



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: CPS 9916/1
File Number: DWERVT11203
Duration of Permit: From 13 April 2023 to 13 April 2025

PERMIT HOLDER

Shire of Broome

LAND ON WHICH CLEARING IS TO BE DONE

Lot 2789 on Deposited Plan 217781, Cable Beach

AUTHORISED ACTIVITY

The permit holder must not clear more than 1.3 hectares of native vegetation within the area cross-hatched yellow in Figure 1 of Schedule 1.

CONDITIONS

1. Period during which clearing is authorised

The permit holder must not clear any *native vegetation* after 13 April 2025.

2. Avoid, minimise, and reduce impacts and extent of clearing

In determining the *native vegetation* authorised to be cleared under this permit, the permit holder must apply the following principles, set out in descending order of preference:

- (a) avoid the clearing of *native vegetation*;
- (b) minimise the amount of *native vegetation* to be cleared; and
- (c) reduce the impact of clearing on any environmental value.

3. Weed management

When undertaking any clearing authorised under this permit, the permit holder must take the following measures to minimise the risk of introduction and spread of *weeds*:

- (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- (b) ensure that no known *weed*-affected soil, *mulch*, *fill*, or other material is brought into the area to be cleared; and
- (c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

4. Directional clearing

The permit holder shall conduct clearing in a slow progressive manner towards adjacent native vegetation to allow fauna to move into adjacent native vegetation ahead of the clearing activity.

5. Wind erosion management

The permit holder must commence bulk earthworks activities no later than two months after undertaking the authorised clearing activities to reduce the potential for wind erosion.

6. Records that must be kept

The permit holder must maintain records relating to the listed relevant matters in accordance with the specifications detailed in Table 1.

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	<ul style="list-style-type: none"> (a) the species composition, structure, and density of the cleared area; (b) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings; (c) the date that the area was cleared; (d) the direction that clearing was undertaken; (e) the date bulk earthworks activities commenced; (f) the size of the area cleared (in hectares); (g) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 2; and (h) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> in accordance with condition 3.

7. Reporting

The permit holder must provide to the *CEO* the records required under condition 6 of this permit when requested by the *CEO*.

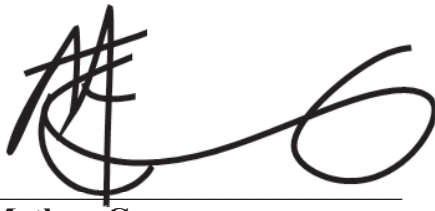
DEFINITIONS

In this permit, the terms in Table 2 have the meanings defined.

Table 2: Definitions

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the <i>Environmental Protection Act 1986</i> .
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
fauna specialist	means a person who holds a tertiary qualification specialising in environmental science or equivalent, and has a minimum of 2 years work experience in fauna identification and surveys of fauna native to the region being inspected or surveyed, or who is approved by the <i>CEO</i> as a suitable fauna specialist for the bioregion, and who holds a valid fauna licence issued under the <i>Biodiversity Conservation Act 2016</i> .
fill	means material used to increase the ground level, or to fill a depression.
department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
EP Act	<i>Environmental Protection Act 1986</i> (WA)
mulch	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
weeds	means any plant – (a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i> ; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

END OF CONDITIONS

A handwritten signature in black ink, appearing to read 'Mathew Gannaway', written over a horizontal line.

Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION

*Officer delegated under Section 20
of the Environmental Protection Act 1986*

20 March 2023

SCHEDULE 1

The boundary of the area authorised to be cleared is shown in the map below (Figure 1).

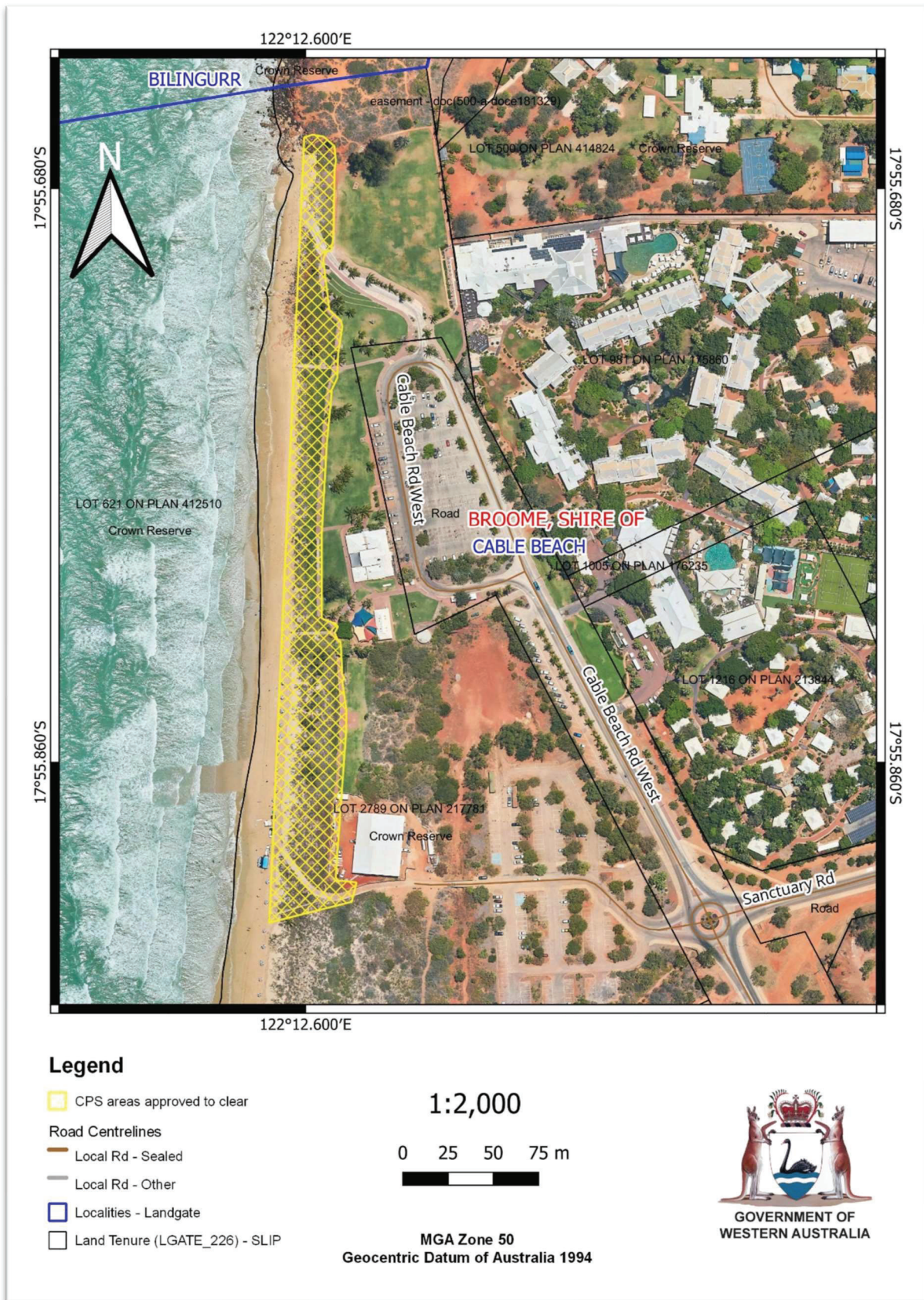


Figure 1: Map of the boundary of the area within which clearing may occur



Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 9916/1
Permit type:	Area permit
Applicant name:	Shire of Broome
Application received:	13 October 2022
Application area:	1.3 hectares of native vegetation
Purpose of clearing:	Bulk earthworks to facilitate erosion mitigation works
Method of clearing:	Mechanical clearing
Property:	Lot 2789 on Deposited Plan 217781
Location (LGA area/s):	Shire of Broome
Localities (suburb/s):	Cable Beach

1.2. Description of clearing activities

The vegetation proposed to be cleared consists of 1.3 hectares of coastal foreshore dune native vegetation within a single contiguous area (Figure 1). This application area is located on the outer western edge of the town of Broome, approximately 2,240 km north of Perth. The area is situated on Crown Land (vested with the Shire) on Lot 2789, Cable Beach Road, Cable Beach (see Figure 1, Section 1.5).

