GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 3445/5
Permit Holder:	BHP Iron Ore Pty Ltd
Duration of Permit:	14 February 2010 – 30 November 2035

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

PART I –CLEARING AUTHORISED

1. Clearing authorised (purpose)

The permit holder is authorised to *clear native vegetation* for the purposes of railway construction and maintenance and associated works, installation and relocation of power lines, installation of fibre optic cables and construction and maintenance of water pipelines.

2. Land on which clearing is to be done

Mineral Lease 244SA (Lot 560 on Deposited Plan 418655, Lot 561 on Deposited Plan 418655, Lot 351 on Deposited Plan 74327, Lot 19 on Deposited Plan 48921, unallocated crown land (PIN 711007), Lot 22 on Deposited Plan 220355 and Lot 29 on Deposited Plan 238020), Newman

Mining Tenement L52/109 (Lot 29 on Deposited Plan 238020) Newman.

3. Clearing authorised

The Permit Holder must not *clear* more than 260.33 hectares of native vegetation within the combined areas cross-hatched yellow in Figure 1 of Schedule 1.

4. Period during which clearing is authorised

The permit holder must not *clear* any native vegetation after 30 November 2030.

PART II –MANAGEMENT PROCEDURES

5. Avoid, minimise, and reduce 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.

6. 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 *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.

7. Retain vegetative material and topsoil, revegetation and rehabilitation (temporary clearing)

(a) The permit holder shall 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) Within twelve months of the area no longer being required for the purposes of this permit the permit holder must *revegetate* and *rehabilitate* the area cross-hatched yellow on Figure 1 of Schedule 1 by:

(i) re-shaping the surface of the land so that it is consistent with the surrounding five metres land;

(ii) ripping the ground on the contour to remove soil compaction;

(iii) laying the vegetative material and topsoil retained under condition 7(a) on the cleared area; and

(iv) ensuring only *local provenance* seeds and propagating material are used to *revegetate* and *rehabilitate* the area.

(c) Within twenty-four months of undertaking *revegetation* and *rehabilitation* in accordance with condition 7(b) of this permit, the permit holder must:

(i) engage an *environmental specialist* to determine the species composition, structure and density of the area *revegetated* and *rehabilitated*; and

(ii) where, in the opinion of an *environmental specialist*, the composition structure and density determined under condition 7(c)(i) of this permit will

not result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, the permit holder must undertake additional *planting* or *direct seeding* of native vegetation in accordance with the requirements of condition 7(b)(i) of this permit.

(d) Where additional *planting* or *direct seeding* of native vegetation is undertaken in accordance with condition 7(c)(ii) of this permit, the permit holder shall repeat condition 7(c)(i) and 7(c)(ii) within 24 months of undertaking the additional *planting* or *direct seeding* of native vegetation.

(e) Where a determination by an *environmental specialist* 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, as determined in condition 7(c)(i) and 7(c)(ii) of this permit, that determination shall be submitted for the CEO's consideration. If the CEO does not agree with the determination made under Condition 7(c)(ii), the CEO may require the permit holder to undertake additional *planting* and *direct seeding* in accordance with the requirements under condition 7(c)(ii).

8. Wind and water erosion management

The Permit Holder shall not *clear* native vegetation unless commencing activities authorised under this Permit within three months of the clearing being undertaken.

9. Vegetation management – drainage line surface flow

The permit holder must:

(a) avoid *clearing* within drainage lines, where practicable; and

(b) maintain the existing surface flow of any drainage line that is to be impacted by the authorised *clearing*.

10. Fauna management - general

The permit holder must:

(a) conduct all clearing authorised under this permit in one direction towards adjacent vegetation, where practicable; and

(b) allow a reasonable time for fauna present within the area being cleared to move into that adjacent native vegetation ahead of the clearing activity.

11. Fauna management – habitat retention

The permit holder shall ensure no *clearing* occurs within the areas cross-hatched red in Figure 2 and Figure 3 of Schedule 1 of this permit except to undertake *rehabilitation* and *revegetation* activities in accordance with Condition 7.

12. Fauna management – western pebble mound mouse

(a) Within fourteen (14) days prior to undertaking any *clearing* authorised within the yellow hatched areas of Figure 1 of Schedule 1, the permit holder shall engage a fauna spotter to inspect the area to be cleared to undertake a clearance

check for any active western pebble-mound mouse (*Pseudomys chapmani*) mounds.

(b) Where active pebble mound mouse mound(s) are identified under condition 12(a), no clearing is to occur within 10-metres of the identified active pebble mound mouse mound, unless otherwise approved by the CEO.

(c) Where active western pebble-mound mouse mounds are identified under condition 12(a) of this permit, the permit holder must include the following in a report submitted to the CEO within three months of undertaking any *clearing* authorised under this permit:

(i) the location of any western pebble-mound mouse mounds 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) the name of the fauna spotter that undertook clearance surveys under condition 12(a) of this permit; and

(iii) the methodology used to survey the permit area.

13. Flora Management

(a) Prior to undertaking any clearing authorised under this permit, the permit holder shall engage a botanist to conduct a targeted flora survey of the area cross hatched green on Figure 4 of Schedule 1 for the presence of *threatened flora and priority flora*:

(b) Where *threatened flora* and/or *priority flora* are identified in relation to condition 13(a) of this permit, the permit holder must ensure:

(i) no clearing occurs within 50 metres of identified threatened flora unless first approved by the CEO;

(ii) no clearing of identified priority flora occurs unless first approved by the CEO; and

(iii) no clearing occurs within 10 metres of identified priority flora unless first approved by the CEO.

(c) Prior to undertaking any clearing authorised under this permit, the permit holder shall provide the results of the targeted flora survey in a report to the CEO.

(d) If *threatened flora* or *priority flora* are identified within the area cross hatched green on Figure 4 of Schedule 1, the targeted flora survey report must include the following;

(i) the location of each threatened flora or priority flora, either as the location of individual plants, or where this is not practical, the areal extent of the population and an estimate of the number of plants, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA20), expressing the geographical coordinates in Eastings and Northings or decimal degrees;

(ii) the species name of each *threatened flora* or *priority flora* identified; and

(iii) the methodology, used to survey the area cross hatched green on Figure 4 of Schedule 1.

PART III - RECORD KEEPING AND REPORTING

14. Records must be kept

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

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 taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 5; (f) actions taken to minimise the risk of the introduction and spread of *weeds* in accordance with condition 6; (g) actions taken to manage and mitigate impacts to wind and water erosion in accordance with condition 8; (h) actions taken to manage and mitigate impacts to drainage lines in accordance with condition 9; and (i) actions taken to manage impacts to fauna in accordance with condition 10.
2.	In relation to the revegetation and rehabilitation of areas pursuant to condition 7	(a) the location of any *revegetated* and *rehabilitated* areas, recorded 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; (b) a description of the *revegetation* and *rehabilitation* activities undertaken; (c) the size of the area *revegetated* and *rehabilitated* (in hectares); (d) the date(s) on which the *revegetation* and *rehabilitation* was undertaken; (e) action and timing of remedial actions undertaken within the area(s) that was revegetated and rehabilitated in accordance with condition 7(c)(ii) to 7(e); and

No.	Relevant matter	Specifications
		(f) a copy of the *environmental specialist's* report in accordance with condition 7(c)(ii) and 7(e).

15. Reporting

(a) The Permit Holder must provide to the CEO, on or before 1 October of each year, a written report:

(i) of records required under condition 14 of this Permit; and

(ii) concerning activities done by the Permit Holder under this Permit between 1 July and 30 June of the preceding year.

(b) If no *clearing* authorised under this Permit was undertaken between 1 July to 30 June of the preceding financial 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 30 November 2035, the Permit Holder must provide to the CEO a written report of records required under condition 14 of this Permit where these records have not already been provided under condition 15(a) of this Permit.

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.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
direct seeding	means a method of re-establishing vegetation through the 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 to fill a depression.
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)
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

Term	Definition
	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.
planting	means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species.
priority flora	means those plant taxa described as priority flora classes 1, 2, 3, or 4 in the Department of Biodiversity, Conservation and Attractions' Threatened and Priority Flora List for Western Australia (as amended).
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 regeneration, direct seeding and/or planting, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area;
threatened flora	means those plant taxa listed as threatened flora under the *Biodiversity Conservation Act 2016*.
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

C Robertson
26.11.2025
12.56PM

Caron Robertson
MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20 of the Environmental Protection Act 1986

