



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 8782/1
Permit Holder:	Woodside Power Pty Ltd
Duration of Permit:	27 May 2020 to 17 July 2026

The Permit Holder is authorised to clear native vegetation subject to the following conditions of this Permit.

PART I – CLEARING AUTHORISED

1. Purpose for which clearing may be done

Clearing for the purposes of geotechnical investigations and road upgrades.

2. Land on which clearing is to be done

Lot 24 on Deposited Plan 241372, Dampier and Burrup
Lot 444 on Deposited Plan 220554, Burrup
Lot 446 on Deposited Plan 194568, Burrup
Lot 678 on Deposited Plan 32810, Burrup
Lot 701 on Deposited Plan 41697, Burrup
Lot 3013 on Deposited Plan 42282, Burrup
Lot 32 on Deposited Plan 47815, Maitland
Lot 310 on Deposited Plan 42288, Maitland
Lot 322 on Deposited Plan 42624, Maitland
Lot 323 on Deposited Plan 42629, Maitland
Lot 324 on Deposited Plan 42631, Maitland
Lot 465 on Deposited Plan 220671, Maitland
Lot 677 on Deposited Plan 32809, Maitland
Lot 1502 on Deposited Plan 75876, Maitland
Lot 3005 on Deposited Plan 52072, Maitland
Lot 3006 on Deposited Plan 52072, Maitland

3. Area of clearing

The Permit Holder must not clear more than 11.93 hectares of native vegetation within the area cross-hatched yellow on attached Plan 8782/1a, 8782/1b and 8782/1c.

4. Period during which clearing is authorised

The Permit Holder must not clear any native vegetation after 17 July 2021.

5. Application

This Permit allows the Permit Holder to authorise persons, including employees, contractors and agents of the Permit Holder, to clear native vegetation for the purposes of this Permit subject to compliance with the conditions of this Permit and approval from the Permit Holder.

PART II –MANAGEMENT CONDITIONS

6. Avoid, minimise and reduce the impacts and extent of clearing

In determining the amount of native vegetation to be cleared authorised under this Permit, the Permit Holder must have regard to the following principles, set out in 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.

7. Weed control

When undertaking any clearing or other activity authorised under this Permit, the Permit Holder must take the following steps to minimise the risk of the 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.

8. Declared Pests and Weeds of National Significance (WoNS)

The Permit Holder must:

- (a) prior to the commencement of activities authorised under this Permit, conduct a treatment of Declared Pests, Weeds of National Significance (WoNS) and **Passiflora foetida* within each investigation site and access track;
- (b) conduct the treatment of Declared Pests in accordance with guidance by Department of Primary Industries and Regional Development and the treatment of WoNS in accordance with Weeds Australia guidance; and
- (c) engage an *environmental specialist* to conduct the weed treatment in a manner that prevents spray drift or water quality impacts to adjacent/downstream areas.

9. Vegetation management - watercourse

The Permit Holder shall not clear the *riparian vegetation* of any *watercourse* or *wetland* within the area cross-hatched yellow on attached Plan 8782/1a, 8782/1b and 8782/1c for the purpose of temporary construction areas, or extraction of borrow material, with the exception of minor access tracks to these areas.

10. Vegetation management – clearing not allowed

The Permit Holder must ensure that no clearing of native vegetation occurs within the vegetation type AcAx?Tt (*Acacia* woodlands) identified during the Flora survey (Vicky Long & Associates, 2019) (area cross-hatched red on attached Plan 8782/1a).

11. Fauna management - backfilling

The Permit Holder must:

- (a) cover all boreholes at the end of each day and backfill upon completion; and
- (b) backfill all test pits on the day of drilling/excavating with excavated material.

12. Fauna management – time of clearing

The Permit Holder must undertake all activities authorised under this Permit during day time hours; i.e. between 6 am and 6 pm.

13. Fauna management – direction of clearing

The Permit Holder shall conduct clearing in a slow progressive manner from one direction to the other (e.g. east to west) to allow fauna to move into adjacent native vegetation ahead of the clearing activity.

14. Fauna management – avoidance of habitat

The Permit Holder shall not clear any vegetation associated with rocky hills with exposed boulder piles within the area cross-hatched yellow on attached Plan 8782/1a, 8782/1b and 8782/1c.

15. Priority ecological community management

The Permit Holder shall not clear more than 0.87 hectares of native vegetation representative of the 'Roebourne Plains coastal grasslands with gilgai microrelief on deep cracking clays (Roebourne Plains gilgai grasslands)'.

16. Retain vegetative material and topsoil, and rehabilitation

- (a) The Permit Holder must retain the vegetative material and topsoil removed by clearing authorised under this Permit and stockpile the vegetative material and topsoil in an area that has already been cleared.
- (b) The Permit Holder must within 6 months of undertaking the clearing authorised under this Permit, *revegetate* and *rehabilitate* the areas that are no longer required for the purpose for which they were cleared under this Permit by:
 - (i) re-shaping the surface of the land so that it is consistent with the surrounding 5 metres of uncleared land;
 - (ii) ripping the ground on the contour of boreholes and test pits to remove soil compaction; and
 - (iii) laying the vegetative material and topsoil retained under Condition 16(a) on the cleared area.
- (c) The Permit Holder must following the first wet season of laying the vegetative material and topsoil on the cleared area in accordance with condition 16(b) of this permit:
 - (i) engage an *environmental specialist* to determine the species composition, structure and density of the vegetation of area revegetated and rehabilitated; and
 - (ii) engage an *environmental specialist* to make a determination as to whether the composition, structure and density determined under condition 16(c)(i) of this permit will, without further revegetation, result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area.
- (d) If the determination made by the *environmental specialist* under condition 16(c)(ii) is that the species composition, structure, and density determined under condition 16(c)(i) will not, without further *revegetation*, result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, the permit holder must *revegetate* the area by deliberately *planting* and/or *direct seeding* native vegetation seeds that will result in a similar species composition, structure, and density of native vegetation to pre-clearing vegetation types in that area.
- (e) Where additional *planting* or *direct seeding* of native vegetation is undertaken in accordance with condition 16(d), the Permit Holder must repeat the activities required by condition 16(c) and 16(d) within 12 months of undertaking the additional *planting* or *direct seeding* of native vegetation.
- (f) Where a determination is made by an *environmental specialist* under condition 16(c)(ii) that the composition, structure and density within areas *revegetated* and *rehabilitated* will result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, that determination shall be submitted to the *CEO* within three months of the determination being made by the *environmental specialist*.
- (g) During the next *optimal time* occurring after receiving notice from the *CEO*:
 - (i) stating that the *CEO* disagrees with the determination submitted under condition 16(f); and
 - (ii) specifying the required further *planting* of *local provenance* propagating material and/or *direct seeding* of *local provenance* seeds that in the *CEO's* reasonable opinion are necessary to ensure that the native vegetation will result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, the permit holder must carry out the further *planting* and/or *direct seeding* specified in the notice.

PART III - RECORD KEEPING AND REPORTING

17. Records must be kept

The Permit Holder must maintain the following records for activities done pursuant to this Permit:

- (a) In relation to the clearing of native vegetation authorised under this Permit:
 - (i) the species composition, structure and density of the cleared area;
 - (ii) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings;

- (iii) the date that the area was cleared;
 - (iv) the times of day that the clearing was undertaken;
 - (v) the direction in which clearing was undertaken;
 - (vi) the size of the area cleared (in hectares);
 - (vii) actions taken to avoid, minimise and reduce the impacts and extent of clearing in accordance with condition 6 of the Permit;
 - (viii) actions taken to minimise the risk of the introduction and spread of *weeds* in accordance with condition 7 of this Permit;
 - (ix) weed management actions in accordance with condition 8 of this Permit;
 - (x) evidence of backfilling all boreholes and test pits in accordance with condition 11 of this Permit; and
 - (xi) total area of Roebourne Plains gilgai grasslands cleared.
- (b) In relation to the revegetation and rehabilitation of areas pursuant to condition 16 of this Permit:
- (i) the location of any areas revegetated and rehabilitated, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
 - (ii) a description of the revegetation and rehabilitation activities undertaken; and
 - (iii) the size of the area revegetated and rehabilitated (in hectares).

18. Reporting

- (a) The Permit Holder must provide to the *CEO* on or before 30 June of each year, a written report:
 - (i) of records required under condition 17 of this Permit; and
 - (ii) concerning activities done by the Permit Holder under this Permit between 1 January to 31 December of the preceding calendar year.
- (b) If no clearing authorised under this Permit was undertaken between 1 January to 31 December of the preceding calendar year, a written report confirming that no clearing under this permit has been carried out, must be provided to the *CEO* on or before 30 June of each year.
- (c) Prior to 17 April 2026, the Permit Holder must provide to the *CEO* a written report of records required under condition 17 of this Permit where these records have not already been provided under condition 18(a) of this Permit.

DEFINITIONS

The following meanings are given to terms used in this Permit:

CEO means the Chief Executive Officer of the Department responsible for administering the clearing provisions under the *Environmental Protection Act 1986*;

direct seeding means a method of re-establishing vegetation through establishment of a seed bed and the introduction of seeds of the desired plant species;

environmental specialist means a person who holds a tertiary qualification in environmental science or equivalent, and has experience relevant to the type of environmental advice that an environmental specialist is required to provide under this Permit, or who is approved by the *CEO* as a suitable environmental specialist;

fill means material used to increase the ground level, or fill a hollow;

local provenance means native vegetation seeds and propagating material from natural sources within 100 kilometres and the same Interim Biogeographic Regionalisation for Australia (IBRA) subregion of the area cleared;

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;

optimal time means the period from November to December for undertaking direct seeding, and no planting without irrigation for undertaking planting;

planting means the re-establishment of vegetation by creating soil conditions and planting seedlings of the desired species;

rehabilitate/ed/ion means actively managing an area containing native vegetation in order to improve the ecological function of that area;

revegetate/ed/ion means the re-establishment of a cover of local provenance native vegetation in an area using methods such as natural regeneration, direct seeding and/or planting, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area;

riparian vegetation has the meaning given to it in Regulation 3 of the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*;

watercourse has the meaning given to it in section 3 of the *Rights in Water and Irrigation Act 1914*;
wetland/s means an area of seasonally, intermittently or permanently waterlogged or inundated land, whether natural or otherwise, and includes a lake, swamp, marsh, spring, dampland, tidal flat or estuary;

weed/s 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 Regional Weed Rankings Summary, regardless of ranking; or
- (c) not indigenous to the area concerned;

wetland/s means an area of seasonally, intermittently or permanently waterlogged or inundated land, whether natural or otherwise, and includes a lake, swamp, marsh, spring, dampland, tidal flat or estuary.

