GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: CPS 9542/1

File Number: DWERVT9327

Duration of Permit: From 26 August 2023 to 26 August 2025

PERMIT HOLDER

Shire of Broome

LAND ON WHICH CLEARING IS TO BE DONE

Lot 550 on Deposited Plan 421448, Waterbank (Crown Reserve 53878)

AUTHORISED ACTIVITY

The permit holder must not clear more than 79.85 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

CONDITIONS

1. Period during which clearing is authorised (staging)

The permit holder must not clear *native vegetation* unless the construction of the Broome Regional Resource Recovery Park is to commence within five (5) months of the authorised clearing being undertaken.

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;

(c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

4. Directional clearing

The permit holder must conduct clearing activities in a slow, progressive manner in a single direction to allow fauna to move into adjacent *native vegetation* ahead of the clearing activity.

5. Fauna management – greater bilby

(a) Within 7 days prior to undertaking any clearing authorised under this permit, the permit holder shall engage a *fauna specialist* to undertake clearance surveys for the greater bilby (*Macrotis lagotis*) within the area cross-hatched yellow in Figure 1 of Schedule 1, using transects spaced at a maximum 100 metres apart, to identify and inspect (if present) greater bilby burrows for signs of use.

(b) Where evidence of recent burrow use by greater bilbies is identified under condition 5(a) of this permit, the permit holder shall;
  (i) engage a *fauna specialist* to flag the location of the burrow(s) showing signs of recent use;
  (ii) not clear within ten metres of the flagged burrow(s);
  (iii) engage a *fauna specialist* to monitor with cameras, the flagged burrow(s) for a maximum of five days, or until such time that greater bilbies have been observed to independently move on from the burrow(s); and
  (iv) immediately prior to clearing, engage a *fauna specialist* to re-inspect any flagged burrow(s) for the presence of greater bilbies.

(c) In the event that greater bilbies are identified utilising any flagged burrow(s) under condition 5(b)(iv) of this permit, the permit holder shall engage a *fauna specialist* to remove and relocate the identified greater bilbies to an area of *suitable habitat*, in accordance with a section 40 authorisation under the *Biodiversity Conservation Act 2016*.

(d) Where active greater bilby burrows are identified under condition 5(a) of this permit, and/or greater bilbies are relocated under condition 5(c) of this permit, the permit holder shall include the following in a report submitted to the *CEO*:
  (i) the location of any active greater bilby burrows identified, using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
  (ii) a description of the camera monitoring measures undertaken under condition 5(b)(iii) of this permit;
  (iii) the date and time that greater bilbies were recorded as independently moving from a flagged burrow;
  (iv) the gender of each greater bilby captured under condition 5(c) of this permit;
  (v) the location of any greater bilbies captured, using a GPS unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings or decimal degrees;
  (vi) the date, time, vegetation type and weather conditions at each location where greater bilbies were captured under condition 5(d)(v) of this permit;
  (vii) the gender of each greater bilby relocated under condition 5(c) of this permit;
  (viii) the location of any greater bilbies relocated, using a GPS unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings or decimal degrees;
  (ix) the date, time, vegetation type and weather conditions at each location where greater bilbies are relocated under condition 5(c) of this permit;
  (x) the name of the *fauna specialist* that relocated fauna under condition 5(c) of this permit; and

(xi) a copy of the fauna licence authorising the relocation of fauna under condition 5(c) of this permit.

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	(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 size of the area cleared (in hectares); (e) actions undertaken in accordance with condition 1; (f) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 2; and (g) actions taken to minimise the risk of the introduction and spread of *weeds* in accordance with condition 3; and (h) actions undertaken in accordance with condition 4.
2.	In relation to fauna management pursuant to condition 5.	(a) result of the pre-clearance survey undertaken in accordance with condition 5; and (b) a copy of the *fauna specialist's* report.

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 *Environmental Protection Act 1986*.
clearing	has the meaning given under section 3(1) of the EP Act.

Term	Definition
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
department	means the department established under section 35 of the *Public Sector Management Act 1994* (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
EP Act	*Environmental Protection Act 1986* (WA)
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 *CEO* as a suitable fauna specialist for the bioregion, and who holds a valid fauna licence issued under the *Biodiversity Conservation Act 2016*.
fill	means material used to increase the ground level, or to fill a depression.
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.
suitable habitat	means habitat known to support the greater bilby (*Macrotis lagotis*), within the known current distribution of the species.
weeds	means any plant – (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; 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

Meenu Vitarana
MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

2 August 2023

Schedule 1

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

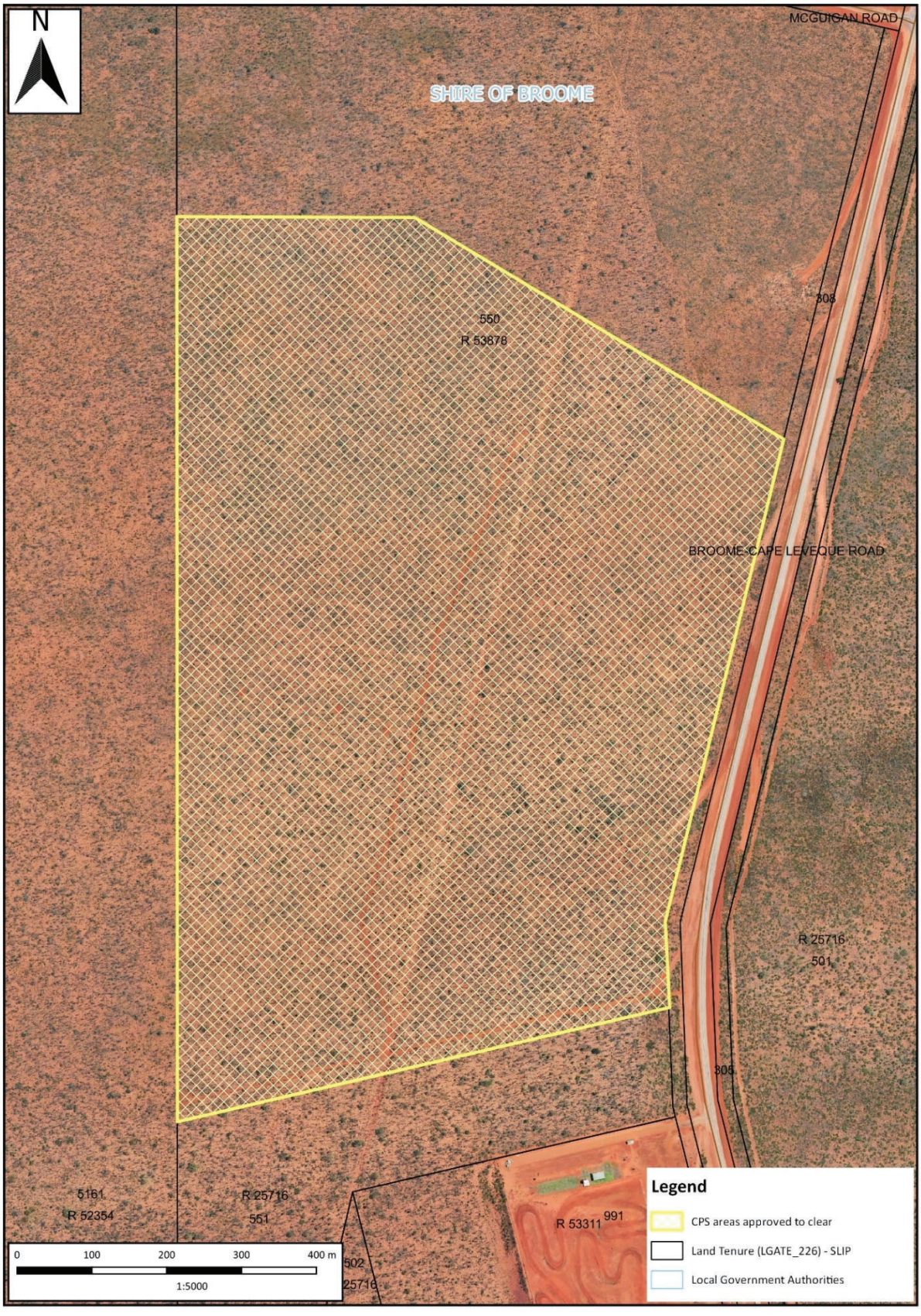


Figure 1: Map of the boundary of the area within which clearing may occur.

Government of Western Australia
Department of Water and Environmental Regulation

Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 9542/1
Permit type:	Area permit
Applicant name:	Shire of Broome
Application received:	23 December 2021
Application area:	79.85 hectares of native vegetation
Purpose of clearing:	Constructing a Community Recycling Centre
Method of clearing:	Mechanical removal
Property:	Lot 550 on Plan 421448 (Crown Reserve 53878)
Location (LGA area/s):	Shire of Broome
Localities (suburb/s):	Waterbank

1.2. Description of clearing activities

The vegetation proposed to be cleared is contained within a single contiguous area (see Figure 1, Section 1.5). In accordance with the Broome Waste Strategy, the Shire of Broome (the Shire) intends to develop a Regional Resource Recovery Park (RRRP) located on Reserve 53878 (Lot 550 on Deposited Plan 421448). The RRRP will consist of a Community Recycling Centre (CRC), Liquid Waste Facility (LWF) and Class III landfill.

The Shire is proposing to stage the developments of the two key elements as follows:

- Phase 1: CRC, LWF and associated supporting infrastructure; and
- Phase 2: Landfill Cells 1 and 2, Leachate Pond and associated supporting infrastructure.

The purpose of the CRC is to provide a modern, safe and easy to use facility to encourage the community to divert waste materials from landfill, whilst the LWF would accept and treat sullage and industrial liquid wastes (Talis, 2021 & 2022).