1.3. Decision on application

Decision:	Granted
Decision date:	20 March 2023
Decision area:	1.3 hectares of native vegetation, as depicted in Section 1.5, below.

1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The Department of Water and Environmental Regulation (DWER) advertised the application for 21 days and no submissions were received.

In undertaking the assessment, the Delegated Officer had regard for the site characteristics (see Appendix A), relevant datasets (see Appendix E.1.), the findings of a flora and vegetation survey, project overview, turtle monitoring program, Cable Beach master plan, Broome Coastal Vulnerability Study, and Broome Townsite Coastal Hazard Risk Management and Adaptation Plan (see Appendix D), the clearing principles set out in Schedule 5 of the EP Act (see Appendix B), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3). The Delegated Officer also took into consideration that the Cable Beach shoreline has been identified as having an extreme level of risk, due to the certainty it will be impacted by coastal erosion in the coming decades. The current significant risk of a 1 in 100-year storm event potentially resulting in an approximate 30 metre 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 (360 Environmental, 2022).

The assessment identified that the proposed clearing may result in:

- the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values.
- land degradation in the form of wind or water erosion.

After consideration of the available information, as well as the applicant's avoidance and mitigation measures (Section 3.1), the Delegated Officer determined the proposed clearing is unlikely to lead to appreciable land degradation or have long-term adverse impacts on conservation significant fauna or flora species and can be minimised and managed to be unlikely to lead to an unacceptable risk to environmental values. The applicant has suitably demonstrated avoidance and minimisation measures.

The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise to reduce the impacts and extent of clearing.
- take hygiene steps to minimise the risk of the introduction and spread of weeds. Weed management measures as specified in the clearing permit.
- slow directional clearing to allow fauna present to move into adjacent vegetation ahead of the clearing activity will minimise impact to individuals.
- undertake bulk earthwork activities within two months of clearing to minimise wind erosion risk.

1.5. Site map



Figure 1: Map of the application area. The area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit CPS 9916/1.

2 Legislative context

The clearing of native vegetation in Western Australia is regulated under the EP Act and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.4), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle
- the principle of intergenerational equity
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Planning and Development Act 2005* (WA) (P&D Act)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

To minimise the risk of impact from the activities associated with the application, the following environmental management measures have been committed to by the Shire of Broome (360 Environmental, 2022):

- Induction of all contractors and/or internal personnel undertaking the clearing in accordance with the Shire of Broome procedures.
- GPS coordinates of the application area to be supplied to contractor undertaking the clearing activities.
- Prior to clearing and earthworks commencing within the application 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 application area.
- Weed hygiene measures are to be implemented to minimise the risk of spread or introduction of new weed species to the application area by:
 - checking all vehicles, machinery, equipment, and personnel for weed contamination and include washdown stations for removal of plant material prior to entering and exiting the application area;
 - ensuring weed free tubestock is used in landscaping or plants of low weed risk;
 - providing 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 Department of Biodiversity, Conservation and Attractions (DBCA), where relevant.
- All associated infrastructure for the Project will be contained within the application 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 application 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.

The Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts of the proposed clearing on environmental values.

3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix A) and the extent to which the impacts of the proposed clearing present a risk to biological, conservation, or land and water resource values.

The assessment identified that the clearing presents a risk to flora and fauna values, and that these required further consideration. The consideration of impacts to these values, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

3.2.1. Biological values (flora) – Clearing Principles (a) and (c)

Assessment

Threatened and Priority Flora

Based on the mapped vegetation, soil and landform types, the application area provides potentially suitable habitat for the following six conservation listed flora species:

- *Aphyllodium glossocarpum* (P3)
- *Bonamia oblongifolia* (P3)
- *Corymbia paractia* (P1)
- *Glycine pindanica* (P3)
- *Gomphrena pusilla* (P2)
- *Seringia exastia* (CR)

The application area was subject to a targeted flora and vegetation survey (the Flora Survey) by Focused Vision Consulting in March 2019 (Focused Vision Consulting, 2019). The timing of the survey (early March, following the majority of the wet season) was considered suitable for a flora and vegetation assessment, although the month preceding the survey (February 2019) was considerably drier than usual, recording only 25.0 millimetres of rain compared to the mean for that month of 181.0 millimetres. December of 2018 was also significantly dry, with only 12.2 millimetres of a mean of 62.7 millimetres being recorded. The region experiences the majority of seasonal rainfall between December and March, with January and February typically recording 69 percent of the fall volumes of these four months. Therefore, with only 14 percent of the average rainfall for February falling during 2019, and only 19 percent of the average rainfall for December falling during 2018, two months prior, the flowering season in the region (March to June) has the potential to be poorer than usual (Focused Vision Consulting, 2019).

Survey data was collected from four non-permanent flora and vegetation assessment relevés in accordance with technical guidance (EPA, 2016). Opportunistic data was also collected continuously whilst traversing the survey area (Focused Vision Consulting, 2019). Of the four relevés that were surveyed during the Flora Survey, only one was located within the application area (R04) and one overlapped partially with the application area (R03) (see Figure 6 in Appendix D). The department considered that the area was adequately surveyed with the entire application area traversed. No species listed as Threatened flora under the BC Act or the EPBC Act, and no species listed as Priority flora were recorded during the Flora Survey at any location (Figure 9) (Focused Vision Consulting, 2019).

Weed risks to biodiversity

The Flora Survey identified two introduced flora species within the larger survey area, *Cenchrus ciliaris* (buffel grass) and *Casuarina obesa* (kapok bush), attributed to nearby historical clearing and soil movement. None of the identified weed species are listed as Declared pest plants under the *Biosecurity and Agriculture Management Act 2007* (BAM Act) and/or a Weeds of National Significance (WoNS).

The proposed clearing may increase the risk of weeds spreading into adjacent areas of native vegetation.

Conclusion

Based on the above assessment, and findings of the Flora Survey, the proposed clearing is unlikely to impact on any threatened or priority flora species. However, the proposed clearing may increase the risk of weeds spreading into adjacent native vegetation, noting that non-native species were recorded in the Flora Survey.

Conditions

To address the potential spread of weeds into adjacent native vegetation, the clearing permit contains a condition that requires the applicant to undertake weed hygiene management measures.

3.2.2. Biological values (fauna) – Clearing Principle (b)

Assessment

According to available databases, 68 migratory conservation significant bird species occur within the local area (50 kilometre radius of the application area). These species are marine or wetland dependent species that require specific habitats (open water or wetlands) for wading, nesting, breeding or foraging. These species may occur as infrequent visitors to the application area, however, it is not classified as critical habitat for these conservation significant species. The application area is unlikely to provide habitat significant to any of the migratory species as they are all highly mobile and there is an abundance of similar habitat within proximity of the application area.

As detailed in the Fauna analysis table (Appendix A.4.), there are an additional 35 conservation significant species that have been recorded in the local area. Of these species, nine are oceanic mammal or reptile species, which either completely or dominantly occupy the marine habitat adjacent to the application area. Fifteen are species listed as Threatened under the BC or EPBC Act, and eleven species are listed as 'Priority' by DBCA. It is unlikely that any of these conservation significant species utilise the application area as critical habitat. The habitat preferences are either marine waters, mangroves, inland locations, arboreal habitats, more densely vegetated areas, or areas dominated by different vegetation complexes.

According to 360 Environmental's analysis of the annual DBCA Cable Beach Volunteer Turtle Monitoring Program 2021/2022, fauna habitat favourable to nesting turtles was identified on the edge of the application area and surrounds (360 Environmental, 2022). The Program recorded 56 turtle nests consisting of *Natator depressus* (flatback turtles), *Chelonia mydas* (green turtles) and one unidentified nest along a 6 kilometre stretch of Cable Beach. 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 (Conservation Volunteers Australia, 2022). Noting the vegetation within the application area is considered to be in 'Degraded' condition and does not include a large area of beach habitat, the application area is 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 3.1.