REFERENCES

Vicki Long & Associates (VLA) (2019). *Woodside Energy Ltd - Geotechnical Investigations Flora And Vegetation Surveys Desktop Assessment Report*. Report for Woodside Energy Ltd, prepared by Vicki Long & Associates, December 2019. DWER Ref: A1856606.

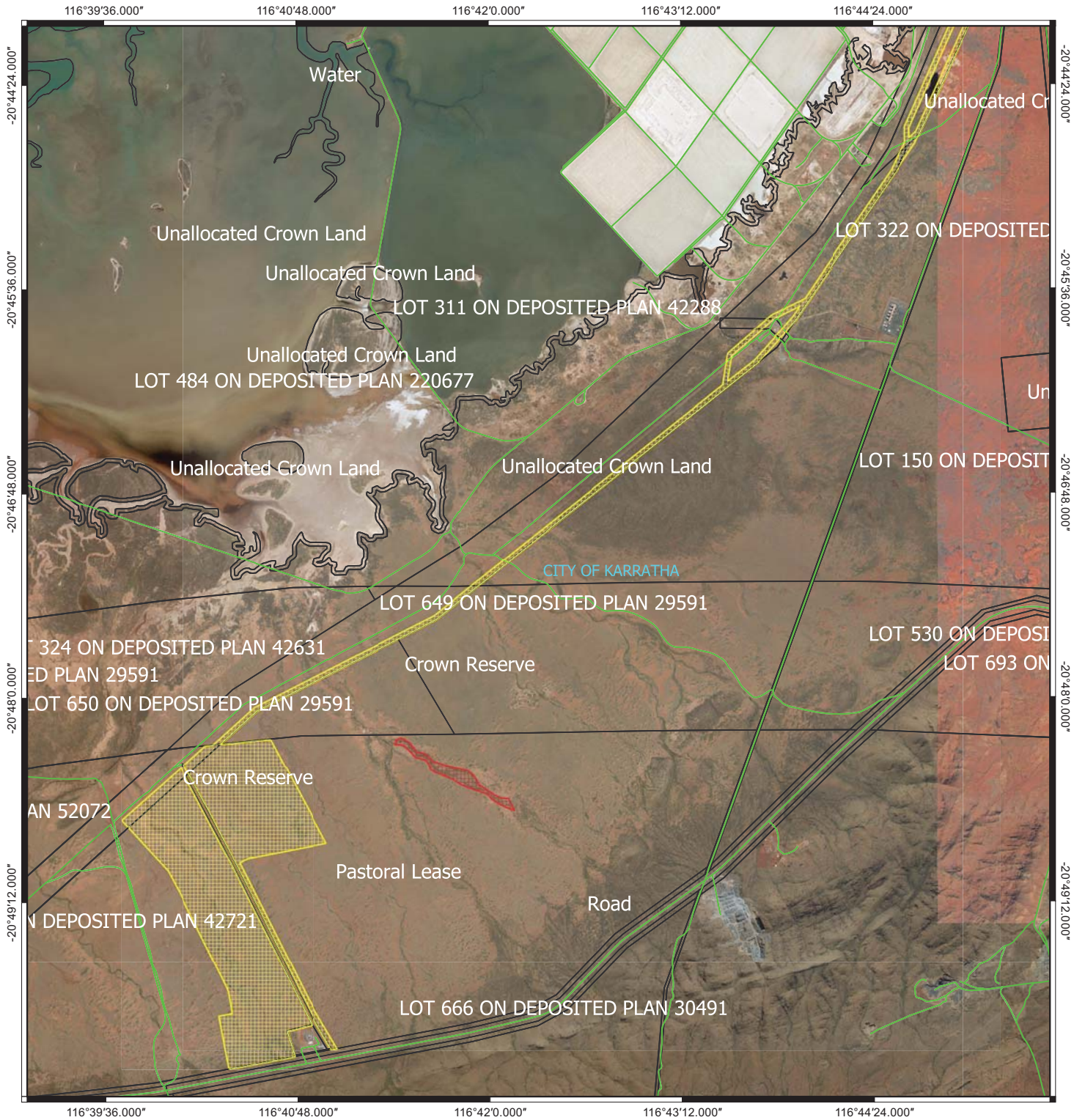


Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION





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

6 May 2020

Plan 8782/1a




Legend

-  CPS areas approved to clear
-  CPS subject to conditions
-  Local Government Authorities
-  Roads
- Image



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MGA 94
Geocentric Datum of Australia 1994

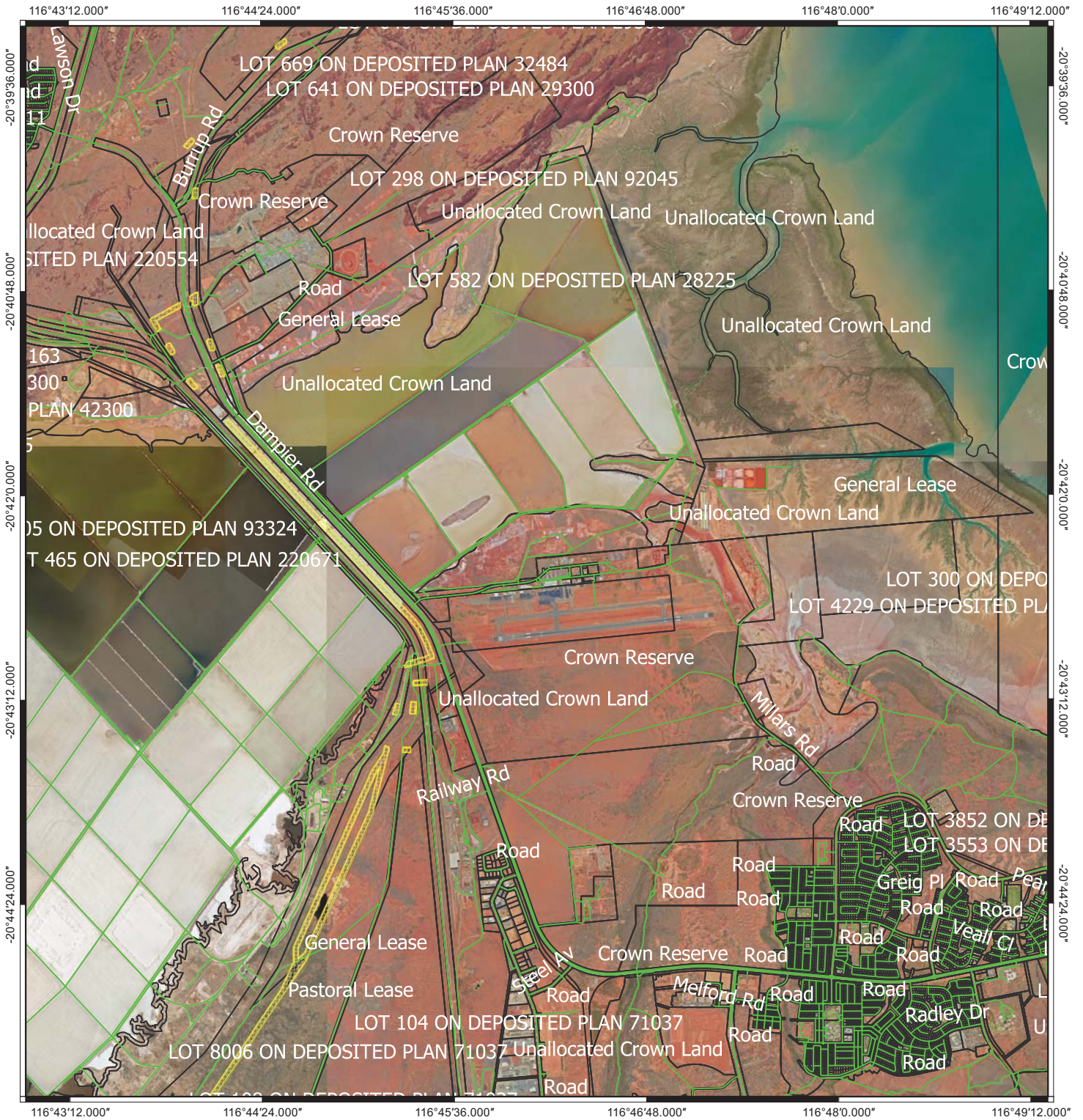

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Officer with delegated authority under Section 20
of the Environmental Protection Act 1986





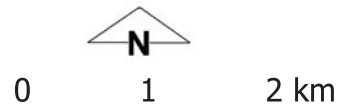
GOVERNMENT OF
WESTERN AUSTRALIA
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Plan 8782/1b