26 November 2025

Schedule 1

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

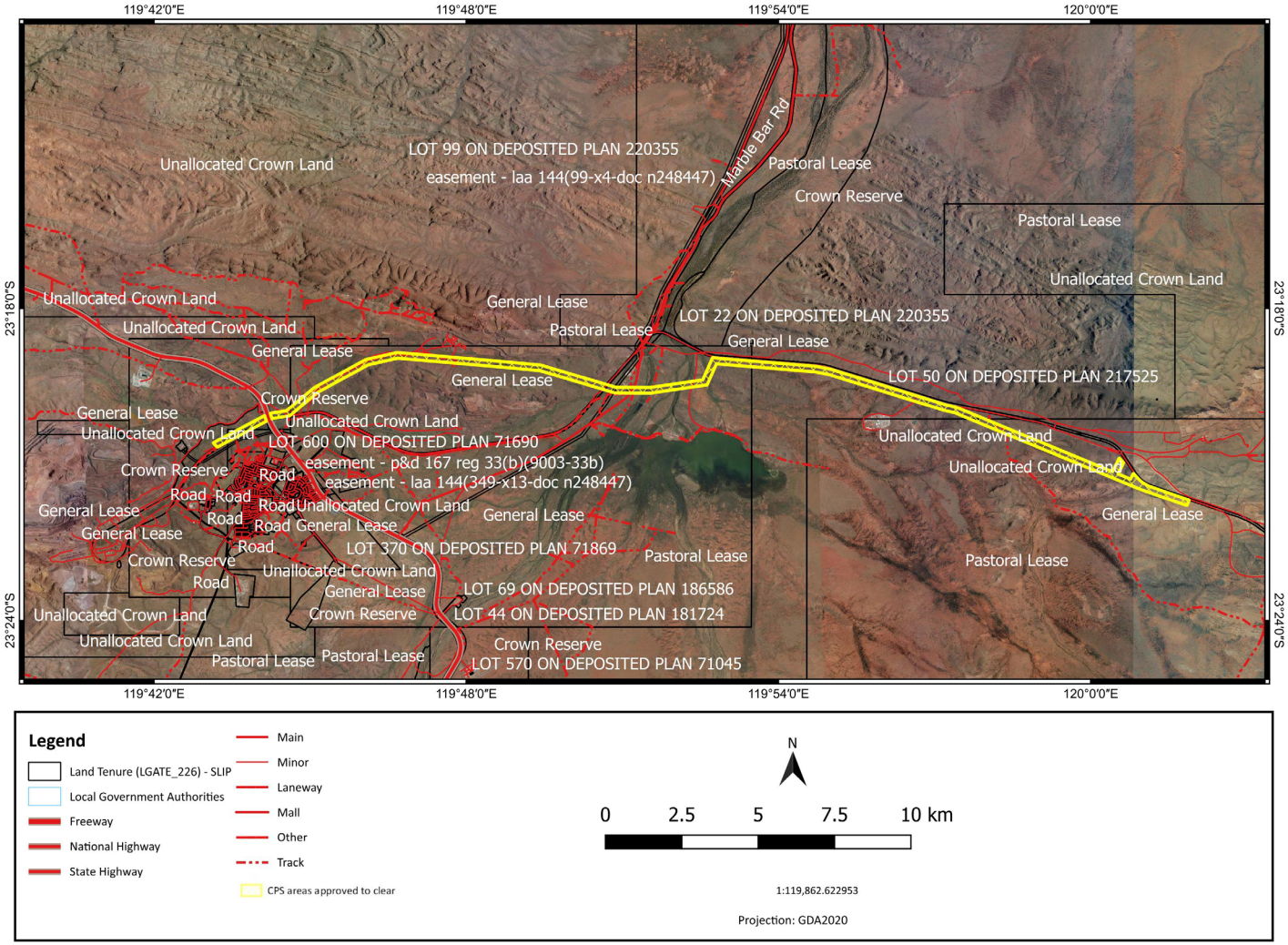

Figure 1: Map of the boundary of the area within which clearing may occur.

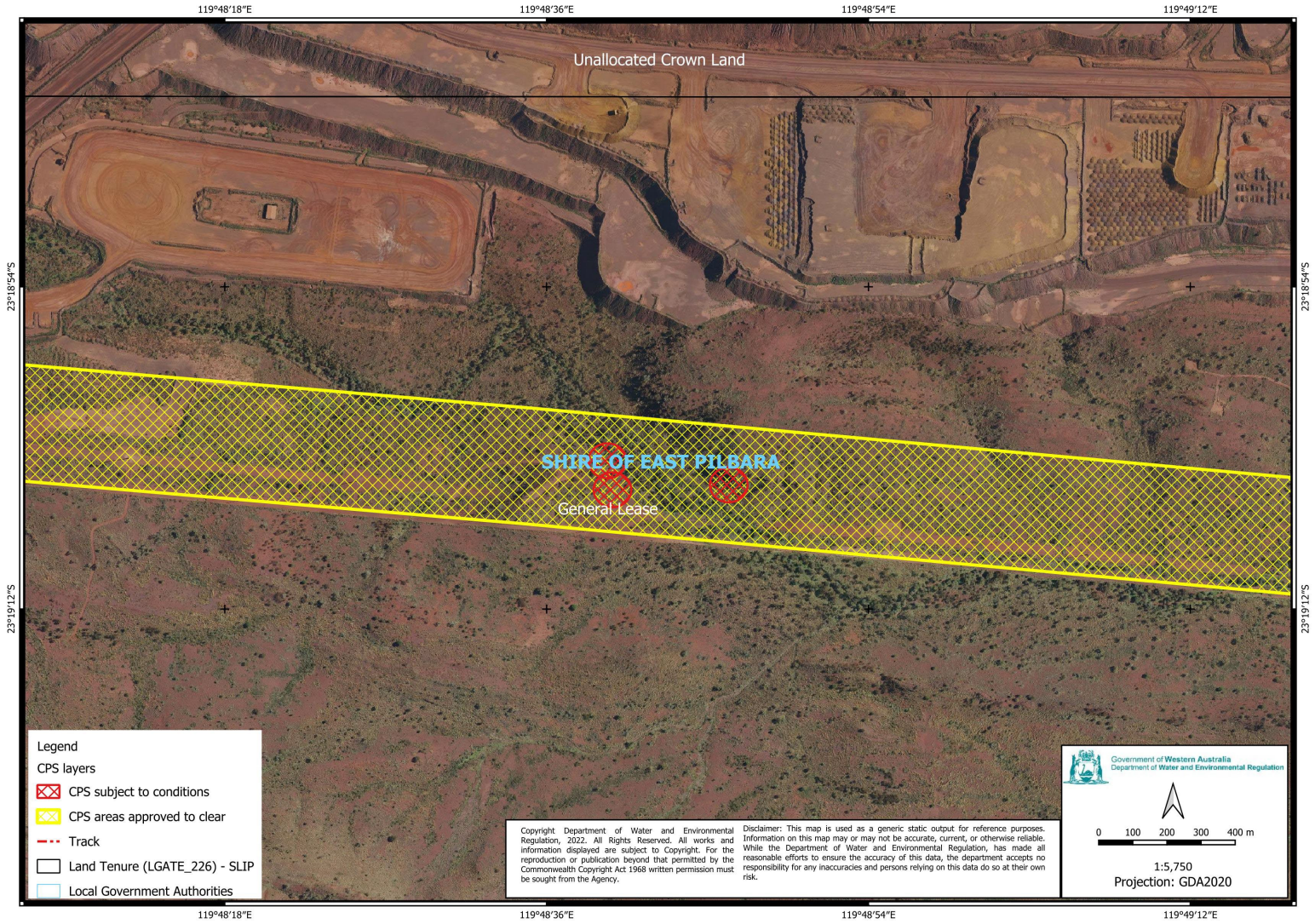

Figure 2: Map of the boundary of the area to which condition 11 applies.