Conclusion

Due to the transient behaviour, ability to fly or relocate to different coastal locations, and an abundance of suitable habitat surrounding the application area, the proposed clearing is unlikely to result in a significant impact to mammal and bird species. The clearing of 1.3 ha of degraded vegetation is unlikely to impact on habitat significant for fauna. The implementation of minimisation and avoidance measures (Section 3.1) will minimise the risk of impacts from clearing activities and significant impacts to species are considered unlikely. However, impacts to individuals that may be present at the time of clearing may occur. Undertaking clearing in a slow direction towards adjacent native vegetation will minimise this risk.

Conditions

To address the potential impact to fauna individuals present at the time of clearing, the clearing permit contains a condition that requires slow directional clearing to allow fauna present to move into adjacent vegetation ahead of the clearing activity.

3.2.3. Biological values (PEC and TEC) - Clearing Principles (a and d)

Assessment

The 2019 flora and vegetation survey confirmed that the flora and vegetation types in the application area are defined as dense Hummock Grasslands of *Spinifex longifolius* with *Ipomoea pes-caprae* subsp. *brasiliensis* (Focused Vision Consulting, 2019).

During the 2019 flora and vegetation survey, a patch of Monsoon (vine) thickets on coastal sand dunes of Dampier Peninsula (MVT) Threatened Ecological Community (TEC) was identified and mapped adjacent to the application area (Figure 2). This is consistent with information available on current mapping databases. The survey found that the patch of MVT was not found to extend outside the area mapped in Figure 2 (Focused Vision Consulting, 2019). There is no proposed clearing of MVT within the application area.

To assist in the preservation of the MVT, the Department of Climate Change, the Environment, Energy and Water (DCCEEW) (formerly known as the Department of Sustainability, Environment, Water, Population and Communities) recommended that where possible, a buffer zone of at least 50 metres be maintained from the outer edge of the patch. The purpose of the buffer zone is to protect and manage the patch and to help avoid potential significant impacts to the ecological community. Changes in land-use within the buffer zone must not have a significant impact on the ecological community, but there are exemptions for continuing use (DSEWPaC, 2013). Although the buffer in

this situation, even prior to clearing, is less than 50 metres due to previous clearing and land uses, the Shire of Broome have committed to several avoidance and minimisation measures to ensure impacts to this patch of MVT is minimised.

According to available databases, the '*Corymbia paractia* dominated community on dunes' 'Priority 1' Priority Ecological Community (PEC) (*Corymbia paractia* PEC) was found to occur approximately 20 metres from the application area. This PEC was not recorded within the application area during the 2019 field assessment. Focused Vision Consulting confirmed that this Priority 1, State-listed PEC does not occur within the application area (Focused Vision Consulting, 2019).

Conclusion

A vegetation survey conducted by Focused Vision (2019) did not record any vegetation considered representative of a TEC or PEC within the application area. Records of a TEC and PEC were found to occur adjacent to the application area. To minimise impacts to these occurrences, weed management practices will be required. Accurately demarcating the clearing permit boundary will also reduce the risk of any incidental clearing occurring.

Conditions

To address the potential spread of weeds into adjacent native vegetation that contains a TEC and PEC, the clearing permit contains a condition that requires the applicant to undertake weed hygiene management measures.

3.2.4. Environmental values (land and water resources – land degradation) - Clearing Principle (g)

Assessment

According to available databases, the application area is located within the Yeeda soil system which is characterised by red sandplains supporting pindan vegetation with dense acacia shrubs, scattered bloodwood and grey box trees and curly spinifex and ribbon grass. The Yeeda soil system is mapped as having a high to extreme risk for wind erosion and phosphorous export, a very high to extreme risk of water erosion, a moderate to very high risk of water logging and inundation, a moderate risk of salinity and a moderate to high risk of flooding.

A 2017 a Coastal Hazard Risk Management and Adaptation Plan (CHRMAP) was compiled for the Broome area, including the application area labelled the 'Central section of Cable Beach' (Baird Australia, 2017). The CHRMAP was informed by data collected in Cardno's 2015 Broome Coastal Vulnerability Study (CVS) which identified coastal hazards for the Broome townsite (Cardno, 2015). The CHRMAP concluded that that the key coastal risk for the Cable Beach coastal compartment will be from coastal erosion, with the Central section of the compartment the main area of this focus. Due to this risk, the CHRMAP estimated coastal processes erosion allowance for the application area, indicating the horizontal distance over which coastal processes could potentially impact the foreshore area in future planning periods (Figure 10). The coastal processes erosion allowance does not necessarily preclude future development. Areas identified as being at risk of coastal processes in future planning periods would need to consider coastal hazard risk through a CHRMAP process prior to new development being supported.

For the application area and immediate surrounds, the current and future risks were summarised in the CHRMAP as (Baird, 2017):

- The current risk posed from a 1 in 100-year storm impacting the coast is significant along the shoreline, with predicted coastal erosion associated with this event denoted by the 'Present Day Storm Erosion (2015)' line in Figure 10. This type of event could result in approximately 30 metres of the coastal dune on which the present foreshore is sited being lost, with shoreline erosion back to the point east of the application area. Shire infrastructure including beach access, coastal pathways, foreshore reserve and landscaping would all be severely impacted or lost in this event.
- For the 2040 planning period, with the inclusion of the sea level rise and historical rate of shoreline recession, the coastal processes allowance line moves a further 30 metres landward. Under this scenario the potential for shoreline erosion is landward of the application area, and the present foreshore public open space areas. The main carpark would be partially at risk of erosion as would the beach access road.
- For the 2070 planning period, the coastal processes allowance line extends across most of the main carpark and is within the northwest boundary of the Cable Beach Club Resort.
- For 2110 the coastal processes line is 66 metres further landward predominantly due to sea level rise allowance. Under this scenario the potential for shoreline erosion encompasses the majority of the present day foreshore area, and extends to the main entrance of Cable Beach Club Resort.

Several structural options were considered in the CHRMAP to mitigate the risk of coastal erosion in the application area. Through undertaking community workshops, the most suitable option for an engineering solution determined was a buried seawall. Other options eliminated from the discussion were groynes (disruptive to sand transport, not in keeping with natural setting) and an offshore artificial reef (reliability in Broome's extreme tide range).

Increasing the natural resilience of the coastal dune through planting and dune rehabilitation is an effective strategy already underway at the location, with the intention of providing good vegetation cover across the dune face. The vegetation stabilises the sand on the dune from wind-blown transport, and also offers greater resilience to the dune face under wave attack in extreme events.

Conclusion

Given the clearing application's purpose is to implement measures to reduce future risk of coastal erosion, provided the clearing, construction of the seawall and dune revegetation are completed in close sequence, it is unlikely that the proposed clearing will lead to further land degradation. To minimise this risk, bulk earthwork activities and subsequent construction will be required to commence within two months of clearing.

Conditions

To address the potential impact of wind erosion, the clearing permit contains a condition that requires the applicant to undertake bulk earthwork activities within two months of clearing.

3.3. Relevant planning instruments and other matters

The proposed clearing is consistent with the Shire's Local Planning Scheme. The project was adopted by the Shire in September 2017 and includes recommendations from Broome Townsite's CHRMAP, to ultimately reduce longshore erosion and increase dune stability (360 Environmental, 2022).

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

- Cable Beach 5 (14557) - Artefacts / Scatter, Ceremonial, Midden / Scatter, Mythological, Camp, Hunting Place, Other: Part of Failed PA 143. APMC 11/89, no gender restrictions apply (Registered Site)
- Billingurru (12839) - Ceremonial, Mythological, Camp, Male Access Only (Registered Site)
- Illangarami (12886) mythological, no gender restrictions apply (Lodged).

There is one Native Title Claim (WC 1999/023) over the application 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) (360 Environmental, 2022). It is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972* (WA) and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

End

Appendix A. Site characteristics

The information provided below describes the key characteristics of the area proposed to be cleared and is based on the best information available to the department at the time of this assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix B.