The Works Approval Application under Part V of the *Environmental Protection Act 1986* was submitted for Stage 1 development only and a separate application will be submitted for the Stage 2 development. However, the Shire has applied to clear all vegetation within the full development footprint to allow for flexibility in which to establish infrastructure for the RRRP such as surface water management and to allow for the stockpiling of excavated materials outside of the Stage 1 operational area (i.e. within Stage 2 footprint) for future use. The stockpile area was determined based on the volume of excavated material surplus of approximately 145 000 m^3, which would require a stockpile area of 200 square metres, slopes of 1:2.5 and an assumed maximum stockpile height of 4 meters for safe storage. The Shire intends to use the stockpiled material for future waste management activities, including but not limited to the permanent capping of the landfill at Buckleys Road (Talis, 2021 & 2022). All required clearing will be undertaken progressively across the proposed Phase 1 and Phase 2 development stages (Tallis, 2022).

The Shire initially applied to clear 69.02 hectares. During the preliminary assessment and public consultation process for the works approval application it was identified that the construction of a new LWF, a tyre monocell, and the initial stages of the RRRP's proposed Surface Water Management System (SWMS) is to be constructed in conjunction with the CRC and needs to be included within the Stage 1 works approval application. This inclusion together with a correction to align the clearing boundary with the cadastre boundary and the proposed use of the Stage 2 footprint as discussed above, resulted in an increase of the clearing application area to 79.85 hectares (Talis, 2021 & 2022).

1.3. Decision on application

Decision:	Granted
Decision date:	2 August 2023
Decision area:	79.85 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. Due to the increased clearing area during the assessment phase, the revised application was advertised for a further 7 days and again no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix B), relevant datasets (see Appendix F.1F.1), the findings of biological surveys (see Appendix E), the clearing principles set out in Schedule 5 of the EP Act (see Appendix C), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3). The Delegated Officer also took into consideration the Shire's current landfill is rapidly approaching the end of its operational life and waste diversion strategies would optimise the use of the remaining airspace. Aligning with the Waste Management Hierarchy, the RRRP will deliver important community services to reuse, recycle, and recover materials, and improve on the current disposal services through construction of a Class III Landfill in Stage 2 (Talis, 2022).

The assessment identified that the proposed clearing will result in:

- impacts to three priority flora species: *Corymbia paractia* (P1), *Jacquemontia sp. Broome* (P1), and *Terminalia kumpaja* (P3).
- the loss of native vegetation that is suitable habitat for Greater Bilby (*Macrotis lagotis*).
- the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values.
- potential for wind erosion due to the presence of sandy soils

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing could potentially lead to long-term adverse impacts, but these impacts 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 to impacts to PEC, fauna habitat and loss of conservation significant flora individuals and habitat (see Section 3).

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

- avoid and minimise measures to reduce the impacts and extent of clearing.
- implement weed management strategies to minimise the risk to the biodiversity values of adjacent native vegetation.
- undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity.
- staged clearing; and
- pre-clearance surveys to identify greater bilby within the application area, and the relocation of any individuals recorded.

1.5. Site map

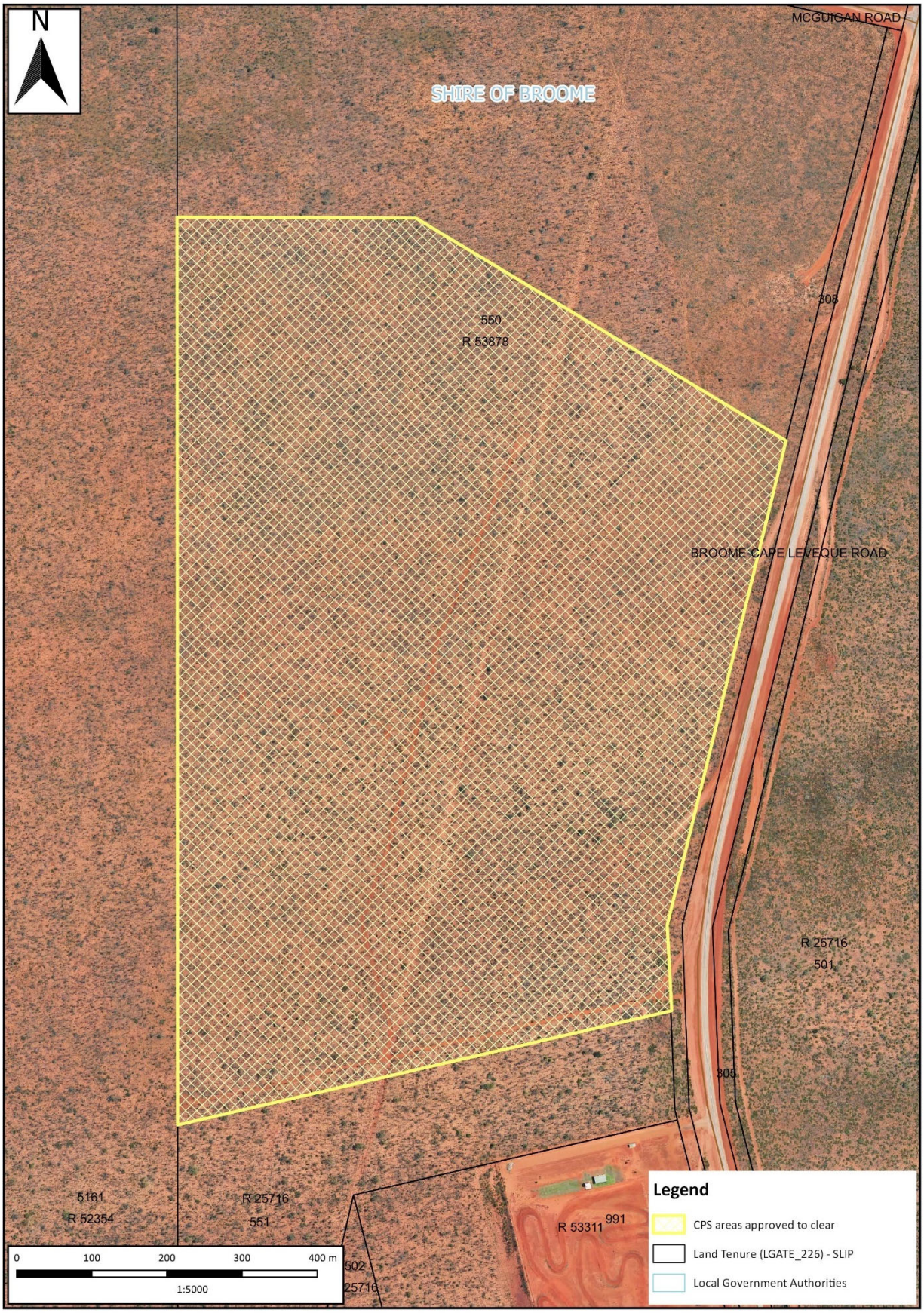


Figure 1 Map of the application area.

The area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit.

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 polluter pays principle
- 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)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)

Relevant policies considered during the assessment include:

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)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2016)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

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

The Shire of Broome together with Talis Consultants, have undertaken an extensive selection process for the proposed location of the new Regional Resource Recovery Park (RRRP) and Landfill Site. Commencing with an initial desktop analysis including topographical, flora and fauna, heritage, hydrological, geotechnical and hydrogeological values of potentially suitable sites located within a 60 kilometre radius of Broome and concluding with the current clearing application area. Over 20 potential sites were identified and narrowed down to two sites that were assessed in detail and compared for their suitability for landfilling activities. The environmental and social aspects of the two sites were compared against their compliance with relevant criteria as determined by the relevant government agencies and complemented by some key factors relevant to the Shire (Talis, 2022).

The current application area was identified as the preferred site for the following key reasons:

- Greater separation to ground water which would ensure compliance with the 3 metre separation distance from groundwater required.
- Provided greater volume of soils (on average 14 metre) below the landfill for natural attenuation to reduce the risk to groundwater.
- The site can satisfy the Shire's desires to achieve a material balance and excavate surplus pindan soils for engineering purposes.
- The site is in a smaller surface water catchment area, resulting in:
    - Less risk of flooding; and
    - less engineering and maintenance requirements to mitigate flooding risks.
- Meets all recommended separation distances to sensitive receptors; and
- A vegetation buffer can be maintained to maintain visual amenity.

Following extensive community consultation, the Shire's Council voted on the preferred location in April 2021 and has since been working towards seeking appropriate approvals (Shire of Broome, 2021).

The Shire indicated that cumulative impacts of dust, weeds, litter, altered surface water run-off, edge effects and fire would be mitigated through operational and environmental management at the facility and has developed additional management plans on these mitigation measures. These documents have been included in the Environmental Assessment and Management Plan for the works approval application and consist of:

- Bushfire Management Plan.
- Bushfire Risk - Assessment & Management Plan.

- Draft Surface Water Management Plan.
- Groundwater Management Plan.
- Feral Animal and Vermin Control Management Plan.
- Weed Management Plan.
- Asbestos Management Plan.
- Construction & Demolition Management Plan.
- Odour Impact Assessment.
- Noise Impact Assessment.

It is understood that the Shire undertook additional engagement with Department of Biodiversity Conservation and Attractions (DBCA) and Nyamba Buru Yawuru (Yawuru) representatives to ensure that they addressed the secondary impacts of the proposed land use activities within these management plans. It is recommended that the Shire continues the engagement to ensure the mitigation of secondary impacts are managed on an ongoing basis.