Legend

-  CPS areas approved to clear
-  Local Government Authorities
-  Roads
-  Image



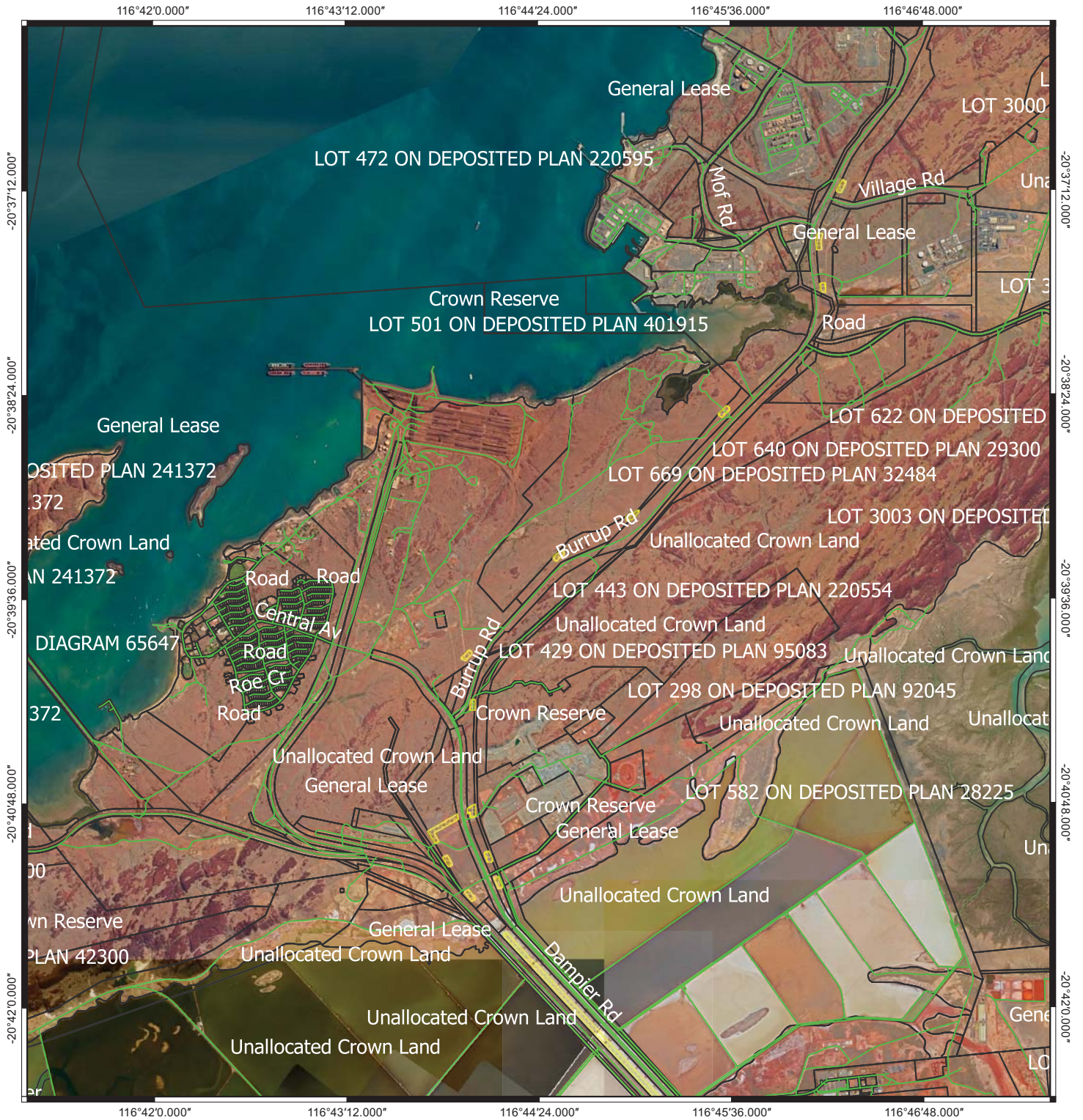
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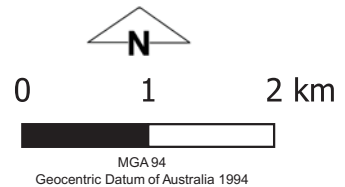



Plan 8782/1c



Legend

-  CPS areas approved to clear
-  Local Government Authorities
-  Roads
-  Image




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Officer with delegated authority under Section 20 of the Environmental Protection Act 1986





1. Application details

1.1. Permit application details

Permit application No.: 8782/1
Permit type: Purpose Permit

1.2. Applicant details

Applicant's name: Woodside Power Pty Ltd
Application received date: 06 January 2020

1.3. Property details

Property: Lot 24 on Deposited Plan 241372, Dampier and Burrup
Lot 444 on Deposited Plan 220554, Burrup
Lot 446 on Deposited Plan 194568, Burrup
Lot 678 on Deposited Plan 32810, Burrup
Lot 701 on Deposited Plan 41697, Burrup
Lot 3013 on Deposited Plan 42282, Burrup
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Lot 465 on Deposited Plan 220671, Maitland
Lot 677 on Deposited Plan 32809, Maitland
Lot 1502 on Deposited Plan 75876, Maitland
Lot 3005 on Deposited Plan 52072, Maitland
Lot 3006 on Deposited Plan 52072, Maitland
Local Government Authority: City of Karratha
Localities: Burrup, Dampier and Maitland

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	Purpose category:
11.93		Mechanical Removal	Geotechnical investigations and associated activities

1.5. Decision on application

Decision on Permit Application: Granted
Decision Date: 6 May 2020
Reasons for Decision:

The clearing permit application has been assessed against the clearing principles, planning instruments and other matters in accordance with section 51O of the *Environmental Protection Act 1986* (EP Act). It has been concluded that the proposed clearing is at variance with principle (f), may be at variance with principles (a), (b) and (h), is not at variance with principle (e) and is not likely to be at variance with the remaining principles.

The Delegated Officer considered the following:

- the proposed clearing includes vegetation growing in association with a watercourse and wetland. The Delegated Officer determined that no significant impacts to the environmental values of the water bodies are expected given the minimal extent of the proposed clearing over a larger clearing envelope.
- the application area is adjacent to Murujuga National Park and the proposed clearing may impact this conservation area through the potential spread of weeds. The Delegated Officer determined that weed management practices will assist in managing potential impacts to adjacent vegetation.
- the application area contains suitable habitat for several conservation significant fauna species. The Delegated Officer determined that environmental impacts can be adequately mitigated through fauna management measures such as:
 - avoidance of vegetation associated with rocky hills with exposed boulder piles;
 - slow directional clearing;
 - covering all boreholes at the end of each day and backfilling upon completion;
 - backfilling of test pits on the day of drilling/excavating; and
 - undertaking all authorised activities during day time hours only.
- a priority ecological community (PEC) is mapped within a portion of the application area. The Delegated Officer determined that the environmental impact can be adequately mitigated through limiting the extent of clearing within this PEC.
- the purpose of the clearing is investigative. The Delegated Officer determined that areas that are not required to remain cleared for the future development of the hybrid

renewable power plant will be required to be revegetated and limit long term impacts from the proposed clearing.

- The Delegated Officer noted that Woodside Power Pty Ltd have obtained appropriate licences to occupy the land under the application area in accordance with Section 91 of the *Land Administration Act 1997* which expire on 28 May 2021, 11 July 2021 and 17 July 2021. Considering this, a condition which does not allow clearing after 17 July 2021 was added to the Permit. Additional five years were added to the permit duration to allow sufficient time for the revegetation actions in accordance with the Permit conditions.
- The Delegated Officer noted that a vegetation type AcAx?Tt of a high conservation value has been mapped during the flora survey (Vicky Long & Associates, 2019). The Delegated Officer determined that a condition which does not allow the Permit Holder to undertake any clearing activities within this vegetation type will assist in managing potential impacts to native vegetation in this vegetation type.
- The Delegated Officer noted that clearing for access tracks will involve vehicle and machinery driving over native vegetation and not earthmoving. Considering this, the Delegated Officer determined that a requirement to rip the ground on the contour of access tracks to remove soil compaction as part of the revegetation activities for access tracks is not required.

In determining to grant a clearing permit subject to the above management conditions, the Delegated Officer found that the proposed clearing is not likely to lead to an unacceptable risk to the environment.

2. Site Information

Clearing Description

The proposed clearing is for geotechnical investigations in the Maitland Strategic Industrial Area (MSIA), MSIA buffer area, and along a land corridor leading to the Burrup Peninsula (Figure 1). The proposed investigations will inform the engineering design and construction planning for the hybrid renewable power plant that the applicant is currently examining (GHD, 2019a).

The applicant intends to refer the full proposal for development of the hybrid renewable power plant and transmission line to Environmental Protection Authority (EPA) in accordance with the Part IV of the *Environmental Protection Act 1986* (Woodside, 2020b).

The proposed clearing of 11.93 hectares will be across a permit boundary of approximately 477.06 hectares. The proposed clearing will be limited to 38 boreholes (up to 25 metres x 25 metres, 56 test pits (up to 15 metres x 15 metres) and associated access tracks. Access tracks are assumed to require clearing of up to a 6 metre wide strip of vegetation. Vegetation clearing on access tracks will involve vehicles and machinery driving over vegetation where the vegetation is low (e.g. grassland), with clearing of access tracks limited to areas of taller vegetation (GHD, 2019a). The vegetation will be cleared through slashing where practicable, to minimise soil disturbance and promote regrowth of vegetation. Only a limited number of circumstances will require clearing other than slashing (Woodside, 2020a).

Biological Surveys

The larger clearing envelope encompassing the application area has been subject to two biological surveys, including:

- Vicky Long & Associates (VLA) (2019) *Geotechnical Investigations - Flora and Vegetation Surveys* (the Flora survey). The scope of the Flora survey was to undertake a Level 1 desktop and reconnaissance flora and vegetation survey for the clearing envelope to assess and record the vegetation communities present, the vegetation condition, weeds species and the location of any vegetation or flora of conservation significance. The survey also included a desktop assessment to review existing information for the application area to determine the likelihood of occurrence of conservation significant species and communities. The desktop assessment included a review of all available data including databases, existing studies and geospatial information.
- GHD (2019b) *Geotechnical Investigation – Fauna survey* (the Fauna survey). The scope of the Fauna survey was to undertake a Level 1 single season vertebrate fauna survey of the application area. The survey consisted of seven days over two periods from the 10th to 13th of June and 22nd to 24th July 2019. The survey aimed to verify the findings of a desktop assessment and preliminary likelihood of occurrence assessment. The survey area was ground truthed with remote cameras and bat detectors installed to assist in species inventory within the survey area. In total, 30 camera nights over nine locations and three bat detector nights over three locations were undertaken.

Vegetation Description

The application area occurs within the 'Pilbara' Interim Biogeographic Regionalisation for Australia (IBRA) bioregion, and is mapped as the following Beard vegetation associations (Shepherd et al., 2002):

- **117:** Hummock grasslands, grass steppe; soft spinifex;
- **127:** Bare areas; mud flats; and

- **589:** Mosaic: Short bunch grassland - savanna / grass plain (Pilbara) / Hummock grasslands, grass steppe; soft spinifex.

The Flora survey (VLA, 2019) conducted during 3 to 5 June 2019 (northern portion) and 23 to 25 July 2019 (southern portion) mapped the application area as comprising of the following vegetation communities (VLA, 2019):

Table 1 Vegetation communities recorded within the application area (VLA, 2019).