A.1. Site characteristics

Characteristic	Details
Local context	<p>The application area lies within the Kimberley Region of Western Australia. It is located on Cable Beach Reserve, on the western edge of the town of Broome, approximately 2240 kilometres north of Perth. The area proposed to be cleared stretches approximately 457 metres along Cable Beach foreshore on Crown Land, vested with the Shire of Broome, on Lot 2789, Cable Beach Road, Cable Beach.</p> <p>Aerial imagery indicates the local area (50-kilometre radius from the centre of the area proposed to be cleared) retains approximately 97.69 percent of the original native vegetation cover.</p>
Ecological linkage	<p>There are no formal ecological linkages mapped within the application area, when assessing available databases.</p> <p>The application area is located within a coastal foreshore area. The clearing of native vegetation within this area will not impact on any existing foreshore linkages as it is already a highly developed area.</p>
Conservation areas	<p>No conservation areas are located within or near the application area. The nearest conservation area is identified as Point Coulomb Nature Reserve approximately 44 kilometres north of the application area.</p>
Vegetation description	<p>The application 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 - <i>Sporobolus spp.</i> grasslands, <i>Melaleuca alsophila</i> low forests, and <i>Spinifex spp.</i> <i>Crotalaria spp.</i> 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.</p> <p>The following vegetation is consistent with the Pindanland subregion: <i>Eucalyptus tectifera</i> (Darwin box), <i>Corymbia flavescens</i> woodland with <i>Acacia tumida</i> (pindan wattle) open-scrub and <i>Chrysopogon spp.</i> (ribbon grass) and <i>Triodia bitextura</i> grasses. These are supported by <i>Eucalyptus tetradonta</i> (Darwin stringybark), <i>Eucalyptus miniata</i> (Darwin woollybutt), and <i>Melaleuca spp.</i> (paperbark) low woodland with sparse <i>Chrysopogon fallax</i> (golden beard grass) tussock grasses (Graham, 2001).</p> <p>The application area is mapped as containing one broad vegetation type:</p> <ul style="list-style-type: none"> - Dampierland_750: <i>Acacia</i> thicket with eucalypt woodland over spinifex <i>Acacia tumida</i>, <i>Eucalyptus tectifera</i>, <i>Corymbia grandifolia</i>, <i>Triodia pungens</i>, <i>T. bitextura</i> (Shepherd et al., 2002). <p>The mapped vegetation type retains approximately 99.68 per cent of the original extent (Government of Western Australia, 2019). Full Vegetation Extent details can be found in Appendix A.2.</p> <p>The 2019 flora and vegetation survey confirmed that the flora and vegetation types in the application area are defined as dense Hummock Grasslands of <i>Spinifex longifolius</i> with <i>Ipomoea pes-caprae</i> subsp. <i>brasiliensis</i> (Focused Vision Consulting, 2019).</p>
Vegetation condition	<p>Focused Vision Consulting assessed vegetation condition against the currently accepted scale; an adaptation of the Keighery (1994) and Trudgen (1991) condition scales. The area proposed to be cleared was assessed as Degraded (approximately eight percent) with some areas noted as Degraded to Completely Degraded (approximately 15 percent). Evidence of disturbance indicated by cleared areas due to</p>

Characteristic	Details																						
	<p>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 (360 Environmental, 2022).</p> <p>The full <i>Keighery</i> (1994) and <i>Trudgen</i> (1991) condition rating scales are provided in Appendix E. Representative photos are available in Appendix F.</p>																						
Climate and landform	<p>The Broome area has a tropical climate and is characterised by hot wet summers (December to March) and a dry season (April to November) (Bureau of Meteorology, 2023). Rainfall is generally received during the summer via unpredictable tropical downpours and cyclonic low pressure systems. Broome receives rainfall on 35.1 days annually with an average annual mean rain of 623.5 millimetres (Bureau of Meteorology, 2021). Tropical cyclones can occur during the wet season months. Since 1910, there have been a reported 22 cyclones that have caused gale force winds at Broome. On average, this equates to one every four years (360 Environmental, 2022).</p> <p>The long-term mean minimum temperature for Broome Airport Station ranges from 13.7 degrees celsius (July) to 26.6 degrees celsius (December). The long-term mean maximum temperature ranges from 29 degrees celsius (July) to 34.4 degrees celsius (April) (Bureau of Meteorology, 2021).</p>																						
Soil description	<p>The application area is within the Yeeda System (335Ye) which is described as Red sandplains supporting pindan vegetation with dense acacia shrubs, scattered bloodwood and grey box trees and curly spinifex and ribbon grass (DPIRD, 2017).</p>																						
Land degradation risk	<table border="1"> <thead> <tr> <th data-bbox="391 907 758 952">Risk categories</th> <th data-bbox="758 907 1436 952">Yeeda System</th> </tr> </thead> <tbody> <tr> <td data-bbox="391 952 758 996">Wind erosion</td> <td data-bbox="758 952 1436 996">~ 99% of map unit has a high to extreme hazard</td> </tr> <tr> <td data-bbox="391 996 758 1041">Water erosion</td> <td data-bbox="758 996 1436 1041">~ 99% of map unit has a very high to extreme hazard</td> </tr> <tr> <td data-bbox="391 1041 758 1108">Water logging and inundation</td> <td data-bbox="758 1041 1436 1108">~ 99% of map unit has a moderate to very high risk</td> </tr> <tr> <td data-bbox="391 1108 758 1153">Water Repellence</td> <td data-bbox="758 1108 1436 1153">0% of the map unit has a high susceptibility</td> </tr> <tr> <td data-bbox="391 1153 758 1198">Sub-surface Acidification</td> <td data-bbox="758 1153 1436 1198">0% of map unit has a high susceptibility</td> </tr> <tr> <td data-bbox="391 1198 758 1243">Phosphorous export</td> <td data-bbox="758 1198 1436 1243">~ 99% of map unit has a high to extreme hazard</td> </tr> <tr> <td data-bbox="391 1243 758 1288">Salinity</td> <td data-bbox="758 1243 1436 1288">~ 99% of map unit has a moderate hazard</td> </tr> <tr> <td data-bbox="391 1288 758 1332">Flooding</td> <td data-bbox="758 1288 1436 1332">~ 99% of the map unit has a moderate to high hazard</td> </tr> <tr> <td data-bbox="391 1332 758 1377">Acidity</td> <td data-bbox="758 1332 1436 1377">0% of map unit has pH_{Ca} < 4.5</td> </tr> <tr> <td data-bbox="391 1377 758 1422">Groundwater salinity</td> <td data-bbox="758 1377 1436 1422"><500</td> </tr> </tbody> </table>	Risk categories	Yeeda System	Wind erosion	~ 99% of map unit has a high to extreme hazard	Water erosion	~ 99% of map unit has a very high to extreme hazard	Water logging and inundation	~ 99% of map unit has a moderate to very high risk	Water Repellence	0% of the map unit has a high susceptibility	Sub-surface Acidification	0% of map unit has a high susceptibility	Phosphorous export	~ 99% of map unit has a high to extreme hazard	Salinity	~ 99% of map unit has a moderate hazard	Flooding	~ 99% of the map unit has a moderate to high hazard	Acidity	0% of map unit has pH _{Ca} < 4.5	Groundwater salinity	<500
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Groundwater salinity	<500																						
Waterbodies	<p>As the application area is in a foreshore location, it is directly adjacent to the Indian Ocean to the west. Available databases and aerial imagery indicate that no wetlands listed under the Directory of Important Wetlands in Australia or waterbodies lie within the application area. The closest wetland listed is located approximately three kilometres to the east of the study area. The closest Ramsar Wetland, a section of Roebuck Bay, is located approximately 11 kilometres south-east of the application area.</p>																						
Hydrogeography	<p>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 metres 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 milligrams per litre. The application area does not overlap any Public Drinking Water Sources Areas (PDWSA). The closest source for PDWSA is mapped approximately 10 kilometres northeast of the application area.</p> <p>The application area is located in the Cape Leveque Coast Catchment within the basin</p>																						