The Shire (Shire of Broome, 2021 and Talis, 2021 & 2022) will aim to minimise disturbance through the following management methods also contained within the Environmental Assessment and Management Plan:

- Prior to disturbance activities, the clearing and disturbance area will be demarcated. The clearance and disturbance area will be defined using high visibility tape and or spray paint where suitable to ensure operators undertake activities within the clearing boundary.
- Avoid, minimise and reduce the impact of clearing as far as practical.
- A qualified botanist or ecologist will undertake a preclearance survey to ensure no significant impacts occur to any significant flora and/or fauna species.
- Immediately prior to clearing, a suitably qualified person will walk along the clearing path to ensure no new active Greater Bilby burrows have been constructed post fauna survey.
- Implementation of the completed Weed Management Plan.
- Implementation of the completed Feral Animal and Vermin Management Plan.
- Implementation of operational and environmental controls to mitigate impacts of odour, dust and noise generation.
- Appropriate dust management measures will be implemented during the construction works and as necessary during operation (i.e. use of water cart).
- Progressive clearing.
- Undertake measures to minimise the spread of any introduced species.
- A clearing supervisor or spotter will be present at all times to ensure all clearing and disturbance is undertaken within the proposed clearing boundaries.
- Install appropriate fencing between the application area and the adjacent Yawuru Birragun Conservation Park.

Finally, the Shire has indicated that the site will be progressively rehabilitated with native vegetation as areas of the site are no longer required for landfill. This will be detailed within the Landfill Closure Plan that will be submitted and approved by DWER for the Works Approval Application under Part V, Division 3 of the *Environmental Protection Act* 1986 which will be submitted at a later stage for Stage 2 of the project.

3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix B) 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 against the clearing principles (see Appendix C) identified that the impacts of the proposed clearing present a risk to biological values (fauna, flora and vegetation) and conservation areas. The consideration of these impacts, 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. Environmental value: Biological values (fauna) - Clearing Principles (b)

Fauna Habitat and Suitability

According to available datasets, there are records of 106 conservation significant priority fauna species mapped within the local area (50-kilometre radius) including marine, freshwater and migratory species. A Level 2 / targeted terrestrial fauna survey was undertaken by Spectrum Ecology on 15th – 24th of April 2020 over the entire property including the proposed clearing area. The Fauna Survey identified that the survey area is characterised by a low-density of *Corymbia spp., Eucalyptus spp*. and *Lysiphyllum cunninghamii* trees over medium to high density *Acacia*

eriopoda and *Acaciaplatycarpa* shrubland. The grass layer varies from low to high density *Sorghum plumosoman*, *Chrysopogon fallax* and *Triodia spp*. on a flat plain of orange sand (Spectrum Ecology, 2020c). Leaf litter and wood litter is generally sparse and accumulates only under trees and shrubs (Spectrum Ecology, 2020c).

Systematic trapping and opportunistic foraging within the survey area identified one conservation significant fauna, the northern coastal free-tailed bat (*Ozimops (Mormopterus) cobourgianus*) which was detected multiple times via ultrasonic recorder (Spectrum Ecology, 2020c). The northern coastal free-tailed bat is known from one previous record within the survey area in 2016. It is listed as vulnerable under the EPBC Act and Priority 1 by DBCA. Refer below for further details.

No other threatened, priority or conservation significant fauna were recorded during the Level 2 / targeted terrestrial fauna surveys (Spectrum Ecology, 2020c).

Thirteen conservation significant fauna species may potentially occur within the application area (Spectrum Ecology, 2020c):

- Greater bilby (*Macrotis lagotis*) (Endangered). Refer below.
- Golden bandicoot (*Isoodon auratus auratus*) (Vulnerable)
- Bare-rumped sheathtail bat (*Saccolaimus saccolaimus nudicluniatus*) (Vulnerable)
- Northern brushtail possum (*Trichosurus vulpecula arnhemensis*) (Vulnerable)
- Spectacled hare-wallaby (*Lagorchestes conspicillatus leichardti*) (Priority 4)
- Short-tailed mouse (*Leggadina lakedownensis*) (Priority 4). The species may occasionally occur within the application area when food resources are plentiful. The species is more frequently recorded from further inland and nearby populations expand depending on seasonal food availabilities.
- Oriental Pratincole (*Glareola maldivarum*) (Migratory).
- Grey falcon (*Falco hypoleucos*) (Vulnerable). May be a transient visitor.
- Peregrine falcon (*Falco peregrinus*) (Other specially protected fauna). Breeding habitat is not present and foraging habitat is limited. May be a transient visitor.
- Oriental cuckoo (*Cuculus optatus*) (protected under international agreement). The species may potentially utilise the application area for foraging during non-breeding season to utilise the area for foraging.
- Barn swallow (*Hirundo rustica*) (protected under international agreement). The species has the potential to utilise the application areas for foraging during the non-breeding season.
- Fork-tailed swift (*Apus pacificus*) (protected under international agreement). Species may overfly the application area during the wet season whilst foraging.
- Dampierland goanna (*Varanus sparnus*) (Priority 1). Habitat is suitable, individuals were trapped during the surveys to the north-east and north of application areas.

Northern coastal free-tailed bat

The distribution of the species is extensive, occurring in coastal areas from Exmouth to Broome, and in the Northern Territory and Queensland (Spectrum Ecology, 2020c). The species roosts in small spouts and dead upper branches of mangroves from where they disperse (Spectrum Ecology, 2020c). Western Australian populations are associated with mangrove communities with roosts only recorded from *Avicennia marina* (Spectrum Ecology, 2020c). Whilst the application area occurs in proximity to coastal habitats (approximately 4 kilometres west), mangrove habitats are absent (Spectrum Ecology, 2020c). As such, the species may overfly or forage within the application area (Spectrum Ecology, 2020c). Noting the vegetation within the application areas is contiguous with areas of similar habitats in similar condition, is adjacent to vegetated areas with secure conservation tenure, and noting local area retains more than 98 per cent of its pre-European vegetation extent, the vegetation within the application area is not likely to comprise significant habitat for the northern coastal free-tailed bat. A slow, directional clearing condition will manage potential impacts from the clearing proposed by allowing for any individuals to move away from the application area, if utilising it at the time of clearing.

Greater bilby

The greater bilby is known from numerous records within the local area, the closest of which is 160 metres from the application area. Greater bilby largely occupies three major vegetation types; open tussock grassland on uplands and hills, mulga woodland or shrubland growing on ridges and rises, and hummock grassland in plains and alluvial areas (Department of the Environment and Energy, 2016). The distribution of the greater bilby is highly fragmented in Western Australia (Pavey, 2006). Movement patterns and denning burrow locations change in response to rainfall and food availability. Bilbies are nomadic and often sparsely distributed across large areas.

While this species has not been recorded within the application area, it may transiently occur on site given the proximity of known records, high mobility of the species and habitat suitability of the application area.

The direct removal of food plants such as spinifex grasslands and acacia shrublands that are found within the proposed area will alter, and subsequently decrease the quantity and quality of food plants available (DBCA, 2022). Loss of vegetation cover is likely to also increase the predation risk to the species (DBCA, 2022). Foraging and traversing areas devoid of vegetation could result in individuals spending more time in the open and being more exposed to natural and introduced predators (DBCA, 2022). This is true for many of the conservation significant species identified as likely to occur in the area (DBCA, 2022). DBCA has indicated that whilst the level of consequence to conservation significant species from vegetation clearing at the proposed site is likely to be minor, the cumulative impact is likely to be regionally significant due to the increased number of development/clearing proposals occurring in the area (DBCA, 2022).

According to DWER records, there are no other clearing permit applications currently under assessment and 17 active clearing permits occur in the local area (50 km radius). The total area of proposed clearing under these applications is 865.68 hectares of native vegetation, which comprises approximately 0.19 per cent of all native vegetation remaining in the local area. According to available records, there is no indication that extensive clearing will occur in the local area in the near future. DWER also notes that any subsequent clearing of native vegetation in the local area would require assessment under the EP Act, although some limited clearing is likely to be subject to exemptions pursuant to the Clearing Regulations or Schedule 6 of the EP Act. DWER considers that each subsequent application in the local area will be assessed on its merits, taking into account the cumulative impacts of past clearing in the region.

The Native Vegetation Policy states that cumulative impacts are leading to increasingly protracted regulatory assessments, and that strategic regional planning can help address cumulative impacts. As the strategic regional planning roadmap action for the Kimberley region has not commenced or been finalised under the Native Vegetation Policy, this is not a relevant consideration for this assessment.

Noting the vegetation within the application areas is contiguous with areas of similar habitats in similar condition, adjacent to vegetated areas with secure conservation tenure, and noting local area retains more than 98 per cent of its pre-European vegetation extent, it is considered the vegetation within the application area is not likely to comprise significant habitat for the greater bilby. A fauna management condition including a pre-clearance survey and a requirement to relocate, will manage potential impacts from the clearing proposed on any greater bilby individuals that may occur within the application area at the time of clearing.

Other fauna species

Noting the absence of other conservation significant fauna recorded during the fauna surveys, that the vegetation within the application area is contiguous with similar vegetation types and habitat in the local area, adjacent vegetation is situated within secure tenure, and the local area retains more than 98 per cent of its pre-European vegetation extent, the vegetation within the application area is not likely to comprise significant habitat for other conservation significant fauna (as listed above).

Whilst no other conservation significant fauna were recorded during the fauna surveys (Spectrum Ecology, 2020c) and the vegetation within the application areas is not likely to comprise significant fauna habitat, it is noted that the application areas may still be utilised by conservation significant and other fauna. A slow, directional clearing condition will manage direct impacts by allowing fauna to move away and into adjacent vegetation ahead of the clearing if present.

Conclusion

Based on the above assessment, the proposed clearing is unlikely to impact on significant habitat for any conservation listed fauna species. However, the proposed clearing may result in fauna fatalities should they occur within the application area at the time of clearing. Impacts to fauna are not expected to be significant given the extent of vegetation to be cleared within an extensive local and regional extent. Conducting clearing in a slow, progressive manner from one direction to the other will allow any fauna present to move into adjacent native vegetation ahead of the clearing activity.