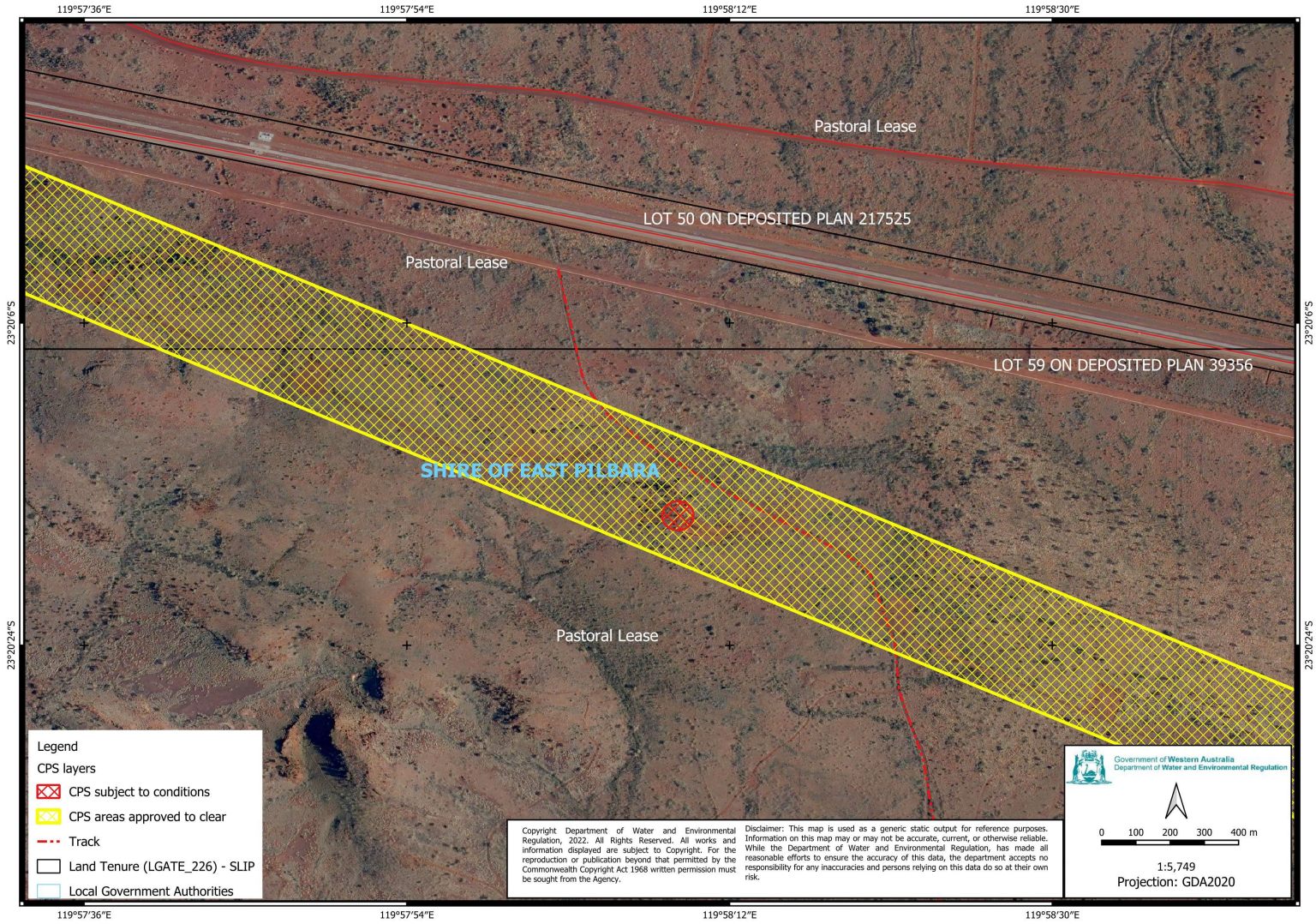

Figure 3: Map of the boundary of the area to which condition 11 applies.

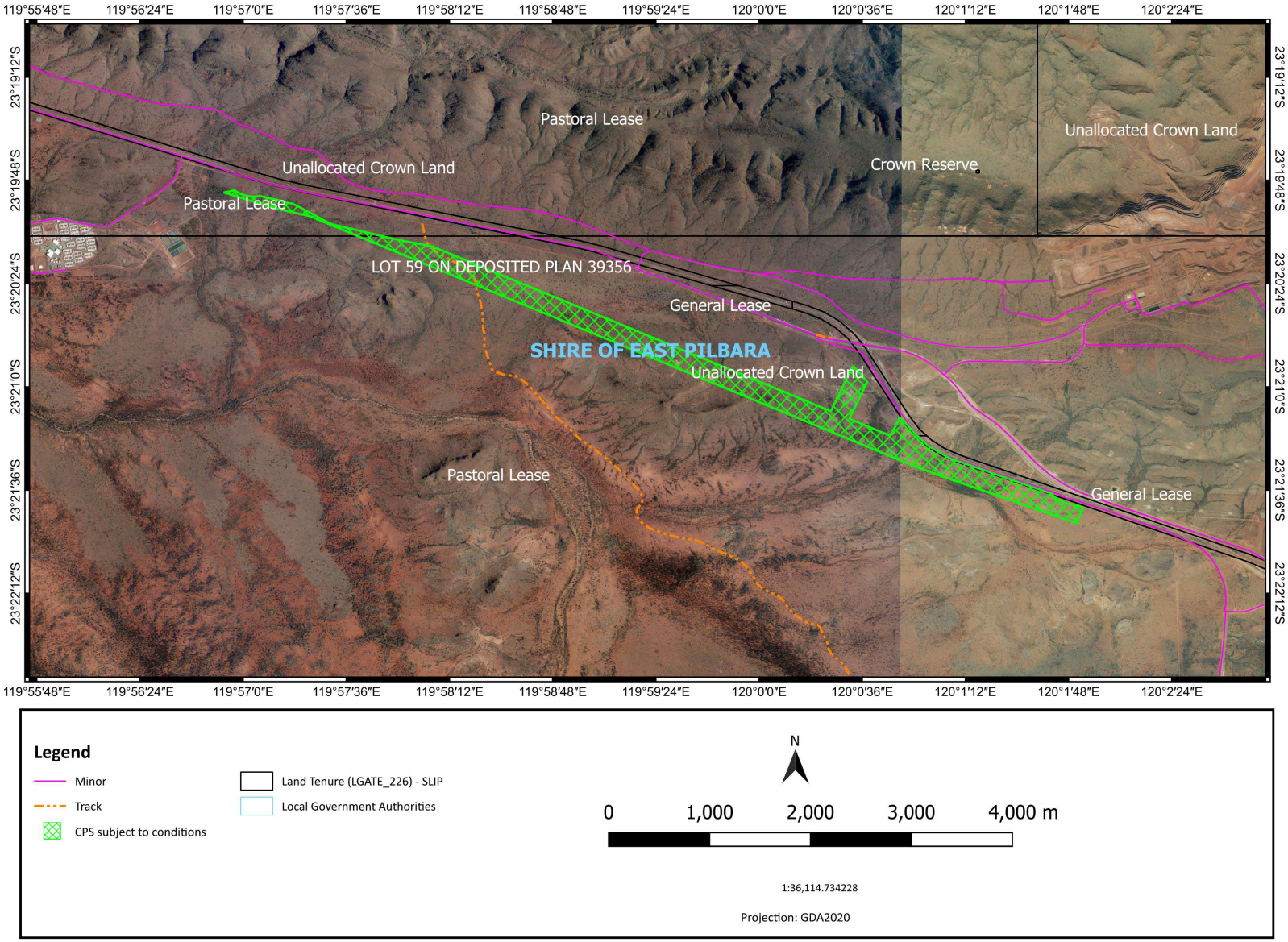

Figure 4: Map of the boundary of the area to which condition 13 applies.

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 3445/5
Permit type:	Purpose permit
Applicant name:	BHP Iron Ore Pty Ltd
Application received:	15 October 2024
Application area:	260.33 hectares of native vegetation
Purpose of clearing:	Railway construction and maintenance and associated works, installation and relocation of power lines, installation of fibre optic cables and construction and maintenance of water pipes
Method of clearing:	Mechanical
Property:	Mineral Lease 244SA Miscellaneous Licence L52/109
Location (LGA area/s):	Shire of East Pilbara
Localities (suburb/s):	Newman

1.2. Description of clearing activities

The applicant-initiated this amendment application CPS 3445/5 to make the following revisions to CPS 3445/4:

- Extend the permit duration to 30 November 2035;
- Add a condition limiting the clearing period to 30 November 2030;
- Extend the final reporting date to 30 November 2035;
- Update the Permit Holder to BHP Iron Ore Pty Ltd.;
- Consolidate the permit purpose; and
- Remove a 2.1-hectare area from the permitted clearing area.

The applicant proposes to clear 260.33 hectares of native vegetation within a 700-hectare footprint. This footprint is contained within two linear areas that are approximately 1.9 kilometres and 32.5 kilometres long. Clearing under CPS 3445/4 commenced in 2010 with a total of 52.28 ha cleared and 6.5 ha rehabilitated to the end of June 2024 (BHP, 2024b). All remaining cleared areas are still required for the purpose for which they were cleared.

1.3. Decision on application

Decision:	Granted
Decision date:	26 November 2025
Decision area:	260.33 hectares of native vegetation

1.4. Reasons for decision

This clearing permit amendment 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 (the department) advertised the application for 21 days and 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.1), the findings of a flora and fauna survey (see Appendix E), the clearing principles set out in Schedule 5 of the EP Act (see Appendix D), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3).

The assessment has not changed since the assessment for CPS 3445/4, except in the case of principles (a), (b) and (f), due to:

- new fauna survey information made available to the department, indicating the application area may contain habitat for multiple conservation signifcant fauna species, with one of these species (western pebble mound mouse) confirmed to be present within the application area;
- no recent flora and vegetation survey data available for a portion of the application area, leading to uncertainty regarding the presence of conservation significant flora species; and
- change to the department's consideration of principle (f).

The Delegated Officer determined that the proposed amendments are not likely to lead to an unacceptable risk to environmental values, subject to appropriate conditions being placed on the permit, including specific fauna and flora management conditions to mitigate the above risks. These conditions include the following requirements:

- avoid, minimise to reduce the impacts and extent of clearing
- take hygiene steps to minimise the risk of the introduction and spread of weeds,
- revegattion and rehwbailitation of temporarily cleared areas;
- wind and water erosion management measures;
- drainage line mangement measures;
- general fauna management measures;
- retention of areas containg caves, and buffers around these caves, which provide bat roosting habitat;
- pre-clearing inspection of application area for active pebble mound mosue mounds, and retention of these mounds and a buffer surrounding them; and
- pre-clearance survey of an eastern portion of the application area, and retention of any conservation signifciant flora found with buffer zones.