Characteristic	Details
	<p>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. There is a manmade drain (ObjectID: 5239) located approximately 58 metres east of the application area, running parallel to the area proposed to be cleared. Available mapping indicates that this drain begins at Cable Beach Road West, approximately 913 metres south-south-east of the application area, heads in a north-north westerly direction, before correcting to a more northerly direction and then stopping in the adjacent Monsoon Vine Thicket Threatened Ecological Community.</p> <p>Where formal drainage does not exist, flood waters are stored in local depressions. Inundation from ocean flooding events is rare, as the local drainage network is the dominant flood mechanism for Broome Township. An unnamed river is identified approximately 14 kilometres east of the application area. No surface drainage features were identified as overlapping the application area. The nearest surface water feature is the Indian Ocean located directly adjacent to the west of the application area (depending on tides), however, no direct impact will occur as a result of the clearing. Surface water features identified nearest to the application area includes Roebuck, located approximately 3.2 kilometres northeast of the application area and Coconut Wells, located approximately 12 kilometres north of the application area (360 Environmental, 2022).</p>
Flora	<p>In the flora survey conducted by Focused Vision Consulting in 2019, no threatened flora protected under the BC Act or under the EPBC Act or Priority flora were recorded (Focused Vision Consulting, 2019). This is consistent with records from available databases, with the nearest conservation significant flora being 'Priority 1' <i>Corymbia paractia</i> which was located approximately 75 metres east of the application area.</p> <p>Available databases indicate that records of 17 'Priority' flora species and one flora species listed as 'Critically Endangered' under the EPBC Act occur within 50 kilometres of the area proposed to be cleared. There are five 'Priority' flora and one flora species listed as 'Critically Endangered' under the EPBC Act that were likely to occur within the application area, as they are known to occur within the same soil, vegetation and habitat type as the area proposed to be cleared.</p>
Ecological communities	<p>According to Focused Vision Consulting's vegetation survey of the application area, the foredune is mapped as 'dense Hummock Grassland of <i>Spinifex longifolius</i> and <i>Cenchrus ciliaris</i> with <i>Ipomoea pes-caprae</i> subsp. <i>brasiliensis</i>' (Focused Vision Consulting, 2019).</p> <p>A review of available databases identified that two Ecological Communities: 'Monsoon vine thickets on the coastal sand dunes of the Dampier Peninsula' (Monsoon Vine Thicket TEC) and '<i>Corymbia paractia</i> dominated community on dunes' are within approximately eight and 19 metres, respectively, of the application area. The monsoon vine thicket TEC is both a Commonwealth-listed TEC categorised as 'Endangered' and a State listed TEC categorised as 'Vulnerable', and it represents the southern-most occurrence of rainforest (dry monsoon rainforests) in Western Australia, providing refuge habitat for many plants and animals at the southern-most limit of their Australasian range. These vine thickets are confined to coastal dunes (and in some cases other unconsolidated Holocene coastal landforms) and have been shown to be distinct from other types of rainforest in the Kimberley region (Black et al. 2010). The <i>Corymbia paractia</i> ecological community is a Priority 1, State-listed PEC. <i>Corymbia paractia</i> is endemic to the Kimberley region of Western Australia and is restricted to the Broome Peninsula and immediate vicinity. It is mainly confined to a relatively narrow coastal zone, where beach dunes merge into pindan soils, with some patches occurring across the Peninsula (Reynolds et al., 2018).</p> <p>The vegetation survey conducted in 2019 found the '<i>Corymbia paractia</i> dominated community on dunes' community was not represented within the application area during the field assessment (Focused Vision Consulting, 2019). Therefore, it can be confirmed that the Priority 1, State-listed PEC does not occur in the application area.</p>

Characteristic	Details
	Focused Vision Consulting's 2019 survey found a patch of monsoon vine thicket TEC mapped within the study area (area of vegetation unit MVT) of 0.37 hectares, however, this patch does not overlap with the application area (Figure 2). This patch is not considered to extend outside the area mapped within the study area.
Fauna	According to available databases, 103 conservation significant fauna species occur within the local area (50 kilometre radius of the application area). Sixty-eight of these are migratory bird species which may utilise the area infrequently, however they are dominantly marine or wetland dependent species that require specific habitats (open water or wetlands) for wading, nesting, breeding or foraging. Nine of these conservation significant fauna species are either dominantly oceanic mammals or reptiles, fifteen are species listed as 'Critically Endangered', 'Endangered', 'Vulnerable', 'Extinct' or 'Other specially protected species' under the BC or EPBC Act, and eleven species are listed as 'Priority' by DBCA. For the detailed Fauna analysis table, see Appendix A.4.

A.2. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA managed land
IBRA bioregion*					
Dampierland	8,343,944.95	8,319,879.14	99.71	142,055.31	1.70
Vegetation complex					
750	1,229,182.16	1,225,280.52	99.68	34,114.53	2.78
Local area					
50km radius (minus ocean area)	387,638.78	378,673.54	97.69	-	-

*Government of Western Australia (2019)

A.3. Flora analysis table

Species name	Conservation status	Suitable habitat features ? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Acacia monticola x tumida</i> var. <i>kulparn</i>	P3	N	Y	N	3.65	2	Y
<i>Aphyllodium glossocarpum</i>	P3	Y	Y	Y	4.03	2	Y
<i>Aphyllodium parvifolium</i>	P1	N	N	N	26.12	1	Y
<i>Bonamia oblongifolia</i>	P3	Y	Y	Y	37.81	3	Y
<i>Corymbia paractia</i>	P1	Y	Y	Y	0.07	19	Y
<i>Glycine pindanica</i>	P3	Y	Y	Y	1.83	18	Y
<i>Gomphrena pusilla</i>	P2	Y	Y	Y	1.69	10	Y
<i>Goodenia byrnesii</i>	P3	N	N	Y	3.87	2	Y
<i>Jacquemontia</i> sp. Broome (A.A. Mitchell 3028)	P1	N	N	Y	2.76	6	Y
<i>Lophostemon grandiflorus</i> subsp. <i>grandiflorus</i>	P3	N	N	N	36.57	3	Y
<i>Pittosporum moluccanum</i>	P4	Y	N	Y	39.02	8	Y

Species name	Conservation status	Suitable habitat features ? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Polymeria</i> sp. Broome (K.F. Kenneally 9759)	P3	N	N	N	4.19	4	Y
<i>Seringia exastia</i>	CR	Y	Y	Y	2.95	7	Y
<i>Stylidium pindanicum</i>	P3	N	Y	Y	15.63	3	Y
<i>Tephrosia andrewii</i>	P3	N	N	Y	43.87	1	Y
<i>Tephrosia valleculata</i>	P3	N	N	N	39.60	1	Y
<i>Terminalia kumpaja</i>	P3	N	N	Y	2.31	4	Y
<i>Thespidium basiflorum</i>	P1	N	N	N	7.80	2	Y

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

A.4. Fauna analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Actitis hypoleucos</i> (Common Sandpiper)	MI	N	Y	1.09	520	N/A
<i>Aipysurus apraefrontalis</i> (Short-nosed seasnake)	CR	N	N	4.19	2	N/A
<i>Anas querquedula</i> (Garganey)	MI	N	Y	15.81	5	N/A
<i>Anous stolidus</i> (common noddy)	MI	N	Y	4.16	16	N/A
<i>Apus pacificus</i> (Fork-tailed swift)	MI	N	Y	0.24	55	N/A
<i>Apus pacificus</i> (Fork-tailed Swift, Pacific Swift)	MI	N	Y	2.80	44	N/A
<i>Ardenna pacifica</i> (Wedge-tailed Shearwater)	MI	N	Y	16.88	1	N/A
<i>Ardenna tenuirostris</i> (Short-tailed shearwater)	MI	N	Y	1.24	1	N/A
<i>Arenaria interpres</i> (Ruddy turnstone)	MI	N	Y	0.12	656	N/A
<i>Bettongia lesueur graii</i> (boodie (inland), burrowing bettong (inland))	EX	N/A	N/A	29.86	1	N/A
<i>Bulweria bulwerii</i> (Bulwer's petrel)	MI	N	Y	0.06	1	N/A
<i>Calidris acuminata</i> (Sharp-tailed sandpiper)	MI	N	Y	0.12	302	N/A
<i>Calidris alba</i> (sanderling)	MI	N	Y	0.06	107	N/A
<i>Calidris canutus</i> (Red knot)	EN/MI	N	Y	1.09	530	N/A
<i>Calidris ferruginea</i> (Curlew Sandpiper)	CR/MI	N	Y	2.39	572	N/A
<i>Calidris melanotos</i> (pectoral sandpiper)	MI	N	Y	4.35	8	N/A
<i>Calidris ruficollis</i> (Red-necked stint)	MI	N	Y	0.06	678	N/A
<i>Calidris subminuta</i> (Long-toed Stint)	MI	N	Y	3.13	73	N/A
<i>Calidris tenuirostris</i> (Great knot)	CR/MI	N	Y	0.00	702	N/A
<i>Calonectris leucomelas</i> (Streaked shearwater)	MI	N	Y	0.06	8	N/A
<i>Cecropis daurica</i> (Red-rumped swallow)	MI	N	Y	13.86	11	N/A
<i>Charadrius dubius</i> (Little Ringed Plover)	MI	N	Y	3.43	11	N/A
<i>Charadrius leschenaultii</i> (Greater sand plover, large sand plover)	VU/MI	N	Y	0.06	636	N/A
<i>Charadrius mongolus</i> (Lesser Sand Plover)	EN/MI	N	Y	0.12	290	N/A
<i>Charadrius veredus</i> (oriental plover)	MI	N	Y	2.39	119	N/A
<i>Chelonia mydas</i> (Green turtle)	VU	N	N	3.92	19	Y
<i>Chlidonias leucopterus</i> (White-winged black tern, white-winged tern)	MI	N	Y	0.12	195	N/A
<i>Ctenopus angusticeps</i> (Airlie Island Ctenopus, Northwestern coastal Ctenopus)	P3	N	Y	5.04	30	N/A
<i>Cuculus optatus</i> (Oriental cuckoo)	MI	N	Y	4.19	11	N/A