DBCA has also indicated that a section 40 authorisation under the BC Act will be required for pre-clearance surveys to take/disturb threatened fauna including bilbies, northern brushtail possum and grey falcon.

Outcome

To address the above impacts and reduce any potential risks to fauna, the clearing permit contains conditions that require the applicant to undertake the following management measures:

- slow, directional clearing to allow fauna to move into adjacent vegetation ahead of the clearing activity.
- pre-clearance surveys for greater bilby.
- identify, remove (if present), and relocate (if necessary) greater bilby from the application area to an area of suitable habitat.

3.2.2. Environmental value: Biological values (flora and priority ecological communities) - Clearing Principles (a & c)

Flora of conservation significance

According to available datasets, there are records of 20 conservation significant flora species mapped within the local area (50 kilometre radius). The applicant commissioned Spectrum Ecology to undertake a number of flora and vegetation related surveys of the area, namely:

- Reconnaissance Flora & Level 1 Fauna Survey (Spectrum Ecology, 2020a).
- Detailed Flora and Vegetation Assessment (Spectrum Ecology, 2020b).
- Updated Detailed Flora and Vegetation Assessment (Spectrum Ecology, 2022).

The Detailed Vegetation survey by Spectrum Ecology (2020) found that the larger survey area contained three priority flora species:

- 14 *Corymbia paractia* (P1) individuals,
- 715 *Jacquemontia sp. Broome* (P1) individuals, and
- 80 *Terminalia kumpaja* (P3) individuals.

The area proposed to be cleared contains six *Corymbia paractia* (P1) individuals, 657 *Jacquemontia sp. Broome* (P1) individuals and 77 *Terminalia kumpaja* (P3) individuals.

Due to the low number of individuals recorded within the site and surrounds, the survey did not deem the populations as significant (Spectrum Ecology, 2020a). Spectrum Ecology concluded that clearing within the site is unlikely to threaten the continued existence of the recorded priority flora and other priority flora with high likelihood of occurrence and that this vegetation is not necessary for the continued existence of conservation significant flora. The location of the priority flora species recorded within the surveyed site is shown in Figure 3. Advice was sought from Department of Biodiversity Conservation and Attractions (DBCA) with regards to the significance of the proposed clearing on priority flora.

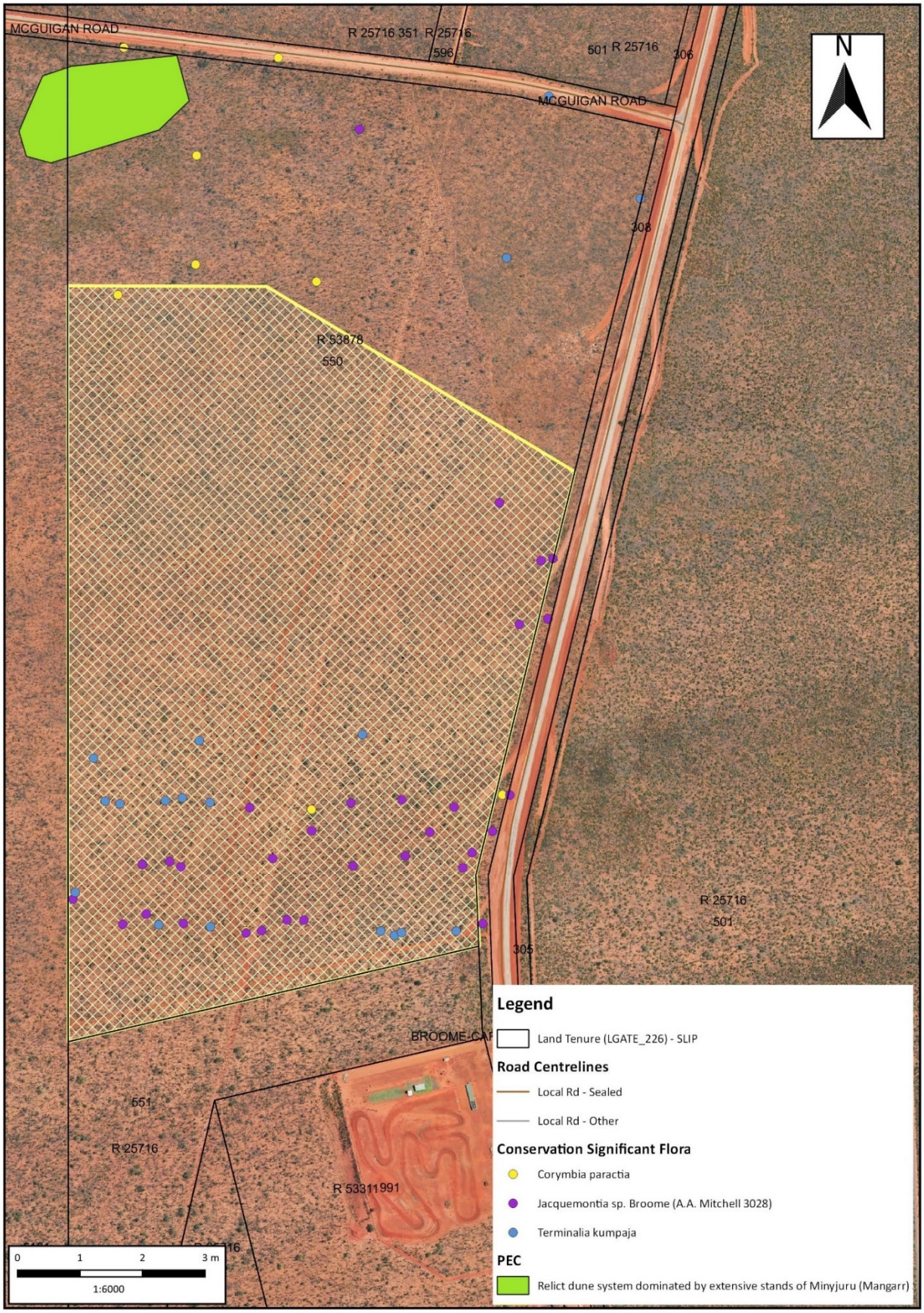


Figure 3 **Map of the location of the priority flora species and the priority ecological community recorded within Lot 550.**

Corymbia paractia (P1): This species is known from 27 locations with a restricted range of 36 kilometres north-south. Only two locations have secure tenure and two locations appeared to have been cleared (DBCA, 2022). Fourteen individuals were recorded by Spectrum Ecology (2020), of which six are located in the proposed clearing area. DBCA advised that the clearing of the *Corymbia paractia* individuals does not represent a significant impact, assuming that the remaining individuals are retained (DBCA, 2022).

Jacquemontia sp. Broome *(P1)* is known from two to three locations. Most collections of this species have occurred within a range of 8 kilometres East to West and 3.5 kilometres North South, with two outliers located 36 kilometres and 95 kilometres to the north respectively (DBCA, 2022). Each outlier is represented by a single collection. The application area falls within the known range of this species. The species it is not represented within conservation estate (DBCA, 2022).

In addition to the flora survey undertaken for this application (CPS 9542/1), a flora survey was previously undertaken for the Broome Motorplex (CPS 8042/1) by GHD (GHD, 2016) which included the application area. This previous study calculated 9,940 *Jacquemontia sp. Broome* plants occurring over a large survey area which included the current application area. Based on density calculations recorded within the survey area, it was estimated that a total of 2,340 individuals of the 9,940 individuals recorded, or 23.5 per cent of the site population, was impacted as a result of the clearing approved for CPS 8042/1 (GHD, 2016). Noting the number of individuals that have been recorded within and in close proximity to the application area, it is considered that *Jacquemontia* sp. Broome is locally common. For the current application, it is proposed that an additional 657 individuals will be removed, which would increase the cumulative population to be removed within the larger survey area to 30 per cent or 2,997 individuals. A significant proportion of this subpopulation thus still remains and as such, the impact from this proposal is not considered to be significant at the local, regional or species level.

Terminalia kumpaja (P3) The species is known from 12 locations over a range of 275 kilometres. Clearing of the 77 individuals within the development area is unlikely to be significant to the conservation of the species as it is well represented regionally (DBCA, 2022).

Priority Ecological Communities (PEC)

No Threatened Ecological Communities (TECs) are located within the clearing application area. The desktop assessment found two Priority Ecological Communities (PEC) had the potential to occur, namely:

- Relict dune system dominated by extensive stands of Minyjuru (Mangarr – *Sersalisia sericea*)" (Priority 1) (Mangarr PEC); and
- *Corymbia paractia* dominated community on dunes (Priority 1) (*Corymbia paractia* PEC).

The desktop assessment indicated that the Mangarr (Minyjuru) (P1) PEC was present in the north-east corner of the survey site (Figure 3), outside the application area. Scattered *Sersalisia sericea* (Minyjuru) trees were recorded in the survey site outside the current PEC boundary; however, it is unlikely that these individuals indicate the presence of the Mangarr PEC. Advice was sought from DBCA which indicated that it is unlikely the proposed clearing will have a direct significant impact on the Mangarr (Minyjuru) PEC, but secondary impact to the PEC should be avoided or mitigated.

Spectrum Ecology (2020b) specified that the study area is likely to contain the *Corymbia paractia* PEC given the presence of *Corymbia paractia*, a species which is likely to represent the *Corymbia paractia* PEC, the distribution of the species, abundance of the species, and the presence of associated vegetation, however the PEC was not mapped. Additional investigation as to the potential occurrence of this PEC was requested by DWER following advice from DBCA. Subsequently Spectrum (2022) reviewed the existing detailed flora and vegetation assessment report and provided additional information on the likelihood of *Corymbia paractia* PEC occurring within the proposed clearing area.