1.5. Site map

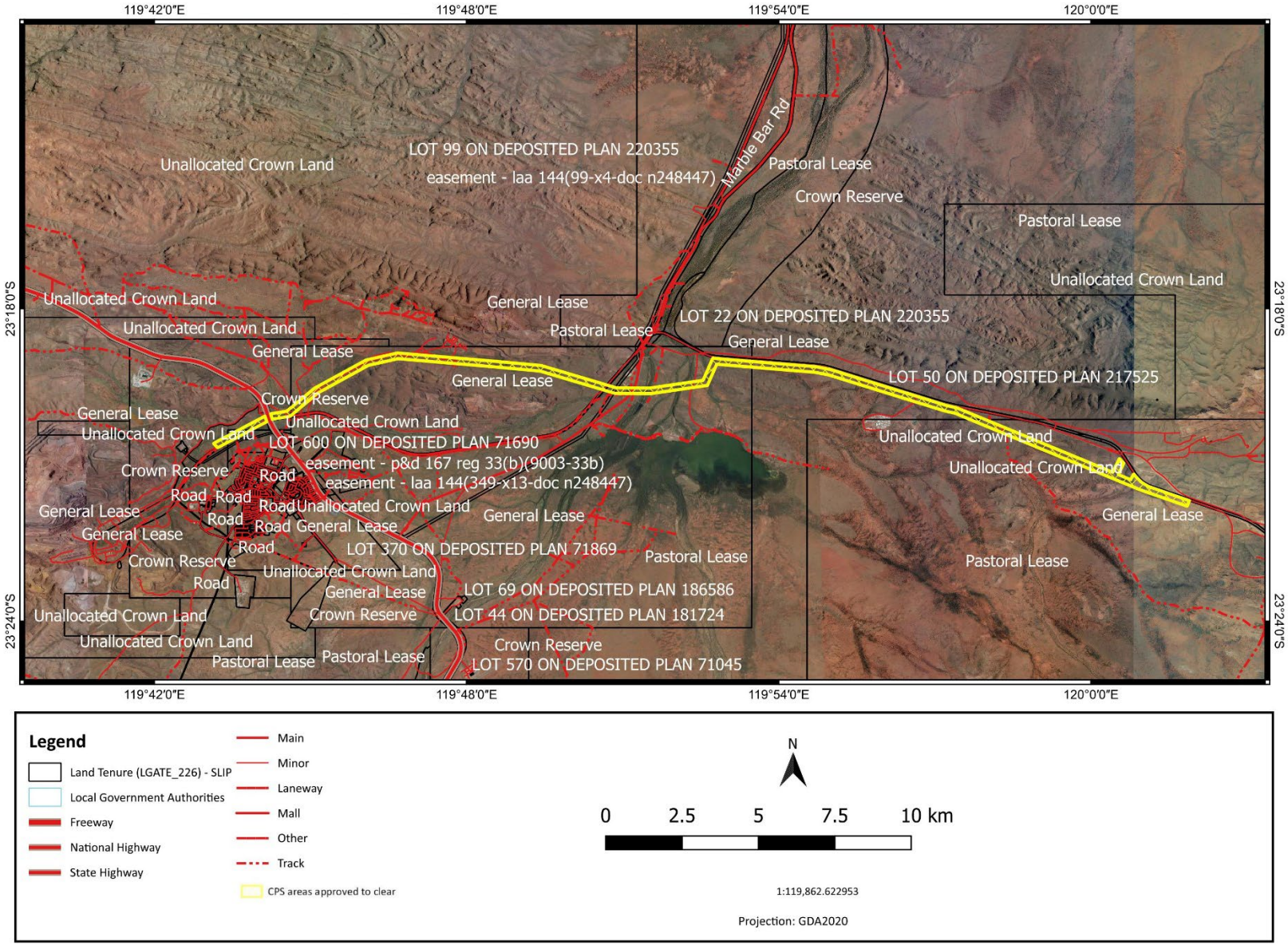

Figure 1. Map of the application area. The areas crosshatched yellow indicates the areas authorised to be cleared under the granted clearing permit.

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 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)

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, 2020)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

The applicant submitted the following information regarding avoidance and mitigation measures:

- Disturbance will be kept to the smallest size possible with previously cleared areas used where practicable. (BHP, 2024a)
- Should any Priority flora populations be identified they will be avoided using a 10 m buffer where practicable. (BHP, 2024b)
- Control of established weed populations will be carried out according to BHP's standard Weed Control and Management Procedures (BHP, 2024b)
- Active Pebble-mouse mounds will be avoided using a 10 m buffer, where practicable (BHP, 2024b).
- Erosion and watercourse management:
    - Appropriate surface water management practices will be implemented to minimise erosion and minimise potential impacts on the quality of surface water
    - Where practicable, existing cleared tracks will be used to cross the unnamed non-perennial minor drainage line.
    - If it is necessary for new crossings to be installed, clearing will be kept to a bare minimum and will be constructed flat level to the surface (i.e. a simple clearing with no bunds) to maintain the natural flow of surface water (BHP, 2024b)

During the assessment the applicant also committed to the following measures to be conditioned on the permit additional to those conditioned in CPS 3445/4:

- avoid caves identified during the fauna survey (ENV, 2009a) and a 25-30 metre buffer of vegetation around them;
- avoid active pebble mound mouse mounds and a 10 metre buffer of vegetation around them;
- avoid clearing within drainage lines, where practicable; and maintain the existing surface flow of any drainage line that is to be impacted by the authorised clearing; and
- complete a pre-clearance survey of an area with no current flora survey in the eastern portion of the application area, and not undertake clearing of any conservation significant flora, and buffer areas surrounding these flora, identified in this survey, unless approved by the CEO.

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

3.2. Assessment of impacts on environmental values

A review of current environmental information (Appendix B) reveals that the assessment against principles (a) and (b) has changed since CPS 3445/4 was granted. As such the assessment of impacts to impacts to habitat for conservation significant fauna and flora are discussed below. While the consideration of principle (f) has changed from "may be at variance" to "at variance" since CPS 3445/4 was granted, the assessment of impacts of the clearing to watercourses has not changed, and can be found in Appendix C, with further discussion of this assessment in the decision report for CPS 3445/1.

The assessment against the remaining clearing principles has not changed significantly from the Clearing Permit Decision Report CPS 3445/4, and can be found in Appendix C, with further discussion of this assessment in the decision report for CPS 3445/1.

3.2.1. Biological values (fauna) - Clearing Principles (a) and (b)

Assessment

Noting the site characteristics (see Appendix B), mapped soil and vegetation types present within the application area, and habitat present within the application area, impacts of the clearing to the following conservation significant fauna species required further consideration:

- *Pezoporus occidentalis* (night parrot) (Critically Endangered)
- *Dasyurus hallucatus* (northern quoll) (Endangered)
- *Petrogale lateralis lateralis* (black-flanked rock-wallaby, black-footed rock-wallaby, mororong) (Endangered)
- *Liasis olivaceus barroni* (Pilbara olive python) (Vulnerable)
- *Macroderma gigas* (ghost bat) (Vulnerable)
- *Macrotis lagotis* (bilby, dalgyte, ninu) (Vulnerable)
- *Rhinonicteris aurantia* (Pilbara form) (Pilbara leaf-nosed bat) (Vulnerable)
- *Anilios ganei* (Gane's blind snake (Pilbara)) (Priority 1)
- *Ctenotus uber johnstonei* (spotted ctenotus (northeast)) (Priority 2)
- *Antechinomys longicaudata* (long-tailed dunnart) (Priority 4)
- *Dasycercus blythi* (brush-tailed mulgara) (Priority 4)
- *Pseudomys chapmani* (western pebble-mound mouse, ngadji) (Priority 4)
- *Apus pacificus* (fork-tailed swift) (Migratory)
- *Calidris acuminata* (sharp-tailed sandpiper) (Migratory)
- *Plegadis falcinellus* (glossy ibis) (Migratory)
- *Tringa glareola* (wood sandpiper) (Migratory)
- *Tringa nebularia* (common greenshank) (Migratory)
- *Tringa stagnatilis* (marsh sandpiper) (Migratory)

Night parrot

The night parrot roosts and nests in patches of long unburnt and *Triodia* (spinifex) and forages in variably sized areas of high vegetative or seed productivity, such as alluvial floodplains, shallow depressions fed by local run-off (such as gilgais), floodplains, salt or clay pans, and salt-lake margins (DCCEEW, 2025a). While these habitats may be present within the application area, there is only one record of this species (from 1975) in available databases present within the local area, despite numerous fauna surveys for nearby projects being conducted within the local area. A targeted search for this species covering a portion of the application area, using acoustic recording in potentially suitable habitat, did not record the presence of this species (Biologic, 2023). As such, the species is considered unlikely to occur in the application area and the proposed clearing is unlikely to result in signifciant impacts to night parrot.

Northern quoll

The northern quoll occurs in a wide variety of habitats throughout its range, however habitats considered critical to the survival of northern quoll are those where northern quolls are least exposed to threats or least likely to be in the future. As such rocky areas are considered to be critical habitat for northern quoll (Hill and Ward, 2010). While all habitat present within the application area may provide suitable habitat for northern quoll, areas of "hillcrest/hillslope" habitat (BHP, 2024), may provide more significant habitat for the northern quoll than other habitat types. However, impacts to northern quoll habitat are not considered to be significant noting:

- a targeted search for this species in a survey fauna covering a portion of the application area (Biologic, 2023) did not record the presence of this species;

- records of the species in the vicinity of the application area are sparse, suggesting that the species' occurrence within the application area would be rare, and it is unlikely a resident population occurs within the application area permanently (Biologic, 2023);
- the level of habitat disturbance from the proposed linear clearing is low in a regional context; and
- areas of temporary clearing will be revegetated.