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Dasyurus hallucatus</i> (northern quoll)	EN	N	N	3.39	1	N/A
<i>Dugong dugon</i> (Dugong)	OS	N	N	4.19	23	N/A
<i>Elanus scriptus</i> (Letter-winged kite)	P4	Y	N	4.18	3	N/A
<i>Eretmochelys imbricata</i> (Hawksbill turtle)	VU	N	N	4.19	2	Y
<i>Erythrotriorchis radiatus</i> (red goshawk)	VU	N	N	26.26	1	N/A
<i>Erythrura gouldiae</i> (Gouldian finch)	P4	N	N	4.19	4	N/A
<i>Falco hypoleucos</i> (Grey falcon)	VU	N	N	2.94	6	N/A
<i>Falco peregrinus</i> (Peregrine falcon)	OS	N	N	1.86	31	N/A
<i>Fregata ariel</i> (Lesser frigatebird)	MI	N	Y	0.12	127	N/A
<i>Fregata minor</i> (Great frigatebird)	MI	N	Y	4.19	3	N/A
<i>Gallinago megala</i> (Swinhoe's snipe)	MI	N	Y	2.96	10	N/A
<i>Gallinago stenura</i> (Pin-tailed snipe)	MI	N	Y	2.96	3	N/A
<i>Gelochelidon nilotica</i> (Gull-billed tern)	MI	N	Y	1.86	319	N/A
<i>Glareola maldivarum</i> (Oriental pratincole)	MI	N	Y	1.18	103	N/A
<i>Hirundapus caudacutus</i> (White-throated needletail)	MI	N	Y	14.09	1	N/A
<i>Hirundo rustica</i> (Barn swallow)	MI	N	Y	1.54	172	N/A
<i>Hydroprogne caspia</i> (Caspian Tern)	MI	N	Y	1.86	442	N/A
<i>Isoodon auratus auratus</i> (golden bandicoot (mainland), wintarru)	VU	N	N	29.86	1	N/A
<i>Ixobrychus dubius</i> (Australian little bittern)	P4	N	N	3.81	3	N/A
<i>Lagorchestes conspicillatus leichardti</i> (spectacled hare-wallaby (mainland))	P4	N	N	37.82	31	N/A
<i>Lepidochelys olivacea</i> (Olive ridley turtle)	EN	N	N	3.92	1	Y
<i>Lerista separanda</i> (Dampierland plain slider)	P2	N	N	5.20	11	N/A
<i>Limicola falcinellus</i> (Broad-billed sandpiper)	MI	N	Y	4.14	185	N/A
<i>Limnodromus semipalmatus</i> (Asian dowitcher)	MI	N	Y	4.14	166	N/A
<i>Limosa lapponica</i> (Bar-tailed godwit)	MI	N	Y	1.86	734	N/A
<i>Limosa lapponica menzbieri</i> (Bar-tailed godwit (northern Siberian))	CR/MI	N	Y	4.18	19	N/A
<i>Limosa limosa</i> (Black-tailed godwit)	MI	N	Y	2.96	414	N/A
<i>Liopholis kintorei</i> (great desert skink)	VU	N	Y	28.86	1	N/A
<i>Macronectes halli</i> (Northern giant petrel)	MI	N	Y	10.60	1	N/A
<i>Macrotis lagotis</i> (Bilby, dalgyte, ninu)	VU	N	N	1.40	246	N/A
<i>Megaptera novaeangliae</i> (Humpback whale)	CD	N	N	44.18	10	N/A
<i>Mesembriomys macrurus</i> (golden-backed tree-rat)	P4	N	N	10.43	1	N/A
<i>Mormopterus cobourgianus</i> (North-western free-tailed bat)	P1	Y	N	1.42	2	N/A
<i>Motacilla cinerea</i> (Grey wagtail)	MI	N	Y	14.29	2	N/A
<i>Motacilla flava</i> (Yellow wagtail)	MI	N	Y	2.94	5	N/A
<i>Natator depressus</i> (Flatback turtle)	VU	N	N	0.07	594	Y
<i>Ninox connivens connivens</i> (Barking owl (southwest subpop.))	P3	N	N	4.19	3	N/A
<i>Numenius madagascariensis</i> (Eastern curlew)	CR/MI	N	Y	0.31	500	N/A
<i>Numenius minutus</i> (Little curlew, little whimbrel)	MI	N	Y	1.86	182	N/A
<i>Numenius phaeopus</i> (Whimbrel)	MI	N	Y	1.86	770	N/A
<i>Oceanites oceanicus</i> (Wilson's storm-petrel)	MI	N	Y	4.19	11	N/A
<i>Onychoprion anaethetus</i> (Bridled tern)	MI	N	Y	4.19	9	N/A
<i>Orcaella heinsohni</i> (Australian snubfin dolphin)	P4	N	N	1.11	18	N/A

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Pandion cristatus</i> (Osprey, eastern osprey)	MI	N	Y	0.12	414	N/A
<i>Phalaropus lobatus</i> (Red-necked phalarope)	MI	N	Y	17.72	6	N/A
<i>Phascogale tapoatafa kimberleyensis</i> (Kimberley brush-tailed phascogale)	VU	N	N	29.86	1	N/A
<i>Philomachus pugnax</i> (Ruff (reeve))	MI	N	Y	4.15	14	N/A
<i>Physeter macrocephalus</i> (Sperm whale)	VU	N	N	44.18	1	N/A
<i>Plegadis falcinellus</i> (Glossy ibis)	MI	N	Y	2.90	191	N/A
<i>Pluvialis fulva</i> (Pacific golden plover)	MI	N	Y	0.12	293	N/A
<i>Pluvialis squatarola</i> (Grey plover)	MI	N	Y	0.06	380	N/A
<i>Polytelis alexandrae</i> (princess parrot)	P4	Y	N	4.15	1	N/A
<i>Puffinus huttoni</i> (Hutton's shearwater)	EN/MI	N	Y	0.06	5	N/A
<i>Rostratula australis</i> (Australian painted snipe)	EN/MI	N	Y	10.63	18	N/A
<i>Simoselaps minimus</i> (Dampierland burrowing snake)	P2	N	Y	5.20	5	N/A
<i>Stenella longirostris</i> (Spinner dolphin)	P4	N	N	44.18	1	N/A
<i>Stercorarius parasiticus</i> (Arctic jaeger, Arctic skua)	MI	N	Y	0.02	1	N/A
<i>Sterna dougallii</i> (Roseate tern)	MI	N	Y	4.18	46	N/A
<i>Sterna hirundo</i> (Common tern)	MI	N	Y	0.12	133	N/A
<i>Sterna sumatrana</i> (Black-naped tern)	MI	N	Y	4.30	1	N/A
<i>Sternula albifrons</i> (Little tern)	MI	N	Y	0.65	287	N/A
<i>Sula leucogaster</i> (Brown booby)	MI	N	Y	0.07	225	N/A
<i>Thalasseus bergii</i> (Crested tern)	MI	N	Y	0.12	378	N/A
<i>Trichosurus vulpecula arnhemensis</i> (Kimberley Northern brushtail possum (Kimberley))	VU	N	N	1.43	10	N/A
<i>Tringa brevipes</i> (Grey-tailed tattler)	P4	N	N	0.06	650	N/A
<i>Tringa glareola</i> (Wood sandpiper)	MI	N	Y	2.96	150	N/A
<i>Tringa nebularia</i> (Common greenshank, greenshank)	MI	N	Y	1.86	777	N/A
<i>Tringa stagnatilis</i> (Marsh sandpiper, little greenshank)	MI	N	Y	3.13	241	N/A
<i>Tringa totanus</i> (Common redshank, redshank)	MI	N	Y	4.68	79	N/A
<i>Tyto novaehollandiae kimberli</i> (masked owl (northern))	P1	N	N	2.94	2	N/A
<i>Tyto novaehollandiae novaehollandiae</i> (Masked Owl (southwest))	P3	N	N	2.94	2	N/A
<i>Varanus sparnus</i> (Dampier Peninsula goanna)	P1	N	N	35.64	5	N/A
<i>Wyulda squamicaudata</i> (scaly-tailed possum)	P4	N	N	4.83	1	N/A
<i>Xenus cinereus</i> (Terek sandpiper)	MI	N	Y	2.94	446	N/A