Vegetation communities	Vegetation Description
AaAcC?v 0.85 hectares	<i>Acacia ampliceps</i> tall shrubland to closed shrubland with <i>Acacia coriacea</i> over <i>Myoporum montanum</i> shrubland with occasional <i>Stemodia grossa</i> over <i>Cyperus</i> sp. and <i>Typha</i> sp. (dead) sedgeland (manmade pond in drainage line). Occurs around an artificially created pool in drainage line.
AbAsTe 1.21 hectares	<i>Acacia bivenosa</i> with <i>Dolichandrone heterophylla</i> tall shrubland over <i>Acacia stellaticeps</i> open to shrubland over <i>Diplopeltis eriocarpa</i> low shrubland over <i>Triodia angusta</i> or <i>T. epactia</i> hummock grassland to closed hummock grassland with patchy <i>Eriachne obtusa</i>
AbCc 10.75 hectares	<i>Acacia bivenosa</i> tall open to shrubland over * <i>Cenchrus ciliaris</i> tussock grassland, sometimes closed tussock grassland, with patchy <i>Triodia angusta</i> .
AbTe 1.18 hectares	<i>Acacia bivenosa</i> with occasional <i>Dichrostachys spicata</i> , <i>Acacia ancistrocarpa</i> open tall shrubland over mixed <i>Triodia epactia</i> / <i>T. angusta</i> hummock and * <i>Cenchrus ciliaris</i> tussock grassland.
AbTeEx 8.04 hectares	<i>Acacia bivenosa</i> , <i>A. coriacea</i> , <i>A. synchronicia</i> open or scattered shrubland over mosaic <i>Triodia epactia</i> hummock and <i>Eragrostis xerophila</i> tussock grassland.
AbTw 53.89 hectares	<i>Acacia bivenosa</i> shrubland to open shrubland with scattered <i>A. inaequilatera</i> , <i>A. coriacea</i> , <i>A. ancistrocarpa</i> , <i>Eremophila longifolia</i> , over <i>Triodia wiseana</i> hummock grassland. There can be patchy <i>T. epactia</i> and patches of * <i>Cenchrus ciliaris</i> on some scald areas (Figure 2b).
Ac?Tt 0.43 hectares	<i>Acacia coriacea</i> with tall shrubland over scattered <i>Acacia inaequilatera</i> , <i>A. ancistrocarpa</i> shrubs over ? <i>Themeda triandra</i> (dead / dormant) ? with some * <i>Cenchrus ciliaris</i> (dead) tussock grassland.
AcAi 0.75 hectares	<i>Acacia coriacea</i> / <i>A. inaequilatera</i> , tall mixed shrubland over * <i>Vachellia farnesiana</i> open shrubs over mixed open tussock grassland (too dead to id) and scattered <i>Triodia wiseana</i> hummocks.
AcCc 1.12 hectares	<i>Acacia coriacea</i> tall shrubland to open tall shrubland over <i>Acacia ampliceps</i> or * <i>Vachellia farnesiana</i> shrubland sometimes over <i>Stemodia grossa</i> closed low shrubland over mixed * <i>Cenchrus ciliaris</i> tussock with <i>Triodia epactia</i> scattered grasses.
AiAc?Eb 1.93 hectares	<i>Acacia inaequilatera</i> , <i>A. coriacea</i> tall shrubland, sometimes open shrubland over ? <i>Eriachne benthamii</i> , <i>Chrysopogon fallax</i> patchy * <i>Cenchrus ciliaris</i> tussock grassland. On broad, shallow drainage line with shallow pinky brown loams and areas of exposed bedrock.
AiAcTw 0.93 hectares	<i>Acacia inaequilatera</i> open shrubland, occasional <i>A. coriacea</i> over <i>Triodia wiseana</i> closed hummock grassland. Occurs in shallow drainage area with red brown alluvial loam.
AiTe 1.00 hectares	<i>Acacia inaequilatera</i> tall open shrubland with <i>Grevillea pyramidalis</i> , <i>Ipomoea costata</i> , <i>Acacia orthocarpa</i> over <i>Triodia epactia</i> hummock grassland with patchy <i>Themeda triandra</i> and with low trees of <i>Brachychiton acuminatus</i> , <i>Terminalia supranitifolia</i> on small outcropping rocks. Occurs on stony hill slopes and rises, stone and small boulder mantle over red-brown skeletal silts.
AiTw 6.31 hectares	<i>Acacia inaequilatera</i> tall open shrubland, or scattered shrubs occasional <i>A. synchronicia</i> , <i>A. coriacea</i> , <i>Hakea lorea</i> sometimes over <i>Acacia bivenosa</i> open shrubs over <i>Triodia wiseana</i> hummock grassland. On flat plain with pinky brown calcareous shallow loams with moderate to abundant calcrete and quartz stone and pebbles.
BaDs 0.03 hectares	<i>Brachychiton acuminatus</i> mixed low woodland with <i>Dichrostachys spicata</i> over <i>Ipomoea costata</i> , <i>Acacia coriacea</i> , open shrubland over scattered <i>Triodia epactia</i> / <i>Cymbopogon ambiguous</i> / * <i>Cenchrus ciliaris</i> grasses. Occasional <i>Ficus brachypoda</i> trees.
BaEsErv 0.43 hectares	<i>Brachychiton acuminatus</i> mixed low woodland with <i>Ehretia saligna</i> , <i>Erythrina vespertilio</i> , <i>Terminalia circumalata</i> over <i>Ipomoea costata</i> , <i>Acacia coriacea</i> open shrubland over <i>Triodia epactia</i> hummock grassland. Scattered * <i>Cenchrus ciliaris</i> .
Cc 1.21 hectares	* <i>Cenchrus ciliaris</i> tussock grassland with scattered shrubs of <i>Acacia bivenosa</i> , <i>A. inaequilatera</i> .
ChAbTe 0.06 hectares	<i>Corymbia hamersleyana</i> open to low woodland over <i>Acacia bivenosa</i> / <i>Acacia coriacea</i> / <i>Dichrostachys spicata</i> tall shrubland, sometimes <i>Adriana tomentosa</i> / <i>Stemodia grossa</i> low shrubland over open <i>Triodia epactia</i> / <i>T. angusta</i> hummock and sometimes * <i>Cenchrus ciliaris</i> tussock grassland.

	Occurs on outer perimeters of drainage lines, on lower stony areas, in broad valley floor, on lower slopes over moderate to dense stony mantle and red-brown silts or on plain with red-brown medium grained sands.
DsAiTe 0.27 hectares	<i>Dichrostachys spicata</i> , <i>Acacia inaequilatera</i> , <i>Acacia coriacea</i> tall shrubland over <i>Scaevola spinescens</i> , <i>Alectryon oleifolius</i> open low mixed shrubland over <i>Triodia epactia</i> / <i>T. angusta</i> hummock grassland. There can be scattered <i>Eucalyptus victrix</i> and <i>Terminalia circumalata</i> .
Eb?Cf 5.20	? <i>Eriachne benthamii</i> , ? <i>Chrysopogon fallax</i> tussock grassland with other annual grass species (all too dead/dormant to identify).
EvAbTa 0.81 hectares	<i>Eucalyptus victrix</i> open to scattered low woodland with scattered <i>Corymbia hamersleyana</i> over <i>Acacia bivenosa</i> tall open shrubland over <i>Adriana tomentosa</i> / <i>Indigofera monophylla</i> open low shrubland over <i>Triodia angusta</i> / <i>T. epactia</i> open to hummock grassland. Occurs along shallow, broad drainage lines and along valley floors with grey-brown stones over grey-brown alluvial silts.
Ex 283.12 hectares	<i>Eragrostis xerophila</i> tussock grassland. Sometimes scattered * <i>Vachellia farnesiana</i> shrubs. Occurs on flat alluvial plain with deep red brown weakly cracking clays (Figure 2a).
Ex spp 27.36 hectares	<i>Eragrostis xerophila</i> tussock grassland. (has apparent <i>Sorghum plumosum</i> , <i>Panicum</i> sp., <i>Aristida</i> sp. – determine following wet season) with intrusions of ? <i>Eriachne benthamii</i> on low areas (Figure 2c). Occurs on flat plain with deep red brown weakly to moderate cracking clays. Varying areas of scald.
GpAiTe 1.48 hectares	<i>Grevillea pyramidalis</i> , <i>Acacia inaequilatera</i> tall shrubland sometimes with <i>Ehretia saligna</i> , <i>Acacia orthocarpa</i> over open mixed low shrubland, <i>Scaevola spinescens</i> , <i>Solanum phlomoides</i> , <i>Indigofera monophylla</i> over <i>Triodia epactia</i> hummock grassland with patchy * <i>Cenchrus ciliaris</i> .
GpTeBaTs 2.19 hectares	<i>Grevillea pyramidalis</i> scattered to open tall shrubland, sometimes with scattered <i>Hakea lorea</i> subsp. <i>lorea</i> , <i>Ipomoea costata</i> , <i>Acacia inaequilatera</i> over <i>Triodia epactia</i> hummock grassland, sometimes patchy <i>T. angusta</i> . There can be open low <i>Indigofera monophylla</i> shrubland. There are scattered <i>Brachychiton acuminatus</i> , <i>Terminalia supranitifolia</i> , <i>Dichrostachys spicata</i> on small rock outcrops. Occurs on low undulating rises, lower hill slopes and higher plateaux with dense stone and boulder mantle over skeletal red silts.
ShEx 1.28 hectares	<i>Senna hamersleyensis</i> low shrubland (senescing?) over scattered <i>Eragrostis xerophila</i> tussocks.
Tsupp 3.43 hectares	<i>Tecticornia halocnemoides</i> subsp. <i>tenuis</i> , <i>Tecticornia ?indica</i> closed low shrubland. (Surrounded by Site 6 vegetation).
Ta 0.15 hectares	<i>Triodia angusta</i> hummock grassland. Scattered <i>Terminalia circumalata</i> , <i>Corymbia hamersleyana</i> trees and <i>Acacia orthocarpa</i> shrubs.
TaTCc 2.35 hectares	* <i>Tamarix aphylla</i> (Weeds of National Significance (WoNS) Species) low open woodland over <i>Tecticornia</i> species open low shrubland with * <i>Aerva javanica</i> over open * <i>Cenchrus ciliaris</i> tussock grassland.
Te 1.93 hectares	<i>Triodia epactia</i> hummock grassland. Scattered <i>Grevillea pyramidalis</i> , <i>Hakea lorea</i> subsp. <i>lorea</i> , <i>Acacia inaequilatera</i> .
Tspp 0.92 hectares	<i>Tecticornia halocnemoides</i> subsp. <i>tenuis</i> , <i>T. pruinosa</i> , <i>T. indica</i> subsp. <i>leiostachya</i> , with <i>Muellerolimon salicorniaceum</i> open low shrubland with patchy <i>Avicennia marina</i> trees.
Tw 27.89 hectares	<i>Triodia wiseana</i> hummock grassland. Sometimes scattered <i>Acacia inaequilatera</i> , <i>A. coriacea</i> , <i>A. pyriformis</i> , <i>A. bivenosa.b</i> (Figure 2d).
Cleared 25.97 hectares	

Vegetation Condition

The condition of the vegetation within the application area is considered to be in excellent (Trudgen, 1988) to completely degraded (Trudgen, 1988) condition (VLA, 2019). The condition of the vegetation was determined by the Flora survey (VLA, 2019).