Pilbara olive python

The olive python (Pilbara subspecies) prefers deep gorges and water holes in the ranges of the Pilbara region (Pearson, 1993). Although not found in a survey fauna covering a portion of the application area in 2023, the species has been recorded within the application area previously (Biologic, 2023) , and of the habitats present within the application area, is most likely to inhabit the "drainage area/floodplain", "minor drainage line" and "major drainage line" (BHP, 2024) habitats identified within the application area. However, impacts to olive python habitat are not considered to be significant noting:

- impacts to drainage line vegetation will be minimised through the applicant's mitigation actions (see Section 3.1) and as a condition on the permit;
- the level of habitat disturbance from the proposed linear clearing is low in a regional context; and
- areas of temporary clearing will be revegetated.

Ghost bat and Pilbara leaf-nosed bat

The Ghost Bat is a carnivorous species with a patchy distribution of isolated populations within the semi-desert Pilbara region and the mesic Kimberley, as well as other locations in the Northern Territory and Queensland (Bat Call WA, 2021a). The Ghost bat roosts in deep, complex caves beneath bluffs of low rounded hills, often composed of Marra Mamba Iron Formation or banded iron formation, granite rock piles and abandoned mines within the Pilbara region (Armstrong & Anstee, 2000). They will often forage more broadly across habitats, often utilising drainage lines and other habitats where prey species are likely to be most abundant (Richards et al., 2008; Tidemann et al., 1985). The Pilbara Leaf-nosed Bat is a slightly divergent form of the Orange Leaf-nosed Bat that occurs only in the Pilbara region. This form is widely distributed throughout the Pilbara, with the exception of the area between Karratha and the Fortescue River, where there are no known permanent diurnal roost sites (Bat Call WA, 2021b). The Pilbara leaf-nosed bat roosts in undisturbed caves, although deep fissures or abandoned mine shafts and forages within and in the vicinity of roost caves and more broadly along waterbodies with suitable fringing vegetation supporting prey species (TSSC, 2016b).

While these bats may forage across the entire application area, "hillcrest/hillslope", "minor drainage line", "major drainage line" and "floodplain" habitat types present within the application area (BHP, 2024) may provide the best habitat for these bat species. Four caves within the application area may provide roosting habitat for these bat species, although were not considered large enough to provide breeding habitat (ENV, 2009). Pilbara leaf-nosed bat was detected via ultrasonic recording in the vicinity of (although not within) the application area in 2023 (Biologic, 2023) and ghost bats were detected to the east of (although not within) the application area in a survey encompassing the eastern portion of the application area conducted in 2021 (GHD, 2021). As such, these bat species are considered likely to forage and may also roost within caves within the application area. However, impacts to ghost bat and Pilbara leaf-nosed bat habitat are not considered to be significant noting:

- clearing of caves (i.e. roosting habitat), and a buffer of 25-30 metres of vegetation surrounding these caves, will not be permitted as a condition of the permit; and
- impacts to drainage line vegetation will be minimised through the applicant's mitigation actions (see Section 3.1) and as a condition on the permit;
- the level of habitat disturbance from the proposed linear clearing is low in a regional context; and
- areas of temporary clearing will be revegetated.

Bilby

Bilby are patchily distributed in Western Australia, with remaining populations in the Gibson Desert, Little Sandy Desert, Great Sandy Desert and parts of the Pilbara and Southern Kimberley (GHD 2014). The application area is on the boundary of the bilby's distribution in the Pilbara (DCCEEW, 2025b). The remaining populations of the greater bilby occupy three main habitats: open tussock grassland on uplands and hills, *Acacia aneura* (mulga) woodland/shrubland growing on ridges and rises, and hummock grassland in plains and alluvial areas (Woinarski et al., 2014). While these habitat is present within the application area, no bilby burrows have been found in fauna surveys (ENV, 2009 and Biologic, 2023). Considering the disturbed nature of the site, the proximity to Newman and mining operations and that the application is on the edge of the known distribution for this species, it is considered unlikely that bilby would be present within the application area. If bilby were present, the level of habitat disturbance from the proposed linear clearing is low in a regional context.

Gane's blind snake (Pilbara)

Gane's Blind Snake is a poorly known burrowing species with a patchy and poorly documented distribution between Newman, Millstream and Pannawonica (Wilson and Swan, 2020). Little is known of the species' ecology, but it is often associated with moist soils and leaf litter within gorges and gullies (Wilson & Swan, 2020) and potentially within a wide range of other stony habitats. Gane's blind snake has not previously been found in fauna surveys (ENV, 2009 and Biologic, 2023) within the application area, however the species has previously been recorded in proximity to the application area in other surveys as recently as 2013 (Biologic, 2023) and blind snakes are typically very hard to detect during biological surveys (ENV, 2009). As such, the application area may provide habitat for Gane's blind snake, particularly in "hillcrest/hillslope" and "floodplain" habitats habitat types (BHP, 2024) present within the application area. However, impacts to Gane's blind snake habitat are not considered to be significant noting:

- impacts to drainage line vegetation will be minimised through the applicant's mitigation actions (see Section 3.1) and as a condition on the permit;
- the level of habitat disturbance from the proposed linear clearing is low in a regional context; and
- areas of temporary clearing will be revegetated.

Western pebble-mound mouse, ngadji

The western pebble-mound mouse is present through the non-coastal, central and eastern parts of the Pilbara, with large populations recorded in the major national parks of the region (Karijini, Rudall River, Millstream-Chichester and Collier Range) (Burbidge, 2016). The species is found in areas of rocky, hummock grassland with little or no soil and an overstorey of *Acacia* (Burbidge, 2016). Individuals live in groups in burrows below mounds of pebbles, typically on low gravelly and stony rises (Burbidge, 2016). The species is likely to utilise the "hillcrest/hillslope" habitats present within the application area (BHP, 2024), and two inactive western pebble-mound mouse mounds have been recorded within the application area (BHP, 2024). However, impacts to western pebble-mound mouse habitat are not considered to be significant noting:

- the applicant has committed to retaining vegetation within a 10-metre buffer around active pebble-mound mouse mounds;
- the level of habitat disturbance from the proposed linear clearing is low in a regional context; and
- areas of temporary clearing will be revegetated.

Spotted ctenotus

Little information regarding habitat preferences of the spotted ctenotus is available. Previous records of the subspecies in the Pilbara region are associated with stony hillslope and plain habitats with variable vegetation cover, often dominated by open *Acacia* shrubland and *Triodia* hummock grassland (Cogger, 2014). This species has not been recorded in surveys within and surrounding the application area (ENV, 2009 and (Biologic, 2023). Noting this, it is considered unlikely that spotted ctenotus would be present within the application area, and if they were, the level of habitat disturbance from the proposed linear clearing is low in a regional context.

Brush-tailed mulgara

The brush-tailed mulgara is often recorded from a range of sandy and stony plain habitats (Pavey et al., 2012). Although the brush-tailed mulgara was not recorded in the portion of the application area surveyed by Biologic (2023), the species has previously been recorded within the area surrounding the application area, with the most recent record of the species occurring in 2013 (BHP WAIO, 2022a). It is considered that brush-tailed mulgara may inhabit Sand Plain and stony Plain habitats present within the application area (BHP, 2024). However, the clearing is not considered to significantly impact habitat for this species, noting the level of habitat disturbance from the proposed linear clearing is low in a regional context, particularly given its wide distribution, and areas of temporary clearing will be revegetated.

Long-tailed dunnart

Long tailed dunnart inhabits rugged rocky areas, scree slopes and stony plains and plateaus dominated by open shrubland and Triodia grassland vegetation (van Dyck et al., 2013). It is considered that this species may occur within the application area, particularly in Stony Plain and Hillcrest/Hillslope habitat types (BHP, 2024b). However, the clearing is not considered to significantly impact habitat for this species, noting the level of habitat disturbance from the proposed linear clearing is low in a regional context, particularly given its wide distribution, and areas of temporary clearing will be revegetated.

Migratory birds

While sharp-tailed sandpiper, glossy ibis, wood sandpiper, common greenshank and marsh sandpiper may forage within drainage line vegetation within the application area, it is considered that the proposed clearing is unlikely to

significantly impact habitat for these species, given the relatively small areas of habitat being cleared in the context of the large range of these species, that the applicant has committed to avoid clearing of drainage line vegetation where practicable and that these species would prefer the better quality habitat at nearby Opthalmia Dam. While fork-tailed swift may be present within the application area, as this species is entirely aerial and not reliant on terrestrial habitats, the impact to this species is not considered to be significant.

Impacts to individuals

While, as discussed above, the proposed clearing is unlikely to result in signifciant impacts to habitat of the above species, it is possible that individuals of the above species may be present within the area at the time of clearing. To minimise impacts to any individuals that may be present, general fauna management conditions have been applied to the permit.

Conclusion

Based on the above assessment, the proposed clearing is unlikely to result in signifciant impacts to habitat for conservation significant fauna species. It is considered that the impacts of the proposed clearing on fauna can be managed through conditions on the permit.