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
<p><u>Principle (a):</u> <i>“Native vegetation should not be cleared if it comprises a high level of biodiversity.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared does not contain locally or regionally significant flora, fauna, habitats, or assemblages of plants. Mapped TEC and PEC occur adjacent to the application area.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (b):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared does not contain foraging, roosting, breeding or significant habitat for conservation significant fauna. However, the area directly adjacent to the application area provides significant habitat for conservation significant fauna.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.2, above.</i>
<p><u>Principle (c):</u> <i>“Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared is unlikely to contain Threatened flora. No Threatened flora were identified during a flora survey of the application area (Focused Vision Consulting, 2019).</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (d):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared does not contain species that can indicate a threatened ecological community (TEC). However, a TEC is located adjacent to the application area.</p>	May be at variance	Yes <i>Refer to Section 3.2.3, above.</i>
Environmental value: significant remnant vegetation and conservation areas		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u></p> <p>The extent of the mapped vegetation type is consistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area.</p>	Not likely to be at variance	No
<p><u>Principle (h):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas.</p>	Not at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: land and water resources		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u></p> <p>Given no water courses or wetlands are recorded within the application area, the proposed clearing is unlikely to impact an environment associated with a watercourse or wetland.</p>	Not at variance	No
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u></p> <p>The mapped soils are between high to extremely susceptible to wind and water erosion, nutrient export and salinity. Noting the location of the application area, and the condition of the vegetation and the purpose of the clearing, the proposed clearing is not likely to have an appreciable impact on land degradation.</p>	May be at variance	Yes <i>Refer to Section 3.2.4, above.</i>
<p><u>Principle (i):</u> <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.”</i></p> <p><u>Assessment:</u></p> <p>Given no water courses, wetlands or Public Drinking Water Sources Areas are recorded within the application area, the proposed clearing is unlikely to impact surface or ground water quality.</p>	Not likely to be at variance	No
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u></p> <p>The mapped soils and topographic contours in the surrounding area do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding.</p> <p>Given no water courses or wetlands are recorded within the application area, the proposed clearing is unlikely to contribute to waterlogging.</p>	Not likely to be at variance	No

Appendix C. Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types. Considering its location, a combination of the scales below were used to measure the condition of the vegetation within the area proposed to be cleared.

Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Measuring vegetation condition for the South West and Interzone Botanical Province (Keighery, 1994)

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.
Completely degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Trudgen, M.E. (1991) *Vegetation condition scale* in National Trust (WA) 1993 Urban Bushland Policy. National Trust of Australia (WA), Wildflower Society of WA (Inc.), and the Tree Society (Inc.), Perth.

Measuring vegetation condition for the Eremaean and Northern Botanical Provinces (Trudgen, 1991)

Condition	Description
Excellent	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.
Very good	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks.
Good	More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds.
Poor	Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds.
Very poor	Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species present including very aggressive species.
Completely degraded	Areas that are completely or almost completely without native species in the structure of their vegetation; i.e. areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs.



Figure 2: Map indicating the vegetation units within and directly adjacent to the application area, as identified in the 2019 flora and vegetation survey (Focused Vision Consulting, 2019)

Unit Code	Vegetation Unit Description	Representative Relevé (R)
Mapped Intact Native Vegetation Units		
MVT	Monsoon Vine Thicket Thicket of <i>Gyrocarpus americanus</i> , <i>Grewia breviflora</i> and * <i>Delonix regia</i> , with various creeping vines, predominantly <i>Ipomoea pes-caprae</i> subsp. <i>brasiliensis</i> .	R01
FD	Foredune Dense Hummock Grassland of <i>Spinifex longifolius</i> and * <i>Cenchrus ciliaris</i> with <i>Ipomoea pes-caprae</i> subsp. <i>brasiliensis</i> .	R03
HD	Higher Dune Dense Hummock Grassland of <i>Spinifex longifolius</i> and * <i>Cenchrus ciliaris</i> with Dwarf Scrub D of <i>Trichodesma zeylanicum</i> and <i>Crotalaria medicaginea</i> var. <i>neglecta</i> , with creeping vines, predominantly <i>Ipomoea pes-caprae</i> subsp. <i>brasiliensis</i> and <i>Canavalia rosea</i> .	R04
Planted and disturbed areas		
PR	Planted/Regrowth Previously cleared areas comprising weeds and disturbed regrowth, dominated by <i>Senna occidentalis</i> and <i>Cenchrus ciliaris</i> , with occasional planted (likely non-endemic) trees, including <i>Corymbia</i> sp..	R02
KG	Kept Gardens and Planted Trees Previously cleared areas comprising kept gardens, lawns and planted groves of trees within built areas, including <i>Senna</i> spp., <i>Acacia</i> spp. and <i>Corymbia</i> spp., <i>Plumeria</i> sp. (Frangipani) and various palms.	NA Not surveyed with relevés, study site or flora inventory due to non-native character

Figure 3: Vegetation unit descriptions, corresponding to map in Figure 2 (Focused Vision Consulting, 2019)

Condition Code	Condition	Area (ha)	% of Study Area
VG	Very Good	0.31	12.20
G	Good	0.01	0.39
D	Degraded	0.74	29.13
D-CD	Degraded to Completely Degraded	0.94	37.01
CD	Completely Degraded	0.54	21.26
Total		2.54	100.00

Figure 4: Vegetation condition categories, corresponding to map in Figure 5 (Focused Vision Consulting, 2019)



Figure 5: Map indicating the vegetation condition within and directly adjacent to the application area, as identified in the 2019 flora and vegetation survey (Focused Vision Consulting, 2019)

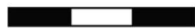


Legend

- Relevé locations
- CPS areas approved to clear
- Road Centrelines
 - Local Rd - Sealed
 - Local Rd - Other
- Localities - Landgate

1:2,000

0 25 50 75 m



MGA Zone 50
Geocentric Datum of Australia 1994



Figure 6: Location of relevés during Focused Vision Consulting's 2019 flora and vegetation survey.

Site R03

Date 7/03/2019
Botanist Kellie Bauer-Simpson
Quadrat Size NA, relevé
NW Corner Coordinates 416329 mE 8017212 mN
Slope Steep
Landform Lower slope
Soil Colour Pale brown
Soil Type sand
Litter 25%
Bare Ground 5%
Fire Age > 10years
Vegetation Condition Degraded
Disturbances/Impacts Weeds
Vegetation Unit FD

Dense Hummock Grassland of *Spinifex longifolius* and **Cenchrus ciliaris* with *Ipomoea pes-caprae* subsp. *brasiliensis*.



Name	Height (m)	Cover (%)
<i>Spinifex longifolius</i>	0.6	50
* <i>Cenchrus ciliaris</i>	0.4	10
<i>Ipomoea pes-caprae</i> subsp. <i>brasiliensis</i>	creeper	10
# <i>Casuarina obesa</i>	4	occasional

Figure 7: Relevé 3 details and photograph, located in the south of the application area of CPS 9916/1 (see Figure 6 for map location) (Focused Vision Consulting, 2019).