Table 2 Vegetation conditions recorded within the application area (VLA, 2019).

Vegetation Condition Extent in the clearing envelope	Description (Trudgen, 1988)
Excellent (11.4 per cent) 54.18 hectares	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement

Very Good (8.7 per cent) 41.27 hectares	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 (72.7 per cent) 344.6 hectares	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 (3.1 per cent) 14.83 hectares	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
Degraded (0.9 per cent) 4.35 hectares	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 (3.2 per cent) 15.22 hectares	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.

Soil type

The following five land systems are mapped within the application area (van Vreeswyk et al. 2004):

- Calcrete: Low calcrete platforms and plains supporting shrubby hard spinifex grasslands.
- Cheerawarra: Sandy coastal plains and saline clay plains supporting soft and hard spinifex grasslands and minor tussock grasslands.
- Granitic: Rugged granitic hills supporting shrubby hard and soft spinifex grasslands.
- Horseflat: Gilgaid clay plains supporting Roebourne Plains grass grasslands and minor grassy snakewood shrublands.
- Littoral: Bare coastal mudflats (unvegetated), samphire flats, sandy islands, coastal dunes and beaches, supporting samphire low shrublands, sparse acacia shrublands and mangrove forests.

Comments

The local area referred to in the assessment of this application is defined as a 50 kilometre radius measured from the perimeter of the application area.

A review of available databases has determined that the local area retains approximately 97 per cent of its pre-European native vegetation.

The Department of Water and Environmental Regulation (DWER) in its assessment noted that the timing of the Flora survey (VLA, 2019) for the southern portions of the application area was outside the nominal survey period for the region.

The survey area referred to in this assessment is defined as the area of the MSIA, adjacent Industrial Buffer Area and along a land corridor leading to the Burrup Peninsula.

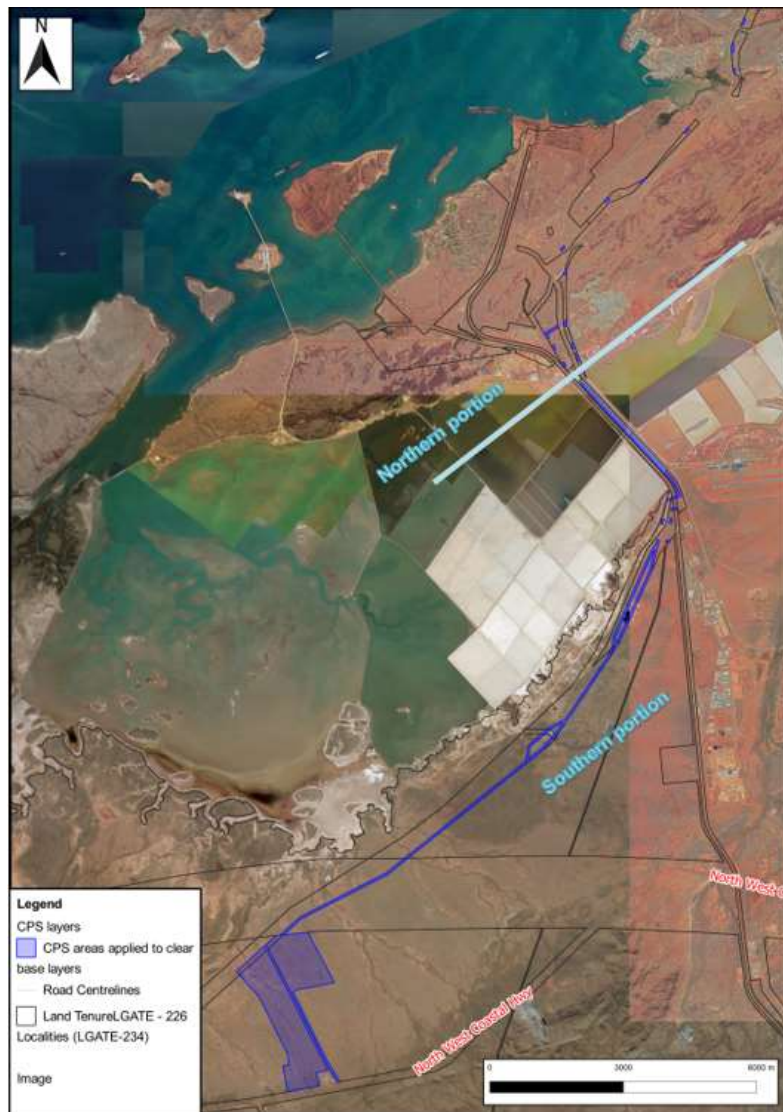


Figure 1: Application area (cross-hatched blue)



Figure 2a Ex vegetation community which covers approximately 59.7 per cent of the application area



Figure 2b AbTw vegetation community which covers approximately 11.4 per cent of the application area



Figure 2c Ex spp vegetation community which covers approximately 5.8 per cent of the application area



Figure 2d Tw vegetation community which covers approximately 5.9 per cent of the application area

Figures 2a-d: Representative photos of the vegetation within the application area (VLA, 2019).

3. Minimisation and mitigation measures

In relation to whether alternatives have been considered that would avoid or minimise the need for clearing, the applicant has advised that the investigation will be undertaken in accordance with an Environmental Management Plan (included with the project execution plan), which will include the following environmental management provisions relevant to native vegetation clearing (GHD, 2019a):

- 1) Minimisation of clearing
 - a) Use of existing cleared access tracks, roads and other disturbed areas as far as practicable to access investigation areas;
 - b) Vegetation within access tracks to be driven over in preference to clearing, where this does not pose an unacceptable fire risk or damage to vehicles;
 - c) Where vegetation on access tracks is to be cleared, vegetation is to be slashed where practicable, to minimise soil disturbance and allow vegetation to regenerate from rootstock;
 - d) Where existing tracks cannot be used, navigation paths will avoid vegetation where practicable;
 - e) Access routes optimised to avoid requirements for earthworks or grading where practicable;
 - f) Movement of vehicles and machinery in convoy along access tracks /routes; and
 - g) Avoiding trees and tall shrubs in selection of access routes and borehole/test pit pads.
- 2) Weeds and rehabilitation
 - a) Potential weed management activities have been informed by consultation with a local experienced botanist (Vicki Long Associates, pers comm, 2019) are outlined below;
 - b) All vehicles and machinery to be cleaned of soil and vegetative matter at point of entry into native vegetation from existing access tracks/roads/disturbed areas, and at exit from weed infested areas;
 - c) Treatment of Declared Pests, WoNS and **Passiflora foetida* present within each investigation site and access track, prior to commencement of Investigation works;
 - d) Treatment of Declared Pests to be in accordance with guidance by Department of Primary Industries and Regional Development and treatment of WoNS to be in accordance with Weeds Australia guidance;
 - e) Weed treatment by a qualified professional, in a manner that prevents spray drift or water quality impacts to adjacent/downstream areas;
 - f) Inspection of all clearing areas following the first wet season and follow up treatment of any weed infestations occurring;
 - g) Investigation works are to avoid removal of topsoil as far as practicable, otherwise topsoil to be stockpiled adjacent to the works area for respreading at the completion of works;

- h) All borehole and test pit pads and rutted access tracks to be re-contoured and respread with topsoil, if necessary, to promote reestablishment of native vegetation; and
 - i) Inspection of all clearing areas following the first wet season and any areas observed to not be regrowing with vegetation to be seeded with native species representative of the cleared vegetation communities.
- 3) Fauna
- a) Staff awareness on Pilbara Olive Python (threatened species, non-venomous), prohibition on killing native fauna, and procedures for interaction with native fauna including snakes;
 - b) Fauna care procedure for any injured fauna, using contact details for appropriate fauna rescue organisation or individual which are maintained by the Investigation team; and
 - c) Reporting all injury or death of terrestrial fauna to Department of Biodiversity, Conservation and Attractions (DBCA)/Department of the Environment and Energy (DotEE) (now Department of Agriculture, Water and the Environment) as relevant.

4. Assessment of application against clearing principles, planning instruments and other relevant matters

(a) Native vegetation should not be cleared if it comprises a high level of biodiversity.

Proposed clearing may be at variance with this Principle

Background

The application area has been subject to a Flora and vegetation survey and a Terrestrial fauna survey as described under Section 2. The Flora survey (VLA, 2019) recorded 32 vegetation types across the application area ranging from grasslands to woodlands (see Section 2 for a more detailed description of vegetation types) (VLA, 2019). *Eragrostis xerophila* tussock grassland was the dominant vegetation type identified (VLA, 2019).

The Fauna survey (GHD, 2019b) recorded nine main fauna habitat types within the application area (detailed descriptions of these habitat are under Principle (b)). The main habitat recorded was Tussock grasslands on cracking clays which has been mapped across approximately 73.5 per cent of the application area (348.73 hectares).

Threatened and Priority Flora

According to available databases 22 priority flora species have been recorded within the local area. Based on the similarities shared between the soil and vegetation types in habitats for these flora taxa and within the application area, it was determined that the following flora species may occur within the application area (VLA, 2019):

Table 1 Priority flora taxa which may occur in the application area (WA Herbarium, 1998-).