Conditions

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- clearing must be conducted in one direction towards adjacent vegetation where practicable and a reasonable time must be allowed for fauna present within the area being cleared to move into that adjacent native vegetation ahead of clearing;
- prior to clearing, the area must be inspected for active western pebble-mound mouse mounds, and if present, these mounds, plus a ten metre buffer, must not be cleared unless approved by the CEO;
- no clearing can occur within buffers of the identified caves, except to undertake rehabilitation and revegetation activities; and
- clearing within drainage lines should be avoided where practicable and existing surface flows of any drainage line that is to be impacted by clearing must be maintained.

3.2.2. Biological values (flora) - Clearing Principles (a) and (b)

Assessment

Noting the site characteristics (see Appendix B), mapped soil and vegetation types present within the application area, and habitat present within the application area, no threatened flora species are likely to be present within the application area, however the application area may contain suitable habitat for the following priority significant flora species:

- *Acacia corusca (*Priority 1)
- *Eremophila capricornica* (Priority 1)
- *Eremophila pilosa* (Priority 1)
- *Eremophila rhegos* (Priority 1)
- *Paranotis* sp. Pilbara (H. Ajduk HAOP04a) (Priority 1)
- *Goodenia hartiana* (Priority 2)
- *Acacia subtiliformis* (Priority 3)
- *Amaranthus centralis* (Priority 3)
- *Aristida jerichoensis* var. *subspinulifera* (Priority 3)
- *Aristida lazaridis* (Priority 3)
- *Crotalaria smithiana* (Priority 3)
- *Eremophila magnifica* subsp. *velutina* (Priority 3)
- *Eremophila naaykensii* (Priority 3)
- *Eremophila rigida* (Priority 3)
- *Euphorbia inappendiculata* var. *inappendiculata* (Priority 3)
- *Goodenia* sp. East Pilbara (A.A. Mitchell PRP 727) (Priority 3)
- *Gymnanthera cunninghamii* (Priority 3)
- *Indigofera gilesii* (Priority 3)
- *Ipomoea racemigera* (Priority 3)
- *Isotropis parviflora* (Priority 3)
- *Maireana prosthecochaeta* (Priority 3)

- *Oxalis* sp. Pilbara (M.E. Trudgen 12725) (Priority 3)
- *Rhagodia* sp. Hamersley (M. Trudgen 17794) (Priority 3)
- *Streptoglossa* sp. Cracking clays (S. van Leeuwen et al. PBS 7353) (Priority 3)
- *Swainsona thompsoniana* (Priority 3)
- *Themeda* sp. Hamersley Station (M.E. Trudgen 11431) (Priority 3)
- *Uvedalia clementii* (Priority 3)
- *Vittadinia* sp. Coondewanna Flats (S. van Leeuwen 4684) (Priority 3)
- *Acacia bromilowiana* (Priority 4)
- *Eremophila magnifica* subsp. *magnifica* (Priority 4)
- *Eremophila youngii* subsp. *lepidota* (Priority 4)
- *Goodenia berringbinensis* (Priority 4)
- *Lepidium catapycnon* (Priority 4)

Flora and vegetation surveys, conducted in 2023 (Spectrum Ecology, 2023) and 2025 (Biologic, 2025), as well as a targeted survey for *Eremophila capricornica* (Biologic, 2021) within portions of the application area did not find any of the above species, or any other conservation significant flora species, to be present. A flora survey undertaken in 2009 (ENV Australia, 2009) did not record any currently listed conservation listed flora species within the application area, however it is noted that several of the above species have been listed as conservation significant since this survey was conducted, and given the length of time since this survey there may be slight changes in vegetation type and condition that could result in species being present that were not there previously. As such, noting no recent flora and vegetation surveys are available in the eastern portion of the application area, it is considered that the above species may be present in the eastern portion of the application area.

As such, a condition has been applied to the permit requiring the applicant to undertake a survey within the eastern portion of the application area, which has not been recently surveyed, for threatened and priority flora species prior to clearing. This condition will require that if identified, any threatened and priority flora individuals will be retained with an appropriate buffer of vegetation. This condition will ensure that impacts to conservation signifciant flora species are not significant.

Conclusion

Based on the above assessment, the application area may contain priority flora species. It is considered that flora management conditions will minimise impacts to any priority flora individuals that may be present.

Conditions

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- Flora management - Prior to undertaking any clearing authorised under this permit, conduct a targeted flora survey of the eastern portion of the application area for the presence of threatened flora and priority flora, and ensure that no clearing occurs within 50 metres of threatened flora and within 10 metres of identified priority flora, unless first approved by the CEO.

3.3. Relevant planning instruments and other matters

The clearing is located within the Newman Water Reserve, proclaimed under the *Country Areas Water Supply (CAWS) Act 1947* in 1983, with a portion of the area within a wellhead protection zone. A Drinking Water Source Protection Plan was prepared for the Newman Water Reserve in 2009. The proposed exploration activities occur within the Priority 1 (P1) area of the reserve. P1 areas are defined and managed to maintain or improve the quality of the drinking water source, with the objective of “risk avoidance (DWER, 2025a). The proposed clearing is compatible with this purpose (DWER, 2025a). Therefore, DWER (2025a) supports the proposal, subject to recommendations for best practice be applied for each land use. These recommendations were provided to the applicant during the assessment.

The applied clearing area lies within a proclaimed area (Pilbara River and Tributaries) under the *Rights in Water and Irrigation Act 1914*, administered by DWER. A mining lease granted under the *Mining Act 1978* or under a State Agreement Act grants the right to undertake activities related to mining, including interfering with the bed and banks of watercourses within the mining lease, as long as those activities are not related to the taking of water (DWER, 2025b). Therefore, although through the proposed works some interference with beds and banks may be necessary, a Section 17 Permit will not be required from the Department of Water due to the applied clearing area.

Portions of the application area are classed as “Contaminated – remediation required” and “Possibly contaminated – investigation required”. Noting this amendment does not propose any new significant new clearing, DWER (2024) had no comment to make regarding implications of the contaminated sites classification on the proposed clearing.

Advice was sought for this amendment application from the Shire of East Pilbara but no comments were received.

Several 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.

End

Appendix A. Additional information provided by applicant

The following information was provided by the applicant during the course of the assessment of this permit.

Summary of comments	Consideration of comment
Flora survey of western portion of the application area (Biologic, 2025)	Table C.1 and Section 3.2.2

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 surrounded by native vegetation, although vegetation in the area surrounding the application area is disrupted by various tracks and roads. Spatial data indicates the local area (50-kilometre radius from the centre of the area proposed to be cleared) retains approximately 99 per cent of the original native vegetation cover.
Ecological linkage	Noting the extent of native vegetation surrounding the application area and in the local area, no particular tract of vegetation within the area acts as an ecological linkage.
Conservation areas	There are no formally recognised conservation areas within the local area.
Vegetation description	As described in BHP (2024b), vegetation surveys conducted within the application area (Onshore, 2014 and ENV, 2009) have recorded the following 18 broad floristic formations (and 52 vegetation associations) within the Amendment Application Area: • **Cenchrus* Scattered Tussock Grasses • **Cenchrus* Tussock Grassland • *Acacia* High Shrubland • *Acacia* Low Open Forest • *Acacia* Low Open Woodland • *Acacia* Low Woodland • *Acacia* Open Scrub • *Acacia* Open Shrubland • *Acacia* Shrubland • *Corymbia* Low Open Woodland • *Eucalyptus Low* Woodland • *Eucalyptus* Open Woodland • *Eucalyptus* Woodland • *Glinus* Herbs • *Themeda* Tussock Grassland • *Triodia* Hummock Grassland • *Triodia* Open Hummock Grassland • *Typha* sedges Representative photos and the full survey descriptions and maps are available in Appendix E. This is consistent with the mapped vegetation type(s): • Beard 82, which is described as Hummock grasslands, low tree steppe; snappy gum over Triodia wiseana • Beard 18, which is described as Low woodland; mulga (Acacia aneura) • Beard 29, which is described as Sparse low woodland; mulga, discontinuous in scattered groups

Characteristic	Details
	• Beard 216, which is described as Low woodland; mulga (with spinifex) on rises (Shepherd et al, 2001) The mapped vegetation types all retain over 99 per cent of their original extents (Government of Western Australia, 2019).
Vegetation condition	A vegetation survey (ENV, 2009) indicates the vegetation within the proposed clearing area is in Pristine, Excellent, Very Good, Good, Degraded and Completely Degraded (Keighery, 1994) condition, described as: • Pristine - Pristine or nearly so, no obvious signs of disturbance. • Excellent - Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species. • Very good - Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing. • Good - Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing. • Degraded - Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing. • Completely degraded - The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs. The full Keighery (1994) condition rating scale is provided in Appendix D. Representative photos and the full survey descriptions and mapping are available in Appendix E.
Climate and landform	The Pilbara has an arid-tropical climate with two distinct seasons, a hot summer from October to April and a mild winter from May to September. The area experiences a wide range of temperatures, with an average annual temperature of 31.4°C (1965-1998). In summer, maximum temperatures may reach 46.0°C, whilst in winter, minimum temperatures may reach -2.0°C (BoM 2009).
Topography	Elevation within the application area undulates, ranging from approximately 510m AHD near the Fortescue River to 580m AHD.
Soil description	The soil is mapped as • Boolgeeda System (245.1 ha) - Stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands or mulga shrublands. • Elimunna System (85.2 ha) - Stony plains on basalt supporting sparse acacia and cassia shrublands and patchy tussock grasslands. • McKay System (111.0 ha) - Hills, ridges, plateaux remnants and breakaways of meta sedimentary and sedimentary rocks supporting hard spinifex grasslands with acacias and occasional eucalypts. • Newman System (175.1 ha) - Rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands. • River System (71.3 ha) - Narrow, seasonally active flood plains and major river channels supporting moderately close, tall shrublands or woodlands of acacias and fringing communities of eucalypts sometimes with tussock grasses or spinifex. • Washplain System (11.8 ha) - Hardpan plains supporting groved mulga shrublands.