The *Corymbia paractia* PEC is defined as "*Corymbia paractia* dominated community on dunes" and is restricted to a narrow coastal zone in the Broome area, where beach dunes transition into pindan soils (Spectrum Ecology, 2022). Despite the close proximity of the application area to a known occurrence of this PEC, it is located outside the transition zone and for this reason, is deemed unlikely to occur (Spectrum Ecology, 2022). Secondary advice from DBCA concluded that there is currently inadequate descriptive and comparative information to positively identify the PEC within the application area (DBCA, 2023).

Weed risks to biodiversity

The fora survey identified four introduced flora species within the larger survey area (Spectrum Ecology, 2020a). 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 will increase the risk of weeds spreading into adjacent areas of native vegetation.

Conclusion

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

Outcome

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.

3.2.3. Environmental value: conservation areas - Clearing Principles (h)

The Yawuru Birragun Conservation Park (CALM Act Reserve 52354) (the Conservation Park), jointly managed between DBCA and native title holders Nyamba Buru Yawuru, for the purpose of conservation, recreation and traditional and customary Aboriginal use, is located directly adjacent to the site.

It is noted that the removal of native vegetation and soil disturbance associated with clearing increases the risk of weeds being spread into surrounding vegetation. The proposed clearing has the potential to directly impact the adjacent conservation areas and surrounding remnant vegetation through the spread of weeds. Weed management conditions will mitigate this potential risk to conservation areas and adjacent vegetation.

In addition, DBCA (2022) noted that the operational activities proposed at the site are also likely to result in secondary impacts such as secondary introduction of weeds and increased numbers of rodents and predators.

Weeds could be introduced to the site through a number of vectors, such as discarded garden waste, and may spread and become established within the adjacent Conservation Park. In the same manner, the proposed end land use has the potential to become a breeding area and vector for feral cats and foxes to the surrounding landscapes. Introduced rodent (black rat and house mouse) populations are also likely to increase. An increase in predator and rodent numbers will impact the biodiversity values in the adjacent Conservation Park. An introduced predator and rodent management plan, detailing proposed monitoring to detect introduced predators and any changes to population size and proposed control measures is recommended to mitigate this risk (DBCA. 2022).

The increase in vehicle movement to and from the site may also result in a range of indirect impacts through increased roadkill of fauna, increased noise and vehicle movements leading to fauna disturbance and increased dust (DBCA, 2022).

Conclusion

Based on the above assessment the proposed clearing has the potential to impact the environmental values of the adjacent conservation area. The management of edge effects can improve the quality and long-term viability of habitats. Implementing weed management measures would assist in minimising the risk, and the erection of appropriate fencing between the application area and the Conservation Park would mitigate the likelihood of wind-blown waste entering the nature reserve. Fencing has been conditioned as part of the approved works approval granted under Part V of the EP Act. In addition the applicant has included weed management, vermin control and dust management within their Environmental Assessment and Management Plan, for the site.

Outcome

To address the above impacts, the following management measure will be required as a condition on the clearing permit:

- Implement weed management strategies to minimise the risk to the biodiversity values of adjacent native vegetation.

Further mitigation measures will be conditioned as part of the works approval process.

3.3. Relevant planning instruments and other matters

A Works Approval Application under Part V of the *Environmental Protection Act 1986* was submitted to the department for the Stage 1 of the development. The application has been granted a works approval, number W6738/2022/1 on 30 May 2023. A separate application will be made for the works approval for the Stage 2 Landfill development (i.e., Cells 1 & 2 of the Class III landfill), which is anticipated to be submitted in early 2023.

It is considered that the secondary impacts associated with the end land use, including impact on the adjacent Conservation Park, have been addressed through the Works Approval.

Clearing permit CPS 8820/1 was granted to the Shire of Broome in August 2020, part of which overlaps the application area for CPS 9542/1. CPS 8820/1 allows the clearing of 5.5 hectares for the purpose of gaining access to undertake hydrogeological and geotechnical investigations to determine the suitability for the development of the landfill facility, which has informed the location for the final development of the Regional Resource Recovery Park.

The application area is within the Broome groundwater area which is proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI). Reported information shows that regional groundwater flow direction through the proposed site is predominantly southwest towards the coast. The proposed clearing is located outside and down groundwater gradient of the Priority 1 Broome Public Drinking Water Source Area (DWER,2022). As such the clearing and proposed future purpose does not pose a significant risk to the drinking water supply for Broome Town (DWER,2022).

No Aboriginal sites of significance have been mapped within the application area. 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. A heritage survey was conducted across the site in late February and early March 2020 by Nyamba Buru Yawuru Pty Ltd (Yawuru) and Kimberley Land Council (KLC) (Talis, 2020). The report concluded that the survey team did not identify anything of cultural heritage value (Talis, 2020). However, the applicant has indicated that the Yawuru will be notified and given the opportunity to be present during clearing activities to ensure no impacts to any unknown Aboriginal Heritage values occur.

End

Appendix A. Additional information provided by applicant

Summary of comments	Consideration of comment
Applicant provided details of project background including site selection and mitigation measures as well as further information to confirm the presence of the *Corymbia paractia* PEC, mitigation of secondary impacts on adjacent Yawuru Birragun Conservation Park and details of works approval (Talis, 2022)	Discussed in Section 3 and Appendix E

Appendix B. Site characteristics

B.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is part of an expansive tract of native vegetation in the extensive land use zone of Western Australia. It is adjacent to the Broome Cape Leveque Road to the east, approximately 1.8 kilometres south of the Broome Road intersection and 600 meters south of the McGuigan Road intersection. To the west it is adjacent the Yawuru Birragun Conservation Park and approximately 10 kilometres south of the proposal site boundary is Yawuru Nagulagun / Roebuck Bay Marine Park and the Threatened Ecological Community - Roebuck Bay Mudflats.

Characteristic	Details
	Aerial imagery indicates the local area (50-kilometre radius from the centre of the area proposed to be cleared) retains approximately 98 per cent of the original native vegetation cover.
Ecological linkage	No formal and informal ecological linkages are mapped within the application area.
Conservation areas	The application area is adjacent to the CALM Act Reserve 52354 Yawuru Birragun Conservation Park (the Conservation Park), jointly managed between DBCA and native title holders Nyamba Buru Yawuru for the purpose of conservation, recreation and traditional and customary Aboriginal use. Approximately 10 km south of the proposal site boundary is Yawuru Nagulagun / Roebuck Bay Marine Park.
Vegetation description	The flora and vegetation surveys (Spectrum Ecology, 2020 a & b) indicate the vegetation within the proposed clearing area consists of two vegetation types: • V001: *Corymbia greeniana* low open woodland with *Acacia eriopoda* and *Bauhinia cunninghamii* tall open shrubland, over *Triodia schinzii,* and • *Triodia caelestialis* low sparse hummock grassland and *Chrysopogon pallidus* and *Sorghum plumosum* low sparse tussock grassland. The full survey descriptions and maps are available in Appendix E. This is somewhat consistent with the mapped vegetation type: • Beard 750.1 Pindanland, which is described as Acacia thicket with eucalypt woodland over spinifex *Acacia tumida, Eucalyptus tectifica, Corymbia grandifolia, Triodia pungens, T. bitextura* The mapped vegetation type retains approximately 100 per cent of the original extent (Government of Western Australia, 2019).
Vegetation condition	The flora and vegetation surveys (Spectrum Ecology, 2020 a & b) indicate the vegetation within the proposed clearing area is in Excellent (Trudgen, 1991) condition. The full Trudgen (1991) condition rating scale is provided in Appendix D. The full survey descriptions and mapping are available in Appendix E.
Climate and landform	Dry, hot and tropical, divided into a dry and wet season. Dry season - April to November, little rain and daily temperatures around 30°C. Wet season - December to March, average temperatures are a few degrees higher along with erratic, often heavy rainfall, high humidity and the possibility of tropical cyclones. Annual average rainfall - 628.1mm however highly variable, from as low as 132mm up to 1599mm.
Soil description	Wanganut System: Sandplains and linear dunes supporting pindan woodlands with acacias and bloodwoods and curly spinifex- ribbon grass, and broad low-lying swales supporting bloodwood-grey box woodlands with curly spinifex-ribbon grass.
Land degradation risk	Sandy soils are prone to wind and water erosion.
Waterbodies	The desktop assessment and aerial imagery indicated that no nationally significant wetlands or waterbodies were mapped within the application area.
Hydrogeography	The application area is within the Broome groundwater area which is proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI).
Flora	No threatened flora was recorded within the site or considered likely to occur. The flora and vegetation surveys by Spectrum Ecology (2020b & 2022) found that the survey site contained three priority flora species:

Characteristic	Details
	• 14 *Corymbia paractia* (P1) individuals, • 715 *Jacquemontia sp. Broome* (P1) individuals, and • 80 *Terminalia kumpaja* (P3) individuals. The application area contains: • six *Corymbia paractia* (P1) individuals, • 657 *Jacquemontia sp. Broome* (P1) individuals, and • 77 *Terminalia kumpaja* (P3) individuals. The location of the priority flora species recorded within the survey site is shown in Figure 3.
Ecological communities	No Threatened Ecological Communities (TECs) are located within the proposed clearing area. The buffers of two P1 Priority Ecological Communities (PEC) are located in the northeast corner of the survey site. Relict dune system dominated by extensive stands of Minyjuru PEC (Mangarr – *Sersalisia sericea*)" and *Corymbia paractia* dominated community on dunes PEC. The location of the PEC and the development footprint is shown in Figure 3.
Fauna	There are records of 106 fauna of conservation significance within the local area including marine and migratory species. Key species of concern is the greater bilby.