Taxon	Conservation status	Number of records in local area	Spatial distribution [km]	Closest record [km]	Description	Soils	Flowering time
<i>Atriplex lindleyi</i> subsp. <i>conduplicata</i>	P3	1	-	12.1	short-lived annual or perennial, herb, ca 0.2 meter high	Crabhole plains	Perennial
<i>Gomphrena cucullata</i>	P3	2	41.3	9.9	Spreading or erect annual, herb, to 0.25 meter high	Red sandy loam, clayey sand. Open floodplains	Feb or May
<i>Gomphrena leptophylla</i>	P3	1	-	10	Prostrate or erect to spreading annual, herb, to 0.15 m high	Sand, sandy to clayey loam, granite, quartzite. Open flats, sandy creek beds, edges salt pans & marshes, stony hillsides	Mar to Sep
<i>Gymnanthera cunninghamii</i>	P3	4	13.2	14.8	Erect shrub, 1-2 meter high.	Sandy soils	Jan to Dec
<i>Oldenlandia</i> sp. <i>Hammersley Station</i> (A.A. Mitchell PRP 1479)	P3	3	22.3	0.25	Spreading annual, herb, 0.05-0.1 meter high	Cracking clay, basalt. Gently undulating plain with large surface rocks, flat crabholed plain	Mar
<i>Rhynchosia bungarensis</i>	P4	37	35	0.49	Compact, prostrate shrub, to 0.5 meter high	Pebbly, shingly coarse sand amongst boulders	Mar-Nov (Ecoscape, 2014)
<i>Stackhousia clementii</i>	P3	4	12.5	0.07	Dense broom-like perennial, herb, to 0.45 meter high	Skeletal soils. Sandstone hills.	Perennial
<i>Terminalia supranitifolia</i>	P3	43	49	0.36	Spreading, tangled shrub or tree, 1.5-3 meter high	Sand. Among basalt rocks.	May or Jul or Dec
<i>Trianthema</i> sp. <i>Python Pool</i> (G.R. Guerin & M.E. Trudgen GG 1023)	P2	2	27.5	21.6	Low succulent herb with pink-white flowers	Rocky loam, sandy or skeletal soils, clay	Sep-Nov

<i>Vigna triodiophila</i>	P3	15	59.7	0.5	Fine-stemmed prostrate or scrambling vine with a woody root with annual stems from a woody base	red-brown or brown, clayey sand or loam	Probably perennial but dying back to rootstock in dry (VLA, 2019).
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With regards to the northern section of the survey area, the Flora survey (VLA, 2019) recorded *Vigna triodiophila* (P3), *Terminalia supranitifolia* (P3) and *Rhynchosia bungarensis* (P4) outside the application area. The closest record of a priority flora species was *Terminalia supranitifolia* located approximately 70 metres from the application area. Generally, only a single plant was recorded from each location, apart from *Terminalia supranitifolia* where sometimes two or three plants were recorded on one rockpile. These three species are considered widespread on the Burrup Peninsula and have been recorded outside the survey area in similar habitats to those observed.

With regards to the southern section of the survey, the Flora survey (VLA, 2019) described the section as an area of hummock grassland, sandy surfaced alluvial soils and tussock grasslands over weakly gilgaied clays, intersected by both shallow grassy and deeper incised wooded drainage lines. A flora list comprising 106 identifiable species was recorded for these areas. No priority flora taxa were recorded. It was noted that the timing of the Flora survey (VLA, 2019) for the southern section was outside the nominal survey requirements, given the dry conditions preceding the survey.

Due to inappropriate timing of the survey, the assessment of impacts on priority flora was based on available Geographic Information System (GIS) databases. A review of these databases identified that there are no priority flora species recorded within the application area. The closest record of a priority flora taxa is *Stackhousia clementii* (P3) which is located approximately 70 metres southeast of the southern portion of the application area.

The proposed clearing of linear tracks and boreholes is not likely to impact on the conservation status of priority flora within the local area. In addition, the applicant has committed to re-contour and respread all borehole and test pit pads to promote regeneration of native vegetation and inspect all clearing areas following the first wet season. Any areas observed to not be regrowing with vegetation to be seeded with native species representative of the cleared vegetation communities (GHD, 2019a).

As discussed under Principle (c), the application area does not include, or is necessary for the continued existence of threatened flora.

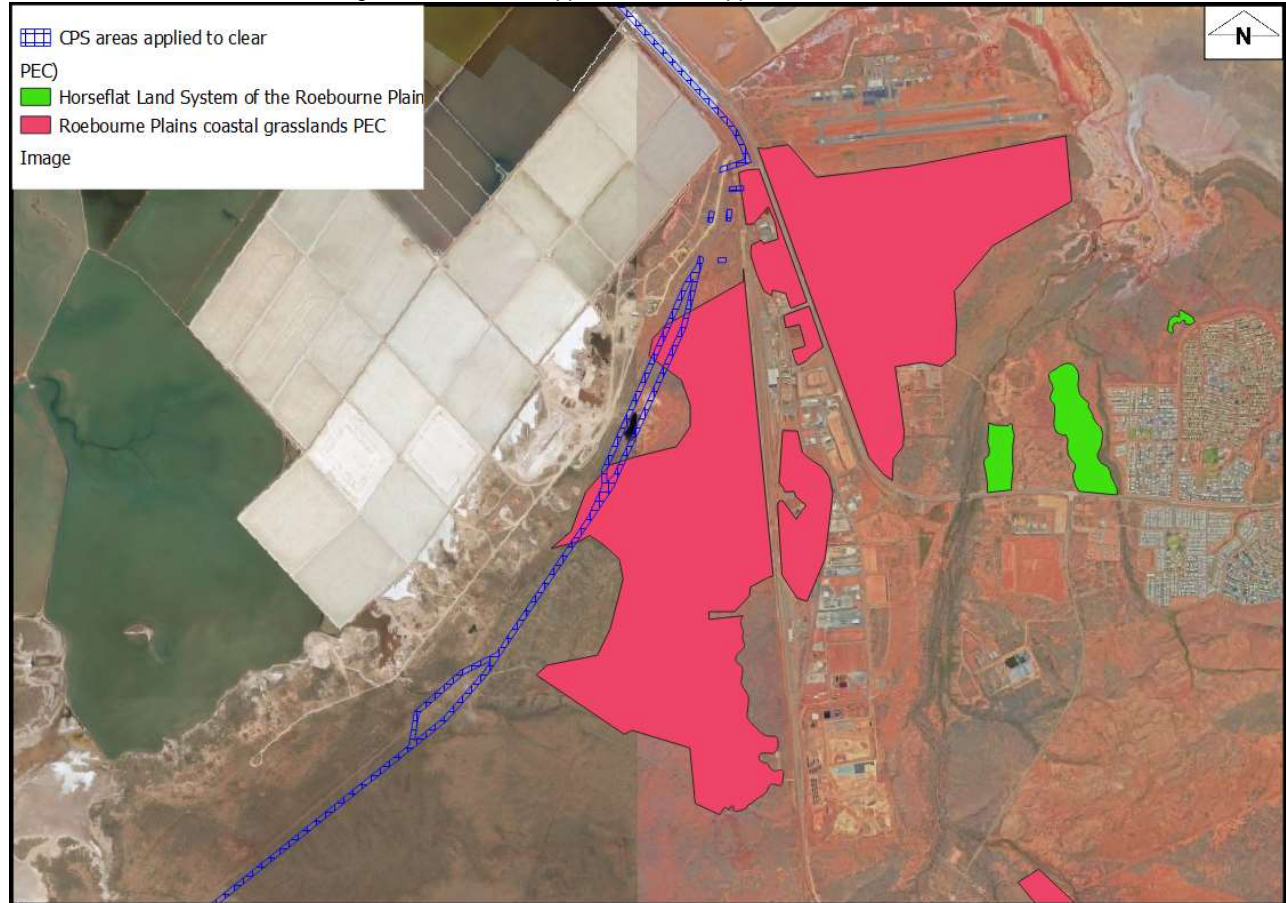
Threatened and Priority Ecological Communities

According to available databases, five priority ecological communities (PEC) have been mapped within the local area. Of these, approximately 11.54 hectares of the Roebourne Plains coastal grasslands with gilgai microrelief on deep cracking clays (Roebourne Plains gilgai grasslands) listed as Priority 1 PEC by DBCA is mapped within the southern section of the application area (Figure 3). This PEC is mapped across approximately 12,000 hectares within the local area. The Roebourne Plains gilgai grasslands occur on microrelief of deep cracking clays, surrounded by clay plains /flats and sandy coastal and alluvial plains. The gilgai depressions supports ephemeral and perennial tussock grasslands dominated by *Sorghum* sp. and *Eragrostis xerophila* (Roebourne Plains grass) along with other native species including *Astrebla pectinata* (barley mitchell grass), *Eriachne benthamii* (swamp wanderie grass), *Chrysopogon fallax* (golden beard grass) and *Panicum decompositum* (native millet).

Due to dry conditions preceding the Flora survey (VLA, 2019), the identification of any PECs in the southern section of the application area was not possible. Subsequently, Woodside Power Pty Ltd commissioned VLA to conduct a wet season survey to determine the extent of Roebourne Plains PEC in the application area and to address the limitations of the initial survey.

The applicant indicated that approximately 0.87 hectares of native vegetation representative of Roebourne Plain PEC scattered across different sites will be cleared. Noting this, the proposed clearing may impact on this PEC. Considering the extent to the proposed clearing within the larger clearing envelope, the PEC is mapped across approximately 12,000 hectares within the local area and the applicant's commitments to revegetate the clearing sites, the impacts on Roebourne Plains coastal grasslands PEC are likely to be minimal. Minimising and managing impacts to this PEC by restricting the clearing that can occur will mitigate impacts to this PEC.

Table 3 Roebourne Plains coastal grasslands PEC mapped within the application area



According to available databases, Barrup Peninsula rock pile communities (the rockpile) (Priority 1) PECs are mapped approximately 390 metres east of the northern section of the application area. These PECs are mapped across approximately 130 hectares within the local area. Several occurrences of the rockpile (P1) PECs were recorded within the northern area of the application area on large rockpiles and rockpile ridges, but also on smaller rockpiles on rocky slopes (VLA, 2019). More accurately, the rockpile PEC was recorded being abundant in vegetation types BaEsErv and TslcTe and as represented in low to moderate abundance in AiTe (BaTS), GplcTe and lchITe. Based on the estimated location of the proposed clearing, it was noted that about 0.54 hectares of the abovementioned vegetation types is mapped in the clearing envelope and about 0.029 hectares of native vegetation is proposed to be cleared. The Flora survey (VLA, 2019) noted that weeds are ingressing into the rockpile PECs as a result of previous disturbances, which then degrades and negates the PEC. Noting this, and the proposed clearing of 0.029 hectares in relation to its occurrence within the local area is small, the proposed clearing is not likely to significantly impact the rockpile PEC.

As discussed under Principle (d), the application area is not likely to comprise the whole or a part of, or is necessary for the maintenance of a state listed TEC.

Threatened and Priority Fauna

As discussed under Principle (b), the application area comprises vegetation that provides habitat for conservation significant fauna. However, the proposed clearing of linear tracks, test pits and boreholes is not likely to impact on the vegetation that comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna.