Characteristic	Details
Land degradation risk	van Vreeswyk et. al. (2004) describes the following land management considerations for the above mapped soil types: • Boolgeeda System - Vegetation is generally not prone to degradation and the system is not susceptible to erosion • Elimunna System - Gilgai plains (unit 3) and drainage floors (unit 6) support tussock grass vegetation attractive to grazing animals and prone to degradation if grazing pressure is excessive. Some drainage floors (unit 6) are slightly susceptible to erosion but most of the system is inherently resistant • McKay System - This system supports predominantly hard spinifex vegetation and is not preferred by livestock. Some areas are poorly accessible and the system is not prone to degradation or soil erosion. • Newman System - Much of the system is inaccessible or poorly accessible and is unsuitable for pastoral purposes. The system contains iron ore deposits which are currently being mined and deposits which are likely to be mined in the future. Spinifex is the dominant vegetation and the system is burnt fairly frequently. • River System- Buffel grass and soft spinifex on this system are highly and moderately preferred respectively by livestock. The system is largely stabilised by buffel and spinifex and accelerated erosion is uncommon. However, susceptibility to erosion is high or very high if vegetative cover is removed. • Washplain System - The system supports shrubs and grasses which are preferred by grazing animals and is prone to vegetation decline if stocking is uncontrolled. Some parts of alluvial plains, groves and tracts receiving more concentrated flow (units 2, 3 and 5) are moderately susceptible to erosion.
Waterbodies	The application area intersects numerous non-perennial minor rivers, as well as Homestead Creek and the Fortescue River, both non-perennial major rivers.
Hydrogeography	The application area intersects a Wellhead Protection Zone from Newman Water Reserve, which is a Priority 1 area proclaimed under the *Country Areas Water Supply Act 1947 (WA*). Wellhead protection zones (WHPZ) are used to protect groundwater sources. They are generally circular with a 500m radius around each production bore in a P1 area. The application is within the Pilbara Surface Water Area and Pilbara Groundwater Area proclaimed under the RIWI Act 1914. Groundwater salinity: 500-1000 mg/L TDS Hydrogeology: Rocks of Low Permeability, Fractured and Weathered Rocks - Local Aquifers (Sedimentary rocks, undifferentiated lithology)
Flora	There are records of 39 priority and no threatened flora species within the local area (50km radius). Based upon the mapped soil types, mapped vegetation types and habitats present within the application area, the application area may provide suitable habitat for 32 of these. Flora surveys conducted in 2024 (Biologic, 2025), 2022 (Spectrum Ecology, 2023), 2020 (Biologic Environmental Survey, 2021) and 2009 (ENV, 2009) did not record any threatened or priority flora within the application area. It is noted that while ENV (2009) covers the entire application area, the most recent flora surveys (Biologic, 2025 and Spectrum Ecology, 2023) do not cover the entire application area, with a portion of the eastern application area unsurveyed.
Ecological communities	One threatened ecological community (TEC), the Ethel Gorge aquifer stygobiont community, is mapped within the application area. It is noted that this TEC is not a floristic community. A further three priority ecological communities are mapped within the local area, however these are specific to habitats and landforms which are not present within the application area. Flora surveys conducted in 2024 (Biologic, 2025), 2022 (Spectrum Ecology, 2023) and 2009 (ENV, 2009) did not find vegetation within the application area to be consistent with any threatened or priority ecological communities within the application area. It is noted that while ENV (2009) covers the entire application area, the most recent flora

Characteristic	Details
	surveys (Biologic, 2025 and Spectrum Ecology, 2023) do not cover the entire application area, with a portion of the eastern application area unsurveyed.
Fauna	There are records of 9 threatened, 10 priority, 14 migratory and one other specially protected fauna species within the local area (50 km radius). Based upon the mapped soil types, mapped vegetation types and habitats present within the application area, the application area may provide suitable habitat for 19 of these. BHP (2024b) advised that there have been 38 vertebrate fauna surveys that intersect the proposed amendment application area, the most relevant of these being: • *East Ophthalmia and Ninga Detailed Vertebrate Fauna Survey* (Biologic, 2022), which covers a portion of the application area, • *Jimblebar targeted ghost bat survey* (GHD, 2020), which covers a portion of the application area; and • *Newman to Jimblebar Transmission Line and Newman Town Substation terrestrial Fauna Assessment* (ENV, 2009b), which covers the entire application area. While no currently listed conservation significant fauna species have been recorded within the application area in the above three surveys, BHP (2024b) advised that inactive two pebble mound mouse mounds have been recorded within the application area. Based on previous fauna habitat assessments incorporating the application area, BHP (2024b) have identified the following fauna habitat types within the application area (described further in Appendix E): • Drainage Area / Floodplain • Minor Drainage Line • Major Drainage Line • Mulga • Sand Plain • Stony Plain • Hillcrest / Hillslope

B.2. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA managed land
IBRA bioregion*					
Pilbara	17,808,657.04	17,731,764.88	99.57	1,801,714.98	10.12
Gascoyne	18,075,219.48	18,067,441.44	99.96	1,855,508.22	10.27
Vegetation complex					
Beard vegetation association 82 *	2,565,901.28	2,553,206.19	99.51	295,377.96	11.51
Beard vegetation association 18 *	19,890,666.60	19,842,830.40	99.76	1,317,179.00	6.62
Beard vegetation association 29 *	7,903,991.45	7,898,973.24	99.94	496,367.56	6.28
Beard vegetation association 216 *	280,759.39	279,237.06	99.46	-	-

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA managed land
Local area (calculation)					
50km radius	1122402.1	1115421.8	99.3	-	-

*Government of Western Australia (2019a)

B.3. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix F), and biological survey information, impacts to the following conservation significant flora required further consideration.

Species name	Conservation status	Suitable habitat features ? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Acacia bromilowiana	4	Y	N	Y	38.1	30	N/A
Acacia corusca	1	Y	Y	Y	8.7	12	N/A
Acacia subtiliformis	3	Y	Y	N	28.7	24	N
Amaranthus centralis	3	Y	Y	N	30.1	7	N
Aristida jerichoensis var. *subspinulifera*	3	Y	Y	Y	2.0	48	N
Aristida lazaridis	3	Y	Y	N	30.1	29	N
Crotalaria smithiana	3	Y	Y	Y	14.5	7	N
Eremophila capricornica	1	Y	Y	Y	17.9	18	N
Eremophila magnifica subsp. magnifica	4	Y	N	Y	2.3	47	N
Eremophila magnifica subsp. velutina	3	Y	Y	N	28.5	22	N
Eremophila naaykensii	3	Y	Y	Y	0.2	22	N
Eremophila pilosa	1	Y	Y	N	48.7	9	N
Eremophila rhegos	1	Y	Y	N	43.1	6	N
Eremophila rigida	3	Y	Y	N	23.4	10	N
Eremophila youngii subsp. *lepidota*	4	Y	Y	Y	7.6	49	N
Euphorbia inappendiculata var. *inappendiculata*	3	Y	Y	N	4.9	14	N
Goodenia berringbinensis	4	Y	Y	N	4.2	32	N
Goodenia hartiana	2	Y	Y	Y	4.9	27	N
Goodenia sp. East Pilbara (A.A. Mitchell PRP 727)	3	Y	Y	Y	3.4	53	N
Gymnanthera cunninghamii	3	Y		Y	1.8	45	N
Indigofera gilesii	3	Y	Y	Y	10.9	40	N
Ipomoea racemigera	3	Y	Y	Y	3.2	18	N
Isotropis parviflora	3	Y	Y	Y	2.1	34	N
Lepidium catapycnon	4	Y	Y	Y	6.4	39	N
Maireana prosthecochaeta	3	Y	Y	N	45.0	24	N

Species name	Conservation status	Suitable habitat features ? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Paranotis sp. Pilbara (H. Ajduk HAOP04a)	1	Y	Y	N	31.6	7	N
Rhagodia sp. Hamersley (M. Trudgen 17794)	3	Y	Y	Y	10.4	75	N
Streptoglossa sp. Cracking clays (S. van Leeuwen et al. PBS 7353)	3	Y	Y	Y	9.3	13	N
Swainsona thompsoniana	3	Y	N	N	3.7	29	N
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	3	Y	Y	N	18.7	60	N
Triodia sp. Mt Ella (M.E. Trudgen 12739)	3	Y	Y	Y	2.0	40	N
Vittadinia sp. Coondewanna Flats (S. van Leeuwen 4684)	3	Y	Y	N	4.5	26	N

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

B.4. Fauna analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix F), and biological survey information, impacts to the following conservation significant fauna required further consideration.