Appendix C. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."* Assessment: The application area: • contains six Corymbia paractia (P1) individuals, 657 Jacquemontia sp. Broome (P1) individuals and 77 Terminalia kumpaja (P3) individuals. • does not resemble habitat for threatened flora; and • does not contain native vegetation which represents a TEC or PEC. Given the presence of priority flora within the application area, the proposed clearing may be at variance to this principle, however, the potential removal of these individual plants is not expected to be a significant impact at a regional scale.	May be at variance	Yes *Refer to Section 3.2.2, above.*
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."* Assessment: The application area contains suitable habitat for 14 species of conservation significant fauna. Only the northern coastal free-tailed bat *(Ozimops (Mormopterus) cobourgianus*) was identified within the application area. While greater bilby was not recorded within the application area, it may transiently occur on site given the proximity of known records, high mobility of the species and habitat suitability of the application area. Noting the extent of equally suitable habitat for conservation listed fauna species within the local area, the application area is not likely to contain significant habitat for conservation significant fauna. Directional clearing and bilby management conditions would reduce the risk of any potential impacts on fauna species within the application area, at the time of clearing.	May be at variance	Yes *Refer to Section 3.2.1, above.*
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: A flora and vegetation survey did not identify suitable habitat for threatened flora species within the application area.	Not likely to be at variance	No
Principle (d): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community."* Assessment: According to available datasets, and flora surveys of the application area, the vegetation within the application area is not representative of any known state listed threatened ecological communities.	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		

Assessment against the clearing principles	Variance level	Is further consideration required?
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."* Assessment: 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.	Not likely to be at variance	No
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."* Assessment: The Yawuru Birragun Conservation Park is immediately adjacent to the application area. Proposed clearing has the potential to increase the risk of the introduction or spread of weeds and secondary impacts on the conservation park's environmental values. The proposed mitigation measures would reduce the risk of any potential impacts.	May be at variance	Yes *Refer to Section 3.2.3, above.*
Environmental value: land and water resources		
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."* Assessment: Given no watercourses or wetlands are recorded within the application area, the proposed clearing is unlikely to impact on- or off-site hydrology and water quality.	Not likely to be at variance	No
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: Mapping indicates that the application area contains sandy soils, which have an increased risk of wind erosion. Wind erosion is not expected to be significant given that the application area is bordered by remnant native vegetation and management practises like watering will be implemented to mitigate wind erosion during operations. A staged clearing condition will mitigate any potential risks of wind erosion as a result of clearing.	May be at variance	No
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."* Assessment: There are sensitive Groundwater Dependent Ecosystems west (coastal inundation areas 2.7 kilometre away) and south west (Roebuck Bay wetlands 3.7 kilometre away) of the site. The proposed clearing may result in increased mobility of sediment offsite through runoff following clearing. It is recommended that best management practices be implemented to minimise site runoff during and following clearing. These impacts are likely to be short term. The proposed clearing poses a low risk to water quality of the groundwater and surface water in the area (DWER, 2022) which can be managed through appropriate management measures (refer section 3.1 for details).	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
Principle (j): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."* Assessment: 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. Given no water courses or wetlands are recorded within the application area, the proposed clearing is unlikely to contribute to waterlogging.	Not likely to be at variance	No

Appendix D. 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, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from 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.

Appendix E. Biological survey information excerpts

Flora and vegetation survey

Talis Consultants, on behalf of the Broome Shire, commissioned Spectrum Ecology (Spectrum) to undertake a detailed flora and vegetation assessment for the Broome Regional Resource Recovery Park (RRRP) Project to determine the environmental values present at the sites and provide support to relevant applications to undertake initial hydrogeological and geotechnical investigations for the development of the RRRP project. A reconnaissance level flora and vegetation assessment was previously conducted at the Study Areas in November 2019. This was

considered appropriate as it is the preliminary investigation into environmental values of the Study Areas. The detailed flora survey was conducted in the months following the wet season (February – April).

During the reconnaissance survey, five relevés were sampled within the Study Areas; including two relevés at D2 Study Area, three relevés in G1 Study Area. The detailed flora survey across both Study Areas was comprised of:

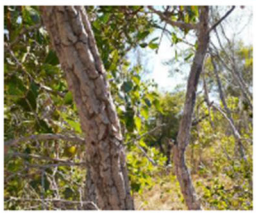
- Five 50 × 50 m quadrats (one located outside the Study Area);
- Five relevés (three located outside the Study Area); and
- 45 km of traverses with 100m spacing.

A combination of quadrats, relevés, traverses, and opportunistic sampling is appropriate for a detailed level survey as stipulated in the guidance statement (EPA, 2016b).

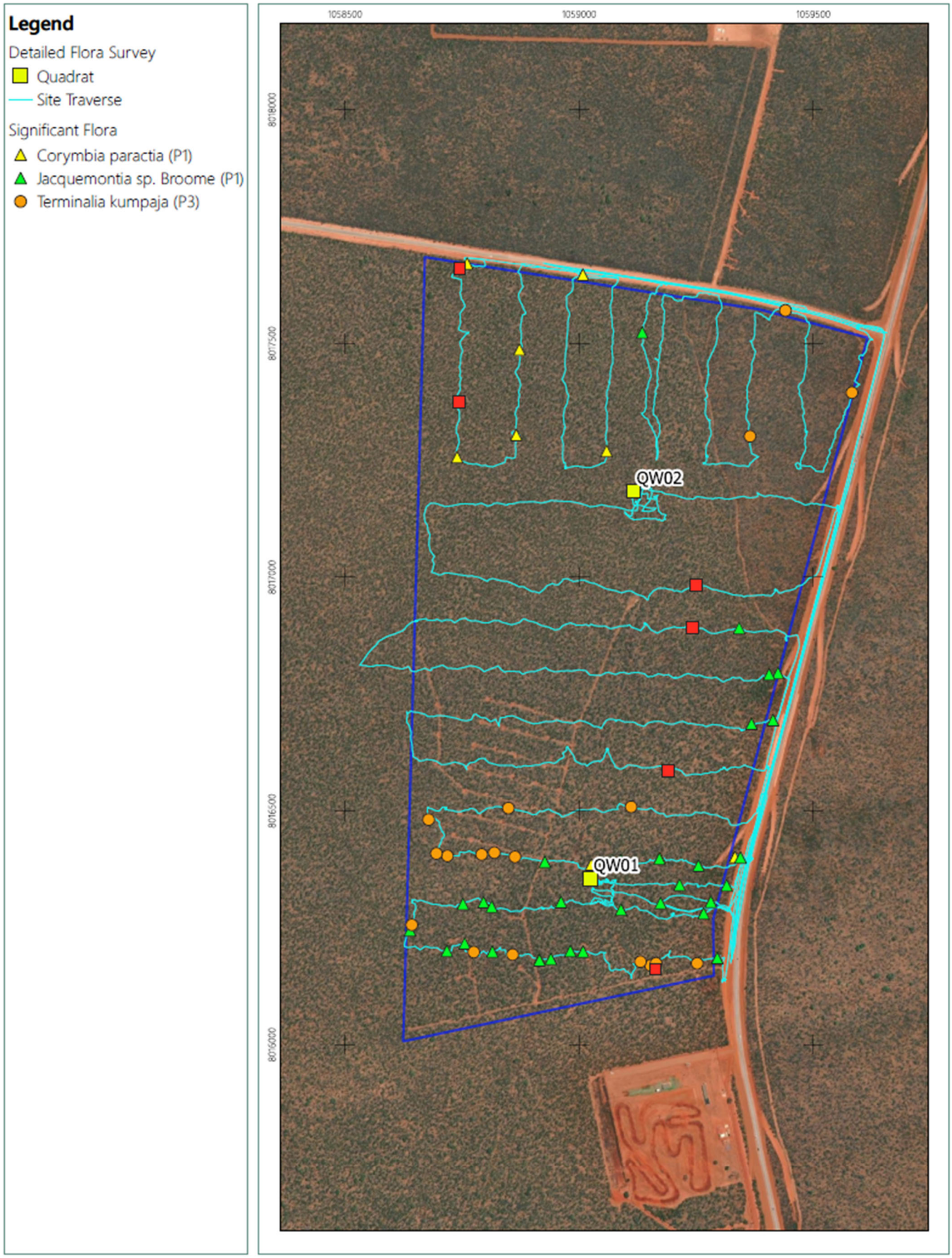
The data collected from relevés, traverses, as well as general field notes, observations and aerial photography were used to map the vegetation across the study areas.

Flora specimens were collected of any suspected or known significant flora and to confirm species recorded during the relevés for vegetation mapping. Specimens were identified by plant Taxonomist Dr Timothy Hammer using the appropriate taxonomic keys and, where required, relevant taxonomic experts at the Western Australian Herbarium were consulted.