Summary

The application area contains vegetation that is representative of PECs and suitable habitat for conservation significant flora and fauna species. Given this, the proposed clearing may be at variance with this Principle. However, noting the proposed clearing will be restricted to linear tracks, test pits and boreholes, impacts to the abovementioned biodiversity values will be minimal.

The disturbance cause by the proposed clearing may impact adjacent native vegetation through an increase of weeds. Weed management practices will assist in mitigating this risk.

(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.

Proposed clearing may be at variance with this Principle

According to available databases, 61 conservation significant terrestrial fauna species have been recorded within the local area, including 12 threatened fauna species, nine priority fauna species, one other specially protected fauna species and 39 species listed under international agreement.

A level 1 fauna survey identified nine fauna habitat types within the application area (Table 3) (GHD, 2019b). Approximately 19.07 hectares of the application area is disturbed or previously cleared for minor roads, supportive infrastructure and salt works. These areas offer little value to fauna as habitat (GHD, 2019b).

Table 3. Fauna habitat types recorded within the application area (GHD, 2019b).

Fauna habitat type	Habitat value	Extent within clearing envelope (hectares)
Mudflat with tidal inundation, Mangroves and supportive scattered Samphire	High; contains foraging habitat for migratory birds, North-western Free-tailed Bat and Peregrine Falcon.	2.14
Rocky hills with exposed boulder piles	High; contains core habitat for Northern Quoll and Pilbara Olive Python, foraging habitat for the Peregrine Falcon.	1.67
Minor drainage lines	High; is a linear corridor of habitat likely to be utilised by Northern Quoll, Pilbara Olive Python and Peregrine Falcon (in rocky environments) and Northern Short-tailed Mouse and Lined Crevice Skink on the plain. A fauna corridor for all other species on the plain.	35.70
Hummock Grassland on Rocky Plain	Moderate to High; this habitat typically supports high diversity of small vertebrate fauna and provides foraging habitat to Peregrine Falcon. The Northern Short-tailed Mouse and Lined Crevice Skink may also utilise this habitat.	30.58
Hummock Grassland on Sandy Plain	Moderate to High; this habitat typically supports high diversity of small vertebrate fauna and provides foraging habitat to Peregrine Falcon. The Northern Short-tailed Mouse and Lined Crevice Skink may also utilise this habitat.	10.84
Hummock Grassland on Low Rocky Hills	Moderate to High; supportive habitat for species foraging and dispersal particularly the Northern Quoll and Pilbara Olive Python.	1.75
Tussock Grasslands on Cracking Clays	Moderate; provides seasonal opportunistic use by migratory species. The Northern Short-tailed Mouse and Lined Crevice Skink may also utilise this habitat.	365.69
Low Chenopod Shrublands	Moderate; opportunistic use of habitat by migratory species. The Northern Short-tailed Mouse and Lined Crevice Skink may also utilise this habitat.	6.54
Water Bodies	Moderate; opportunistic use of habitat by migratory species.	0.47
Disturbed	Very little; this environment occurs across cleared areas or comprise of corridors within the application area. These include minor roads and supportive infrastructure. Vegetation in these areas varied depending on the location of the disturbance.	19.07

The GHD (2019b) Fauna survey identify that the proposed clearing will involve clearing of native vegetation that is potential habitat for the following conservation significant fauna species: Northern Quoll, Pilbara Olive Python, Peregrine Falcon, North-western Free-tail Bat, Northern Short-tailed Mouse, Lined Soil-crevice Skink and Migratory birds.

Noting that some sections of the application area comprise high value fauna habitat types, the proposed clearing may be at variance with this Principle. However, the proposed clearing of linear tracks, test pits and boreholes is not likely to impact on the conservation status of conservation significant fauna. The applicant advised that to prevent fauna from becoming trapped or killed, excavations boreholes will be safely covered at the end of each day and backfilled upon completion. Test pits will be backfilled on the day of drilling/excavation. Potential impacts to Northern Quoll will be mitigated through not permitting any native vegetation associated with rocky hills with exposed boulder piles to be cleared. In addition, the applicant has committed to re-contour and respread all borehole and test pit pads to promote regeneration of native vegetation in order to reinstate fauna habitat. Woodside Power Pty Ltd also advised that all potential direct and indirect impacts to native fauna will be managed through environmental provisions in the Environmental Management Plan, which include actions as described in Section 3 of this report (GHD, 2019a).

The applicant acknowledged that the investigation may result in direct injury or mortality of fauna through driving over or collision with vehicles and machinery (road kill). The investigation will be undertaken during day time hours (06:00 to 18:00) for safety reasons, as native fauna are predominantly active at night, which will limit the potential for road kill of fauna (GHD, 2019a). In additional, clearing works undertaken in a slow, progressive manner in one direction (i.e. east to west) will ensure that fauna have adequate ability to escape into adjacent vegetation.

The Department of Water and Environmental Regulation noted that the timing of the survey was relatively late in the season for assessing migratory birds. Considering this, some migratory species might not have been identified during the survey. Noting that the migratory species are widespread and supported by the surrounding extensive, intact vegetation, the proposed clearing is not likely to impact on migratory species.

Ecological linkage

The fauna habitats of the application area are part of a much larger area of similar habitats within the local area. Noting this, the proposed clearing is not likely to impact on ecological linkages.

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.

Proposed clearing is not likely to be at variance with this Principle

According to available databases, there are no threatened flora species recorded within a 50 kilometre radius from the perimeter of the application area (WA Herbarium 1998-). The surveys did not record any threatened flora species within the application area (VLA, 2019).

Based on the above, the proposed clearing is not likely to be at variance with this 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.

Proposed clearing is not likely to be at variance with Principle

According to available databases, there are no state listed TECs recorded within a 50 kilometre radius from the perimeter of the application area. The flora and vegetation survey did not record any vegetation types within the application area to be representative of any state listed TECs (VLA, 2019).

Based on the above, the proposed clearing is not likely to be at variance with this 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.

Proposed clearing is not at variance with this Principle

The National Objectives and Targets for Biodiversity Conservation 2001-2005 include a target to have clearing controls in place that prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750 (i.e. pre-European settlement) (Commonwealth of Australia, 2001). This is the threshold level, below which species loss appears to accelerate exponentially.

The application area is located within the Pilbara IBRA bioregion, which retains approximately 99 per cent of its pre-European vegetation extent (Government of Western Australia, 2019) (Table 4). The mapped Beard vegetation associations 117, 127 and 589 all retain over 89 per cent of its pre-European vegetation extent within the bioregion (Government of Western Australia, 2019) (Table 4). In assessing the risk of further loss and subsequent cumulative effects, consideration has been given to the extent of native vegetation remaining within the local area. The local area retains approximately 97 per cent pre-European native vegetation cover.

Noting that all the abovementioned remnant vegetation extents are above the 30 per cent threshold, the proposed clearing is not likely to be significant as a remnant of native vegetation in an area that has been extensively cleared.

Given the above, the proposed clearing is not at variance with this Principle.

Table 4. Remnant vegetation extent (Government of Western Australia, 2019).

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed lands (ha)	Extent remaining in all DBCA managed lands (proportion of Pre-European extent) (%)
IBRA bioregion:a					
Pilbara	17,808,657.04	17,731,764.88	99.57	1,801,714.98	10.12
Beard vegetation association in IBRA bioregion:					
117	82,705.78	78,096.64	94.43	17,600.29	21.28
127	177,749.75	159,595.04	89.79	3,703.79	2.08
589	728,768.20	724,695.82	99.44	15,304.39	2.10

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Proposed clearing is at variance with this Principle

The application area crosses over the mapped boundaries of a number of minor, non-perennial watercourses. The proposed clearing will impact approximately 0.31 hectares of vegetation growing in association with ephemeral drainage lines and intertidal flats. A small number of geotechnical investigation sites are required on drainage lines in order to characterise the geotechnical

properties of the alluvial formations. Planning of the Investigation has minimised the proposed works on drainage lines as far as is practicable (GHD, 2019a).

As the proposed clearing includes vegetation growing in, or in association with a watercourse or wetland, the proposed clearing is at variance with this Principle. However, noting the extent of the proposed clearing and that the impact to riparian habitat is limited to scattered segments along the application area, the proposed clearing is not expected to significantly impact on riparian habitat within the local area.

To minimise the potential impact to drainage lines, the proposed clearing will be limited to access tracks only.

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

Proposed clearing is not likely to be at variance with this Principle

As described in section 2, five land systems are mapped within the application area (van Vreeswyk et al., 2004).

The majority of the application area occurs within the Horseflat land system, of which some portions are moderately to highly susceptible to erosion if vegetation is removed.

Most units of the Cheerwarra land system, and the coastal dunes of the Littoral land system are highly susceptible to wind erosion if vegetative cover is lost (van Vreeswyk et al., 2004).

The Granitic and Calcrete land systems are generally not susceptible to erosion (van Vreeswyk et al., 2004).

Based on the above, the proposed clearing may cause wind erosion in some portions of the application area. However, given the proposed clearing is for the purpose of geotechnical investigations, and the extent of clearing will be limited to test pits, drill pads and access tracks, it is not likely that the proposed clearing will cause appreciable land degradation in the form of wind erosion. Furthermore, the implementation of a rehabilitation condition will reduce any long term impacts from erosion.

Acid sulfate soils (ASS) may be present within alluvial drainage lines dissecting the Horseflat and Granitic land systems, sandy plains of the Cheerawarra land system, and intertidal flats of the Littoral land system. ASS are harmless when left in a waterlogged, undisturbed environment. However, when exposed to air, the iron sulfides in the soils react with oxygen and water to produce iron compounds and sulfuric acid. This acid can release other substances, including heavy metals, from the soil and into the surrounding environment and waterways. The proposed clearing of 11.93 hectares across a permit boundary of 477.06 hectares is not likely to alter any groundwater regimes that result in oxidation of ASS, causing appreciable land degradation.

Based on the above, the proposed clearing is not likely to be at variance with this 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.

Proposed clearing may be at variance with this Principle

The Murujuga National Park occurs immediately adjacent to the application area at the most northern extent. Due to the close proximity of the application area and conservation area, the proposed clearing may increase the spread of weeds into the Murujuga National Park.

Undertaking weed management measures will reduce the risk of weeds spreading into adjacent vegetation.

Based on the above, the proposed clearing may be at variance with this 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.