Site R04

Date	7/03/2019
Botanist	Kellie Bauer-Simpson
Quadrat Size	NA, relevé
NW Corner Coordinates	416350 mE 8017634 mN
Slope	Steep
Landform	Mid slope
Soil Colour	Orange
Soil Type	Sand
Litter	25%
Bare Ground	10%
Fire Age	> 10years
Vegetation Condition	Degraded
Disturbances/Impacts	Weeds and erosion
Vegetation Unit	HD

Dense Hummock Grassland of *Spinifex longifolius* and **Cenchrus ciliaris* with Dwarf Scrub D of *Trichodesma zeylanicum* and *Crotalaria medicaginea* var. *neglecta*, with creeping vines, predominantly *Ipomoea pes-caprae* subsp. *brasiliensis* and *Canavalia rosea*.



Name	Height (m)	Cover (%)
<i>Spinifex longifolius</i>	0.7	65
<i>Trichodesma zeylanicum</i>	0.6	8
* <i>Cenchrus ciliaris</i>	0.5	15
<i>Crotalaria medicaginea</i> var. <i>neglecta</i>	0.5	3
<i>Ipomoea pes-caprae</i> subsp. <i>brasiliensis</i>	creeper	5
<i>Canavalia rosea</i>	creeper	2

Figure 8: Relevé 4 details and photograph, located directly adjacent to the north-north-east of the application area for CPS 9916/1 (see Figure 6 for map location) (Focused Vision Consulting, 2019).

*denotes introduced (weed) species #denotes non-endemic species (planted)

Family	Species	R01	R02	R03	R04
Apocynaceae	<i>Carissa lanceolata</i>	+			
Boraginaceae	<i>Trichodesma zeylanicum</i>				+
Casuarinaceae	# <i>Casuarina obesa</i>			+	
Cleomaceae	<i>Cleome</i> sp.	+			
Convolvulaceae	<i>Ipomoea pes-caprae</i> subsp. <i>brasiliensis</i>	+		+	+
Fabaceae	<i>Acacia ampliceps</i>	+			
Fabaceae	<i>Acacia colei</i> var. <i>colei</i>	+	+		
Fabaceae	<i>Canavalia rosea</i>				+
Fabaceae	<i>Crotalaria medicaginea</i> var. <i>neglecta</i>				+
Fabaceae	* <i>Delonix regia</i>	+			
Fabaceae	* <i>Senna occidentalis</i>		+		
Hernandiaceae	<i>Gyrocarpus americanus</i>	+			
Malvaceae	<i>Grewia breviflora</i>	+			
Meliaceae	* <i>Azadirachta indica</i>	+			
Myrtaceae	<i>Corymbia</i> sp.		+		
Nyctaginaceae	<i>Boerhavia ? dominii</i>	+			
Passifloraceae	* <i>Passiflora foetida</i> var. <i>hispidula</i>	+	+		
Phyllanthaceae	<i>Flueggea virosa</i> subsp. <i>melanthesoides</i>	+			
Poaceae	* <i>Cenchrus ciliaris</i>		+	+	+
Poaceae	<i>Spinifex longifolius</i>			+	+

Figure 9: Flora species within each recorded relevé. Relevé three (R03) is located within the southern side of the application area, relevé four (R04) is located slightly overlapping the northern side of the application area and relevé one and two are located adjacent to the east of the application area (see Figure 6 for map locations) (Focused Vision Consulting, 2019).

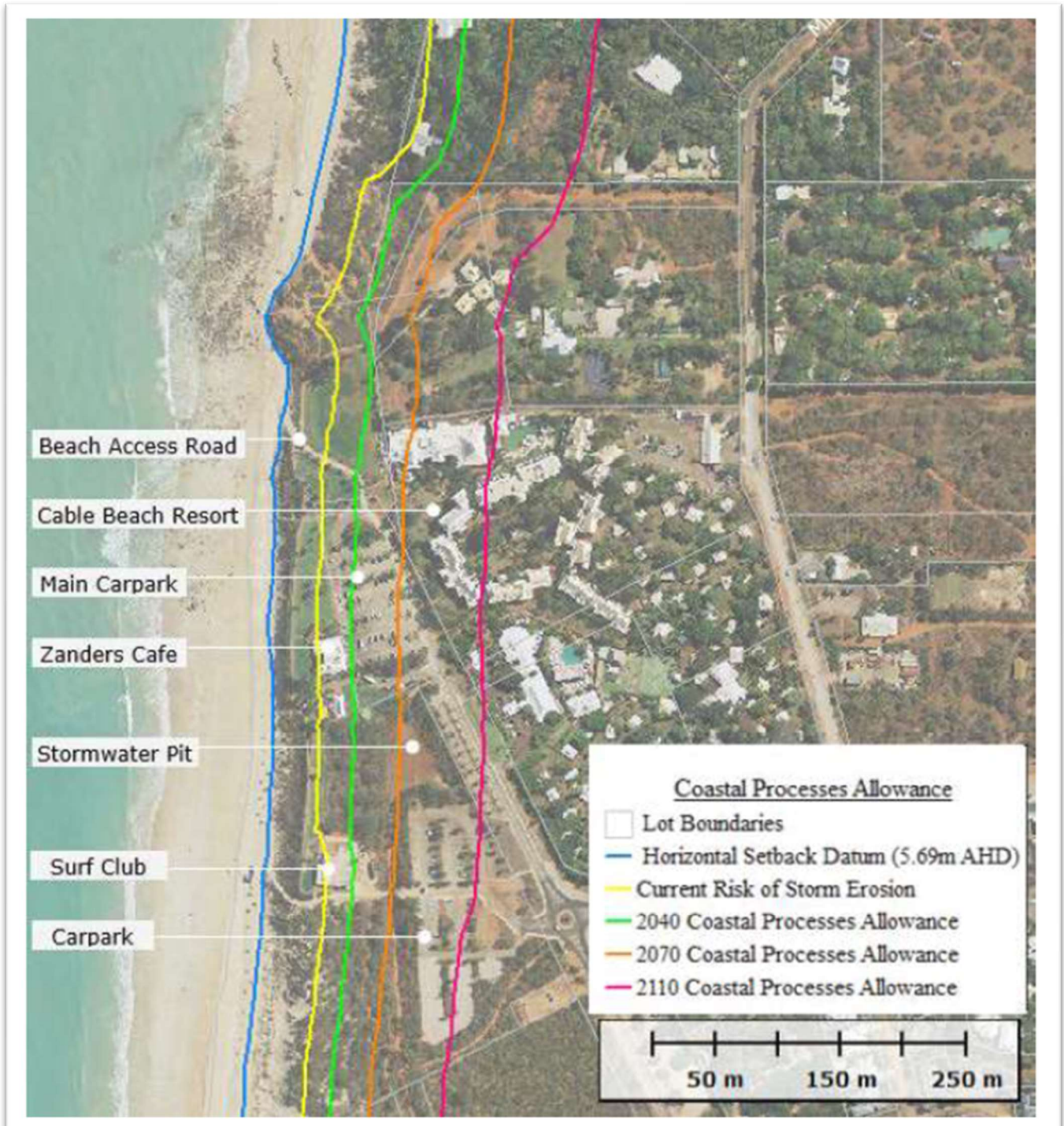


Figure 10: Cable Beach Coastal Compartment (central) showing coastal processes erosion allowances recommended for future planning periods (Baird Australia, 2017).

Appendix E. Sources of information

E.1. GIS databases

Publicly available GIS Databases used (sourced from www.data.wa.gov.au):

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Groundwater Subareas (DWER-083)
- Hydrography – Inland Waters – Waterlines
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Offsets Register – Offsets (DWER-078)
- Pre-European Vegetation Statistics
- Public Drinking Water Source Areas (DWER-033)
- Ramsar Sites (DBCA-010)
- Regional Parks (DBCA-026)
- Remnant Vegetation, All Areas
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)
- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Mapping – Best Available
- Soil Landscape Mapping – Systems

Restricted GIS Databases used:

- ICMS (Incident Complaints Management System) – Points and Polygons
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

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