginal Heritage Sites and Bushfire Zones
FIGURE 1
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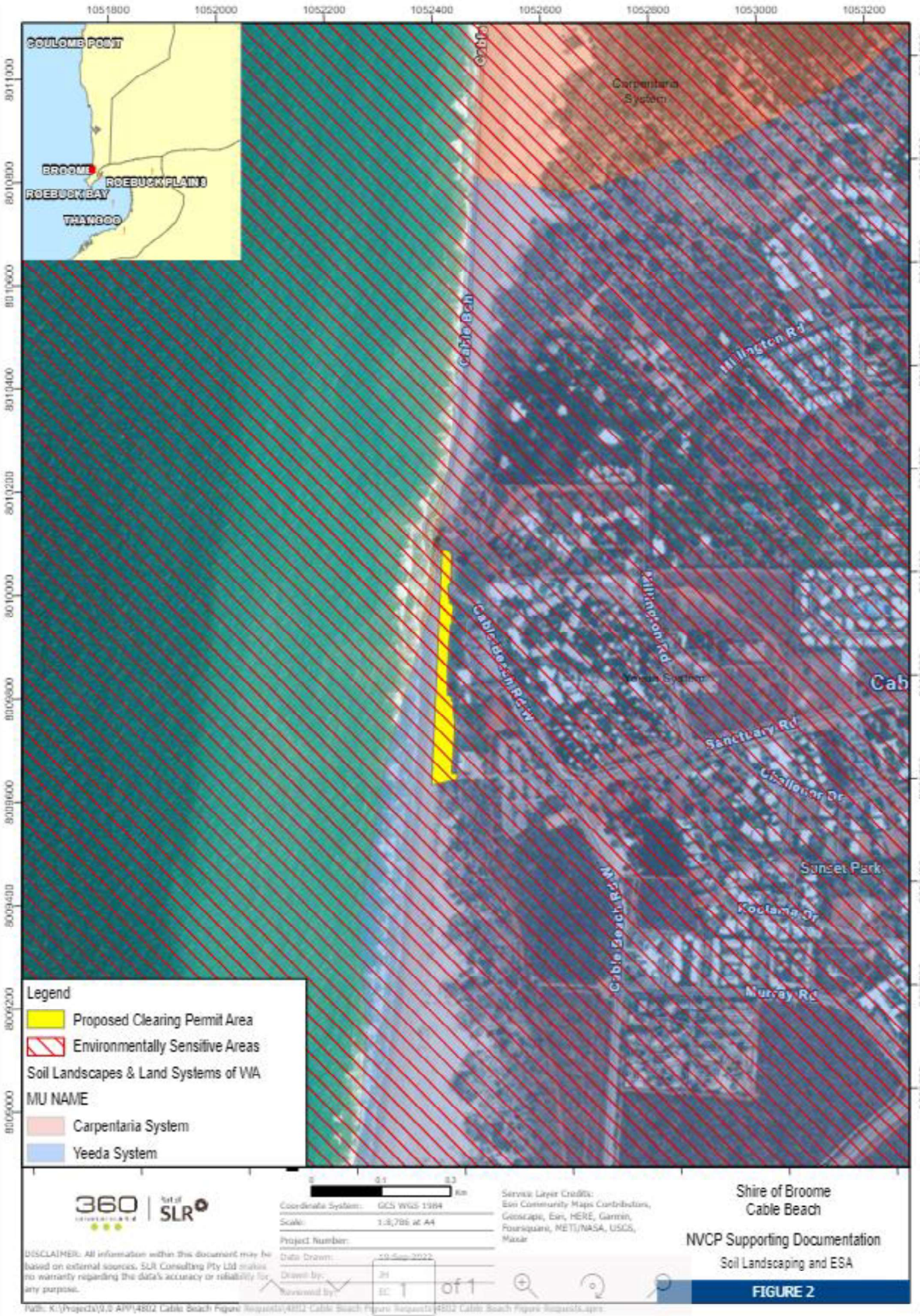

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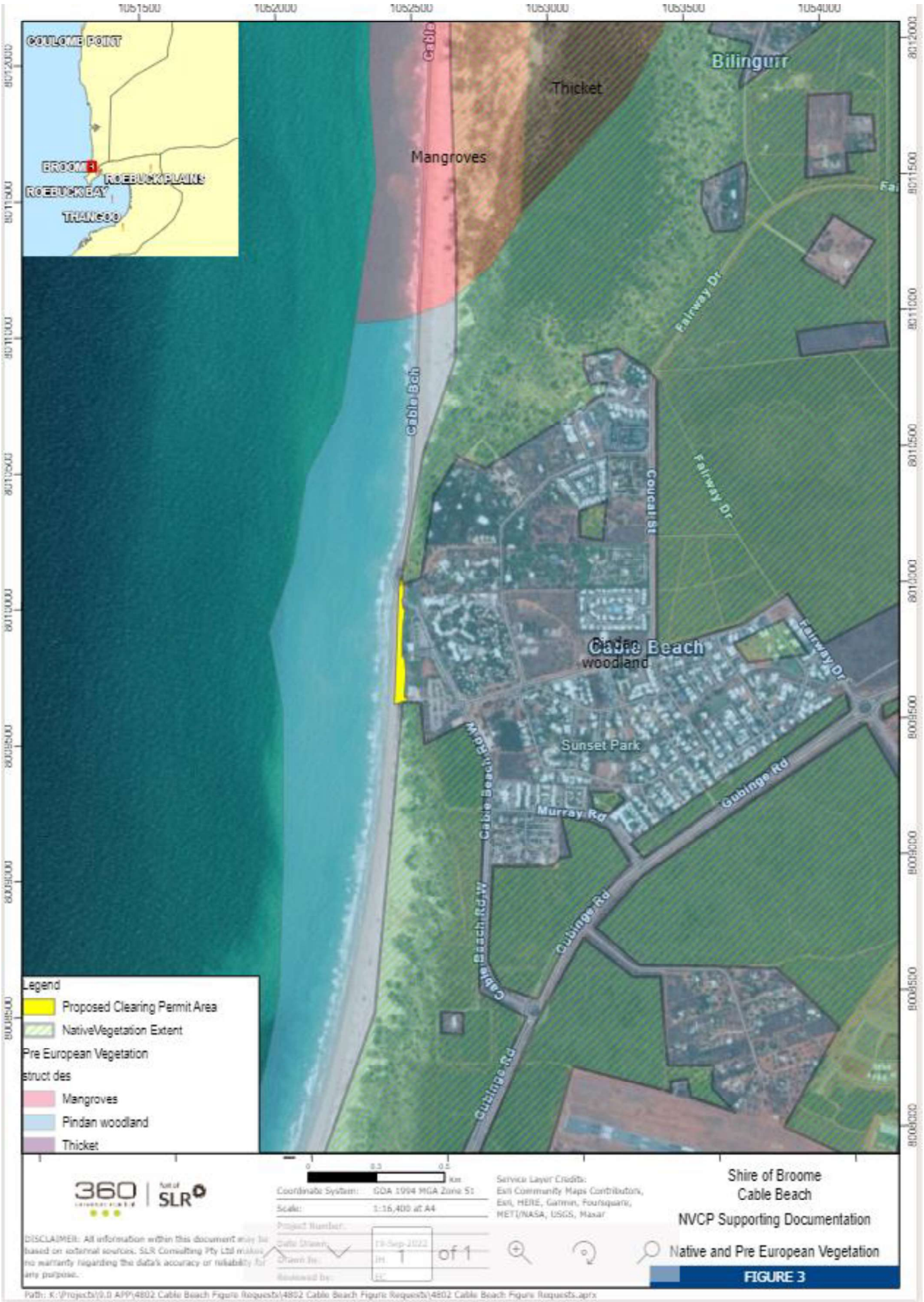
COULOMB POINT
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Mangroves
Bilingurr
Fairway Dr
Cable Bch
Gourdis
Cable Beach
woodland
Sunset Park
Cable Beach Rd W
Murray Rd
Gubinge Rd
Legend
Proposed Clearing Permit Area
NativeVegetation Extent
Pre European Vegetation
struct des
Mangroves
Pindan woodland
Thicket
Coordinate System: GDA 1994 MGA Zone 51
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Shire of Broome
Cable Beach
NVCP Supporting Documentation
Native and Pre European Vegetation
FIGURE 3
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