Proposed clearing is not likely to be at variance with this Principle

As discussed under Principle (f), there are numerous minor, non-perennial watercourses that intersect the application area. While the proposed clearing may increase sedimentation and runoff into the watercourse, the impacts are likely to be minimal and short term and are not likely to cause deterioration in the quality of surface water.

As discussed under Principle (g), portions of the application area has a moderate to high risk of ASS. However, given the nature of the proposed clearing being low impact (limited to drill pads, test pits and access tracks), and will not modify groundwater regimes, it is not likely that the proposed clearing will result in oxidation of ASS causing significant impacts to ground water quality.

Based on the above, the proposed clearing is not likely to be at variance with this Principle.

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Proposed clearing is not likely to be at variance with this Principle

Rainfall in this region is generally low and highly variable, typically resulting from cyclone events and localised thunderstorms (van Vreeswyk et al., 2004). The average annual rainfall is 292.4 millimetres with an actual areal evapotranspiration rate of ~300-400 millimetres per annum (BOM, 2020). Whilst temporary localised flooding may occur briefly following heavy rainfall events, the proposed clearing is not likely to increase the incidence or intensity of natural flooding events.

Based on the above, the proposed clearing is not likely to be at variance with this Principle.

Planning instruments and other relevant matters.

Planning instruments

Woodside has obtained Licences to Occupy Crown Land (00342/2018_A10596493 and 00342/2018_A10631865) under Section 91 of the *Land Administration Act 1997* (WA) (LA Act), issued by Department of Planning, Lands and Heritage (DPLH) in July 2019. The Licences granted the permitted use:

"Environmental, geological and cultural heritage surveys, geotechnical engineering investigation of ground conditions, assessment of construction materials and locate potential borrow pits and limited ground disturbing activities including access tracks clearing, boreholes, cone penetration tests, test pits and the temporary installation of water and meteorological monitoring equipment".

Licence A10596493 covers the application area south of Burrup Peninsula and Licence A10631865 covers the application area on the Burrup Peninsula.

Other matters

Aboriginal sites of heritage

There are several Aboriginal sites of significance mapped within the application area. It is the applicant's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

The Application Area is covered by Native Title, granted to the Ngarluma people and governed by the Ngarluma Aboriginal Corporation (NAC) established in 2005. Woodside has ongoing engagement with NAC regarding the Proposal and NAC is undertaking an Aboriginal heritage survey within the proposed application area. The Murujuga Aboriginal Corporation has been consulted in relation to activities on the Burrup Peninsula. Survey information has been utilised in planning for the works and no disturbance to any indigenous cultural site is predicted (GHD, 2019a).

Public submissions

The clearing permit application was advertised on the DWER website on 29 January 2020 with a 21 day submission period. One public submission has been received in relation to this application.

The Submission (2020a) objected to the proposed clearing due to five concerns. On 9 March 2020, the applicant requested a redacted version of the public comments to address the concerns raised in the submission. Subsequently, DWER sought the submitter's consent to forward their comments onto the applicant. The consent was received on 11 March 2020 (Submission, 2020b).

DWER has prepared a consolidated summary of the concerns raised in the submission and how these concerns were addressed by the applicant and DWER:

Woodside Energy Ltd (2020b) responded that they are of the opinion that all requirements of the native vegetation clearing regulations were met. Particularly, the application area was limited to the extent necessary for the proposed works, fauna and flora surveys have been undertaken to identify potential impacts on the environment and actions that would mitigate the potential impacts have been pursued or will be applied during the execution of the proposed works.

1. The Clearing Permit should not be granted as it is unclear how the Applicant has legal authority to undertake the clearing set out in the Application.

Woodside's response Woodside Energy Pty Ltd obtained appropriate licences to occupy the land under the application area from DPLH in accordance with Section 91 of the LA Act. Clause 2.1 of this the s91 Licence grant a non-exclusive right to a Licensee and the Licensee's Agent to access and use the Licence area for a permitted use, which includes clearing activities. Noting the definition of Licensee's Agent as defined in the s91 Licence, Woodside Power Pty Ltd is classified as Licensee's Agent, and therefore, has legal authority to undertake clearing. Given this, Woodside Power Pty Ltd applied for a Purpose Permit in accordance with section 51E(2)(b) of the EP Act.

DWER's response DWER during the validation of the Woodside Power Pty Ltd's application assessed the applicant's right to access land that is subject to the application. DWER determined that Woodside Power had sufficiently demonstrated that they have a right to access the land.

2. The Clearing Permit should not be granted as the purpose for which the clearing is proposed to be done is unclear, and it appears that the clearing is unnecessary for the purpose stipulated.

Woodside's response The clearing is thoroughly described in the supporting document prepared by GHD (2019a) which was submitted together with the application for a clearing permit. According to the applicant the proposed activities are in line with normal industry practices.

DWER's response In relation to the purpose of the application being unclear, DWER determined that the purpose of the clearing was adequately explained in the application form and supporting documents. In addition, to develop a better understanding of the proposed activities, DWER regularly consulted with the applicant during the assessment of the application regarding the clearing purpose.

Regarding the clearing being unnecessary, DWER took into account avoidance and minimisation actions implemented by the applicant, including the use of current existing cleared areas as far as practicable. Section 51E and 51O of the EP Act sets out the consideration the DWER's Chief Executive Officer (CEO) shall have in assessing a clearing matter and the DWER's (2014) *Guide to the assessment of application to clear native vegetation* (the Guide) outlines the DWER's considerations in undertaking an assessment of an application in more detail. The DWER's assessment of the clearing permit application is focussed on the potential impacts of clearing native vegetation, whereas the Applicant is responsible for planning and providing specifications of the proposed work within its jurisdiction.

3. DWER should consider in further detail the nature of the Part IV processes, including whether its obligations under section 38(5c) of the EP Act have been enlivened.

Woodside's response The potential impacts of geotechnical investigation were not determined significant enough to be referred to EPA. However, the development of the hybrid renewable power plant and transmission will be referred to EPA for assessment under Part IV of the EP Act

DWER's response Under Part IV of the EP Act s38(1) any person may refer a significant proposal to EPA. A significant proposal is one that is likely, if implemented, to have a significant effect on the environment (s37B(1)). Following the assessment, DWER determined that the proposed clearing is not likely to have a significant effect on the environment, and therefore, a referral to EPA was not required for this purpose.

4. DWER should ensure that in assessing the Application there is proper scrutiny of supporting documentation such as flora and fauna surveys.

Woodside's response Woodside Energy Pty Ltd advised that comprehensive fauna and flora surveys were undertaken to provide thorough supporting information for the native vegetation clearing permit application.

DWER's response The clearing permit application has been assessed against the clearing principles, planning instruments and other matters in accordance with section 51O of the EP Act. Supporting documentation, including flora and fauna surveys, have also been reviewed. DWER concluded that the Flora (VLA, 2019) and the Fauna survey have been conducted in accordance with the EPA *Technical Guidance – Flora and Vegetation surveys for Environmental Impact Assessment* and *Technical Guide – Terrestrial Fauna Survey* respectively.

5. In any grant of the Clearing Permit, DWER should ensure conditions are clear, enforceable and effective.

Woodside's response Woodside Energy Pty Ltd emphasised their commitments to undertake the proposed activities in accordance with relevant regulatory requirements.

DWER's response Given that the proposed clearing is unlikely to lead to an unacceptable risk to the environment, the Clearing Permit has been granted subject to conditions outlined under Section 1.5.

5. References

- Bureau of Meteorology (BOM) (2020). Climate Statistics for Australian locations, Summary statistics Karratha Aero. http://www.bom.gov.au/climate/averages/tables/cw_004083.shtml (Accessed March 2020).
- Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.
- Ecoscape. (2014). Rutila Resources Railway Corridor Flora and Vegetation Assessment. Retrieved from https://consultation.epa.wa.gov.au/seven-day-comment-on-referrals/ballaballa-railway/supporting_documents/CMS14012%20Flora%20and%20vegetation.pdf
- GHD (2019a). Woodside Energy Ltd Geotechnical Investigations Clearing Permit Supporting Documentation. DWER Ref: A1856569.
- GHD (2019b). Woodside Energy Ltd Geotechnical Investigation Fauna Survey. DWER Ref: A1856612.
- Government of Western Australia. (2019). 2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of March 2019. WA Department of Biodiversity, Conservation and Attractions. <https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics>
- Shepherd, D.P., Beeston, G.R., and Hopkins, A.J. (2002). Native vegetation in Western Australia: extent, type and status. Department of Agriculture and Food, Western Australia, Perth. Report 249.
- Submission. (2020a). The submission received in relation to clearing permit application CPS 8782/1. Received on 18 February 2020 by Department of Water and Environmental Regulation. DWER Ref: A1869252.
- Submission. (2020b). Submitter's consent to forward the comments onto the applicant. DWER Ref: A1878151.
- GHD 2019a Woodside Energy Ltd Woodside Energy – Geotechnical Investigations Clearing Permit Supporting Documentation Government of Western Australia (2019).
- Trudgen, M.E. 1988. A Report of the Flora and Vegetation of the Port Kennedy Area. Unpublished report to Bowman Bishaw and Associates.
- Vicki Long & Associates (VLA) (2019). Woodside Energy Ltd - Geotechnical Investigations Flora And Vegetation Surveys Desktop Assessment Report. Report for Woodside Energy Ltd, prepared by Vicki Long & Associates, December 2019. DWER Ref: A1856606.

Woodside Energy Ltd. (2020a). Application form for the clearing permit application CPS 8782/1. Received by DWER on 7 January 2020. DWER Ref: A1856561.

Woodside Energy Ltd. (2020b). Response to the comments raised in the submission. Received by DWER on 9 April 2020. DWER Ref: A1883687.

Van Vreeswyk, A.M.E., Payne, A.L., Hennig, P., and Leighton, K.A. (2004). An Inventory and Condition Survey of the Pilbara Region, Western Australia. Department of Agriculture, Western Australia.

Western Australian Herbarium (1998-). FloraBase - the Western Australian Flora. Department of Biodiversity, Conservation and Attractions. <https://florabase.dpaw.wa.gov.au/> (Accessed March 2020).

GIS Databases:

- Aboriginal Heritage Places
- DBCA – Lands of Interest
- DBCA Legislated Lands and Waters
- Directory of Important Wetlands in Australia – Western Australia
- Environmentally Sensitive Areas
- IBRA Vegetation Statistics
- Soil and Landscape Mapping – Best Available
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)