Table 3.2: Significant Flora

	Taxon	Description	Study Area	# of Individuals		Photograph
P1	*Corymbia paractia*	Tree (often several-stemmed), 4-6(-12) m high, bark smooth, white, shedding in thin scales.	D2	14		
P1	*Jacquemontia* sp. Broome (A.A. Mitchell 3028)	Perennial herb or subshrub with creeping habit. Flowers pink.	D2	715		
P3	*Terminalia kumpaja*	Small tree to 6 m, bark deeply fissured and corky.	D2	80		

Unit	Description	Associated Species (Priority Species in Bold)	Quadrats	Area (ha)	Representative Photo
V001	*Corymbia greeniana* low open *woodland* with *Acacia eriopoda* and *Bauhinia cunninghamii* tall open shrubland, over *Triodia schinzii* and *Triodia caelestialis* low sparse hummock grassland and *Chrysopogon pallidus* and *Sorghum plumosum* low sparse tussock grassland.	*Acacia colei* var. *colei* *Aristida hygrometrica* *Corymbia zygophylla* *Grewia pindanica* ***Corymbia paractia*** ***Jacquemontia* sp. Broome (A.A. Mitchell 3028)** ***Terminalia kumpaja***	QW01 QW02 QW03 QW04	220	



Spectrum

Date: 05-10-2022

Author: TH

N

0 0.2 0.4 km

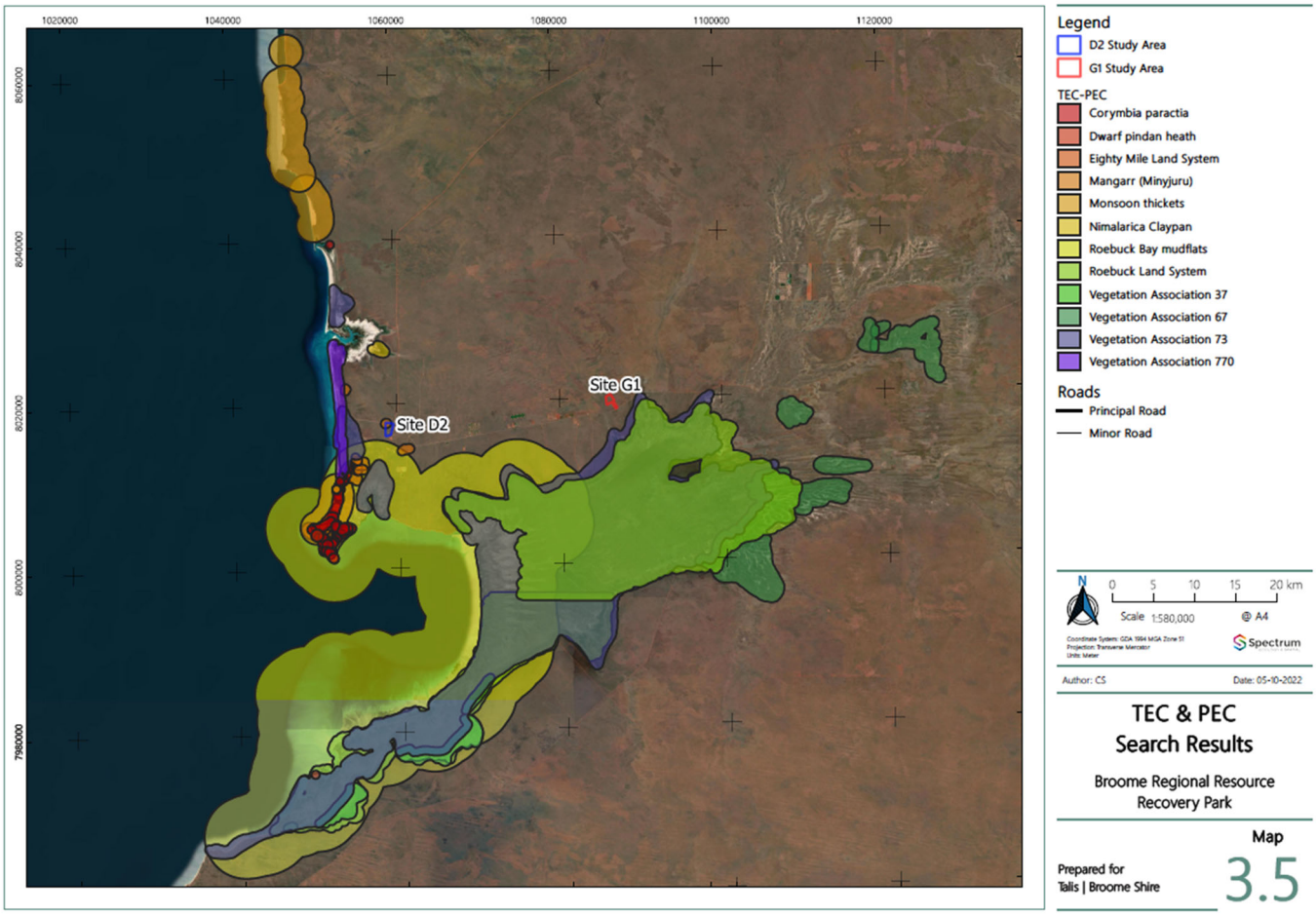
Coordinate System: GDA 1994 MGA Zone 51
Projection: Transverse Mercator
Units: Meter

Scale 1:10,000

D2 Study Area
Significant & Introduced Flora Records

Broome Regional Resource Recovery Park

Map
3.2



In 2020, Spectrum Ecology & Spatial (Spectrum) completed a detailed flora and vegetation assessment at the Regional Resource Recovery Park in Broome. During the assessment, one Priority Ecological Community (PEC) which is listed as Priority 1 was recorded during the desktop assessment: Corymbia paractia PEC.

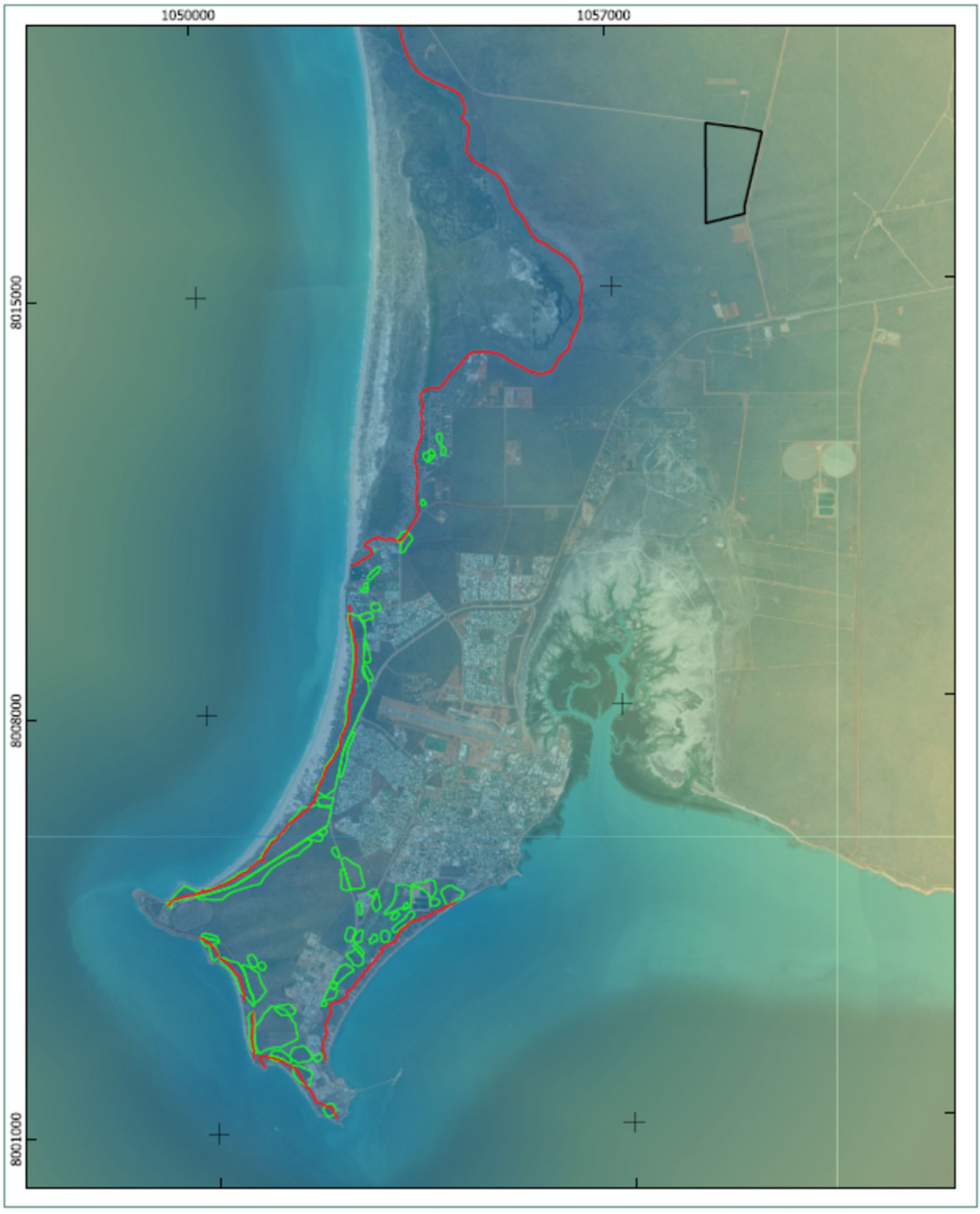
Based on the presence of scattered Corymbia paractia trees on site (13 specimens at 10 locations), the PEC was assessed as likely to occur at the D2 Study Area.

During the Clearing Permit application process, the Department of Water and Environmental Regulation (DWER) requested further information regarding the PEC. Item 2 of the request form states: “A priority ecological community assessment is required for the area proposed to be cleared, to confirm the presence/absence of the Corymbia paractia dominated community on dunes Priority Ecological Community (PEC). Please note that should a PEC be identified, additional surveys of surrounding areas will also be required to determine the PEC’s size and distribution. A protective buffer would also need to be created around the PEC’s boundaries, which may impact on the application area.”

In response to this, Spectrum has reviewed the existing detailed flora and vegetation assessment report (Spectrum Ecology, 2020) to provide additional information on the likelihood of Corymbia paractia PEC to occur on site.

In response to DWER’s comment “A priority ecological community assessment is required for the area proposed to be cleared, to confirm the presence/absence of the Corymbia paractia dominated community on dunes Priority Ecological Community (PEC)”, Spectrum completed the distance mapping and concluded that the Corymbia paractia PEC is unlikely to occur at the D2 Study Area.

Based on this, Spectrum believes that no additional surveys are required regarding the Corymbia paractia PEC on site.


1050000
1057000
8015000
8008000
8001000
Legend
D2 Study Area
Corymbia paractia PEC Areas
Transition Line
Distance to Transition Zone Line (m)
0
4198
8397
12596
16795
20994
N
0
1
2
3 km
Scale
1:85,000
@ A4
Spectrum
Author: MH
Approved: AH
Date: 11-10-2022
Transition Zone Mapping
Broome Regional Resource Recovery Park
MAP
3.6
Prepared for
Talis | Broome Shire

Fauna Survey:

Talis Consultants, on behalf of the Broome Shire, commissioned Spectrum Ecology (Spectrum) to undertake a terrestrial fauna assessment for the Broome Regional Resource Recovery Park (RRRP) Project. A single phase Level 2 terrestrial fauna survey was completed during the 15th – 24th of April 2020.

Systematic trapping and opportunistic foraging identified a total of 31 vertebrate fauna species within the D2 Study Area

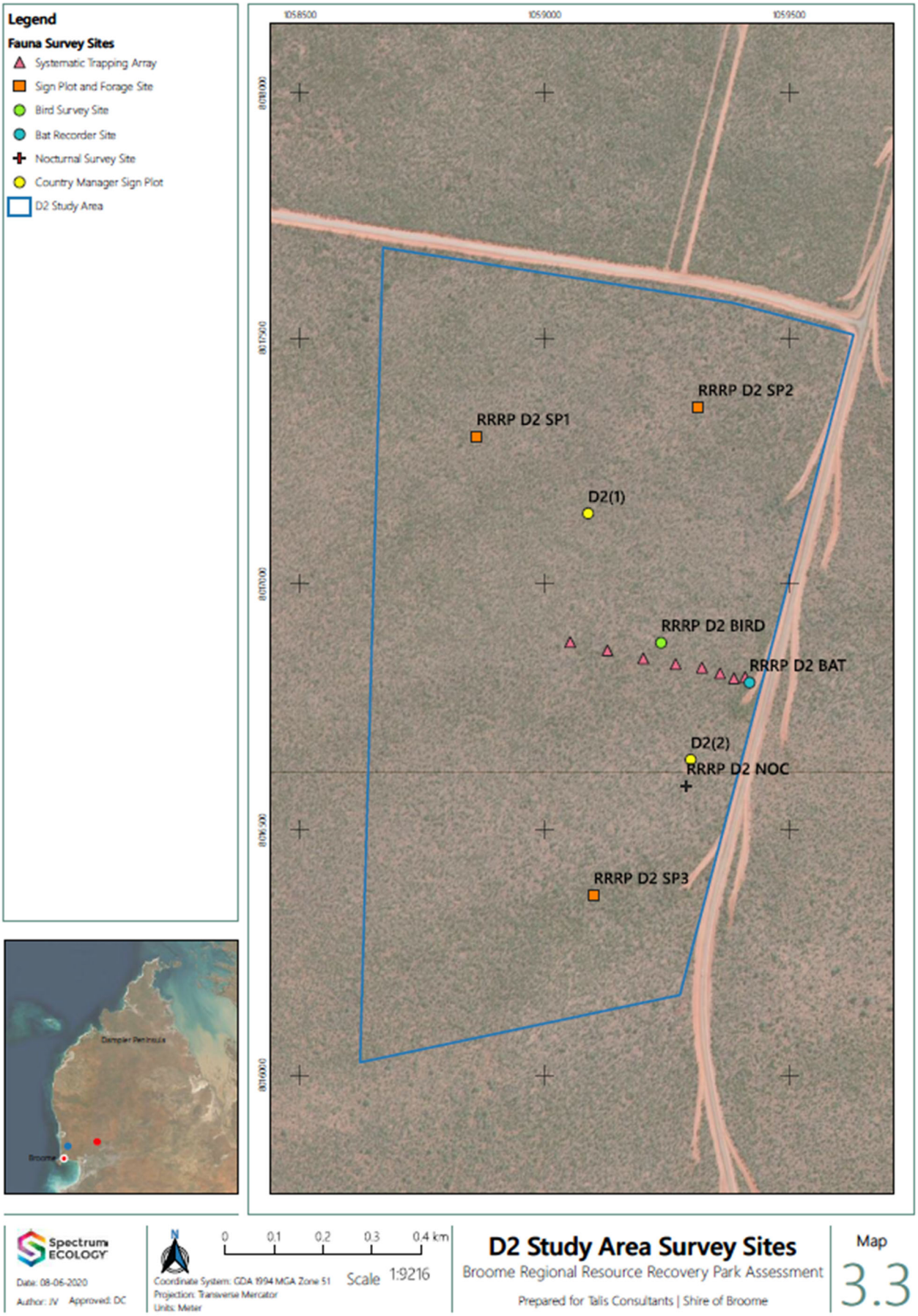
- Ten bird species
- Four non-volant mammal species (three introduced)
- Three bat species (with a further three possible species)
- Fourteen reptile species.

Systematic trapping and opportunistic foraging identified a total of 38 vertebrate fauna species within the G1 Study Area:

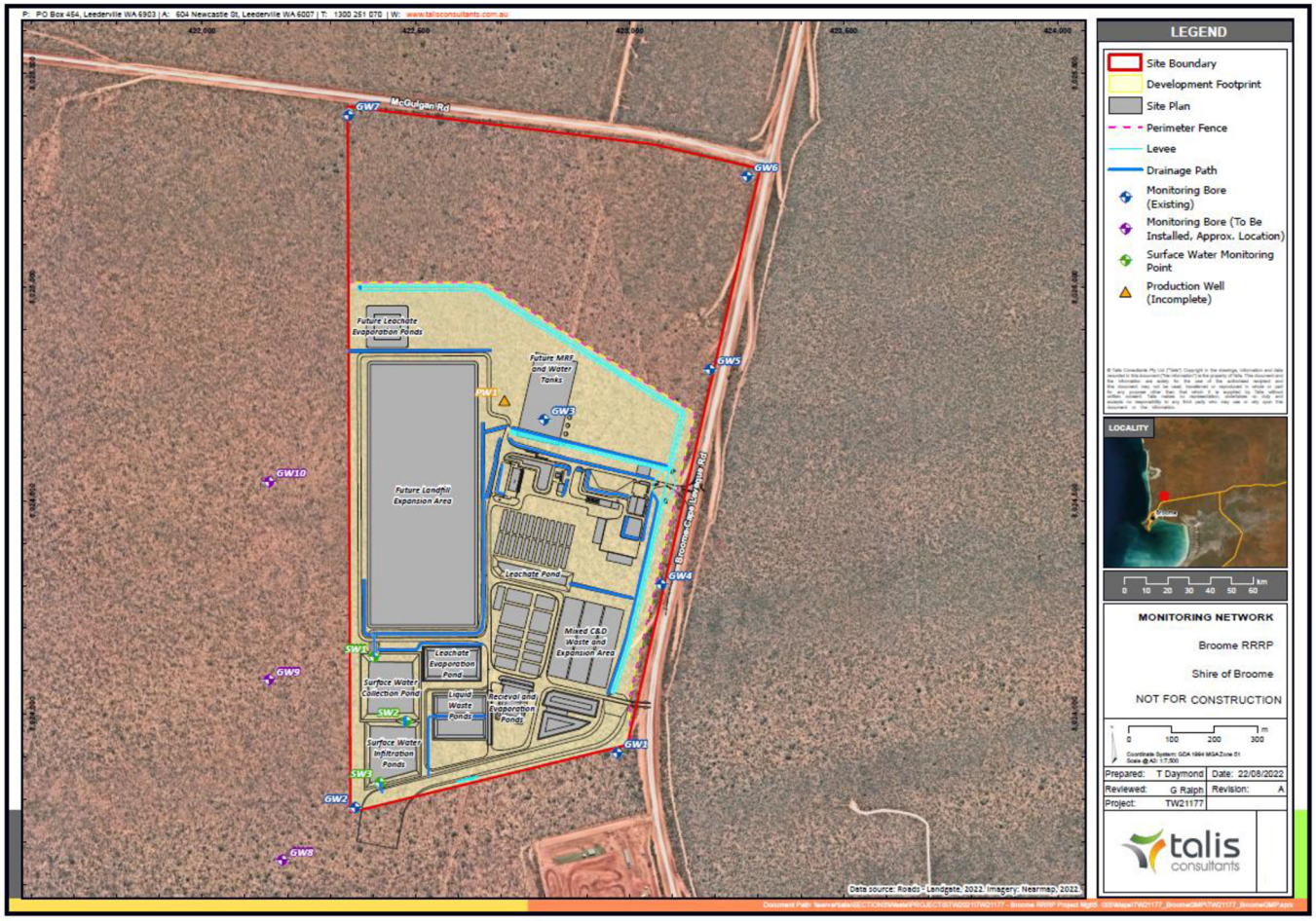
- Seventeen bird species
- Three non-volant mammal species (two introduced)
- Two bat species (with a further three possible species)
- Sixteen reptile species.

The DBCA Priority 1 listed Northern Coastal Free-tailed Bat (*Ozimops cobourgianus*) was detected multiple times via ultrasonic recorder from the Study Area.

Plate 3.1: Pindan Shrubland habitat from the D2 Study Area


Legend
Fauna Survey Sites
Systematic Trapping Array
Sign Plot and Forage Site
Bird Survey Site
Bat Recorder Site
Nocturnal Survey Site
Country Manager Sign Plot
D2 Study Area
1058500
1059000
1059500
8018000
8017500
8017000
8016500
8016000
RRRP D2 SP2
RRRP D2 SP1
D2(1)
RRRP D2 BIRD
RRRP D2 BAT
D2(2)
RRRP D2 NOC
RRRP D2 SP3
Dampier Peninsula
Broome
Spectrum ECOLOGY
Date: 08-06-2020
Author: JV Approved: DC
N
0 0.1 0.2 0.3 0.4 km
Coordinate System: GDA 1994 MGA Zone 51
Projection: Transverse Mercator
Units: Meter
Scale 1:9216
D2 Study Area Survey Sites
Broome Regional Resource Recovery Park Assessment
Prepared for Talis Consultants | Shire of Broome
Map
3.3

Groundwater monitoring



Appendix F. Sources of information

F.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)
- 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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