Species name	Conservation status	Suitable habitat features? [Y/N]	Distance of closest record to application area (km)	Number of known records in local area	Are surveys adequate to identify? [Y, N, N/A]
Anilios ganei (Gane's blind snake (Pilbara))	P1	Y	0.1	10	N
Antechinomys longicaudata (long-tailed dunnart)	P4	Y	43.8	1	N
Apus pacificus (fork-tailed swift)	MI	Y	1.7	1	N
Calidris acuminata (sharp-tailed sandpiper)	MI	Y	1.7	7	N
Ctenotus uber johnstonei (spotted ctenotus (northeast))	P2	Y	2.9	1	N
Dasycercus blythi (brush-tailed mulgara)	P4	Y	3.0	27	N
Dasyurus hallucatus (northern quoll)	EN	Y	8.9	8	N
Liasis olivaceus barroni (Pilbara olive python)	VU	Y	0.0	42	N
Macroderma gigas (ghost bat)	VU	Y	0.9	562	N
Macrotis lagotis (bilby, dalgyte, ninu)	VU	Y	8.8	13	N
Plegadis falcinellus (glossy ibis)	MI	Y	0.7	12	N
Petrogale lateralis lateralis (black-flanked rock-wallaby, black-footed rock-wallaby, moororong)	EN	Y	9.4	4	N
Pezoporus occidentalis (night parrot)	CR	Y	6.5	1	N
Pseudomys chapmani (western pebble-mound mouse, ngadji)	P4	Y	0.5	197	N
Rhinonicteris aurantia (Pilbara form) (Pilbara leaf-nosed bat)	VU	Y	0.7	490	N
Tringa glareola (wood sandpiper)	MI	Y	1.8	4	N
Tringa nebularia (common greenshank)	MI	Y	1.7	5	N
Tringa stagnatilis (marsh sandpiper)	Mi	Y	1.6	1	N

B.5. Ecological community analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix F) impacts to the following conservation significant ecological communities required further consideration.

Community name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Ethel Gorge aquifer stygobiont community	CR	Y	N	Y	0	1	N/A

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

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 area proposed to be cleared overlies the Ethel Gorge aquifer stygobiont community, contains habitat for conservation significant fauna and may contain priority flora species.	May be at variance (changed from CPS 3445/4)	Yes *Refer to Sections 3.2.1 and 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 area proposed to be cleared contains habitat for multiple conservation significant fauna species.	At variance (changed from CPS 3445/4)	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: The area proposed to be cleared is unlikely to contain flora species listed under the BC Act.	Not likely to be at variance (unchanged from CPS 3445/4)	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: The area proposed to be cleared does not contain flora species indicative of a threatened ecological community. While the Ethel Gorge aquifer stygobiont community underlies the application area, the vegetation proposed to be cleared is not necessary for the maintenance of this community.	Not likely to be at variance (unchanged from CPS 3445/4)	Yes *See previous assessment for CPS 3445/4*
Environmental value: significant remnant vegetation and conservation areas		
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 extents of the mapped vegetation type and native vegetation in the local area are 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 (unchanged from CPS 3445/4)	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: Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of adjacent conservation areas.	Not likely to be at variance (unchanged from CPS 3445/4)	No
Environmental value: land and water resources		

Assessment against the clearing principles	Variance level	Is further consideration required?
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: Numerous watercourses intersect the application area and riparian vegetation is present. The applicant's mitigation measures for drainage lines will minimise impacts to drainage line vegetation.	At variance (variance level changed from CPS 3445/4, but assessment unchanged)	No
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: The mapped soils are susceptible to erosion. Noting the linear nature of the clearing, and that banks of watercourses will be avoided where possible, impacts are not likely to be significant. Erosion management and revegetation conditions will further limit impacts from erosion.	May be at variance (unchanged from CPS 3445/4)	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: Impacts to water quality within the non-perennial minor watercourses and major rivers within the application area may occur from the clearing, but are expected to be minor and temporary noting the linear nature of the clearing. These impacts are likely to be reduced through the applicant's avoidance and mitigation actions for watercourses discussed in Section 3.1 and the revegetation of temporarily cleared areas required as a condition on the permit. DWER (2025) did not identify any issues to quality or quantity of groundwater within a P1 public drinking water source area and wellhead protection zone resulting from the proposed clearing.	May be at variance (unchanged from CPS 3445/4)	No
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 Given the size of the application area and its proximity to numerous non-perennial minor watercourses and major rivers it is probable that the clearing area may result in increased surface water flows, but this is unlikely to result in an increase in the incidence and/or intensity of flooding within the local area given the linear nature of the clearing.	Not likely to be at variance (unchanged from CPS 3445/4)	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. The Trudgen (1991) scale below was used to measure the condition of the vegetation proposed to be cleared.

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.

Condition	Description
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

Table E-1. Vegetation associations within the application area (BHP, 2024b adapted from Onshore 2014; and ENV, 2009)

Broad Floristic Formation	Vegetation Association Description	
*Cenchrus Scattered Tussock Grasses	FP Cc Sccn	Scattered Tussock Grasses of **Cenchrus ciliaris* over Scattered Herbs of *Sclerolaena cornishiana* on pale brown sitly clay on floodplains.
*Cenchrus Tussock Grassland	FP Cci ChaAci AbiApr	Tussock Grassland of **Cenchrus ciliaris* with Low Woodland of *Corymbia hamersleyana* and *Acacia citrinoviridis* over High Shrubland of *Acacia bivenosa* and *Acacia pruinocarpa* over Open Hummock Grassland of *Triodia pungens* on orange sand on floodplains.
	MA CcCs EvAciAthe	Tussock Grassland **Cenchrus ciliaris* and **Cenchrus setiger* with Low Woodland of *Eucalyptus victrix*, *Acacia citrinoviridis* and *Atalaya hemiglauca* on brown sandy loam on major drainage lines and adjacent flood plains.
	SC CciEpo Aci	Tussock Grassland of **Cenchrus ciliaris* and *Enneapogon polyphyllus* and Low Woodland of *Acacia citrinoviridis* on orange brown sand and clay on floodplains.
Acacia High Shrubland	FP AaAssAanc Tp	High Shrubland of *Acacia aptaneura*, *Acacia sclerosperma* subsp. *sclerosperma* and *Acacia ancistrocarpa* over Very Open Hummock Grassland of *Triodia pungens* on red brown sandy loam on floodplains and medium drainage lines.
Acacia Low Open Forest	SA AanApr Tpu	Low Open Forest of *Acacia pteraneura* and *Acacia pruinocarpa* over Open Hummock Grassland of *Triodia pungens* on red sand clay on plains.

Broad Floristic Formation	Vegetation Association Description	
Acacia Low Open Woodland	FP AaAciApr AsyAssAb Tp	Low Open Woodland of *Acacia aptaneura*, *Acacia citrinoviridis* and *Acacia pruinocarpa* over Open Shrubland of *Acacia synchronicia*, *Acacia sclerosperma* subsp. *sclerosperma* and *Acacia bivenosa* over Very Open Hummock Grassland of *Triodia pungens* on red brown clay loam on floodplains and medium drainage lines.
	FP AaAprCh ErfrAteDope AriChfArc	Low Open Woodland of *Acacia aptaneura*, *Acacia pruinocarpa* and *Corymbia hamersleyana* with Open Shrubland of *Eremophila fraseri*, *Acacia tetragonophylla* and *Dodonea petiolaris* over Tussock Grassland of *Aristida inaequiglumis*, *Chrysopogon fallax* and *Aristida contorta* on red sandy loam on floodplains.
Acacia Low Woodland	FP AciChAa AancApypPl TtAriCc	Low Woodland of *Acacia citrinoviridis*, *Corymbia hamersleyana* and *Acacia aptanerua* over High Shrubland of *Acacia ancistrocarpa*, *Acacia pyrifolia* var. *pyrifolia* and *Petalostylis labicheoides* over Very Open Tussock Grassland of *Themeda triandra*, *Aristida inaequiglumis* and **Cenchrus ciliaris* on brown sandy loam on floodplains and medium drainage lines.
Acacia Open Scrub	AOS2	Open Scrub of *Acacia melleodora*, *Petalostylis labicheoides* and *A. ancistrocarpa* over Very Open Hummock Grassland of *Triodia wiseana* and *T. pungens* with Scattered Low Trees of *Corymbia hamersleyana*, *Eucalyptus gamophylla* (Mallee) and *E. xerothermica* on Red-Brown Loam on Minor Drainage Lines.
Acacia Open Shrubland	SA AaCocTb	Open shrubland of *Acacia aptaneura* with lower shrubland of *Grevillea striata*, *Eremophila forrestii* subsp. *forrestii* with low open woodland of *Corymbia candida* over very open hummock grassland of *Triodia basedowii* and very open tussock grassland of *Aristida pruinosa*, and **Cenchrus ciliaris* on orange sandy clay plains.
	SA AinErer	High open shrubland of *Acacia incurvaneura*, (+/-) *Acacia catenulata* subsp. *occidentalis*, and *Acacia ayersiana* over scattered tussock grasses of *Eragrostis eriopoda*, *Eriachne helmsii*, and or *Digitaria brownii* on orange sandy clay plains.
	SS TeAsEse	open hummock grassland of *Triodia epactia* and *Triodia angusta* with very open tussock grassland of **Cenchrus ciliaris* under Open shrubland of *Acacia sclerosperma* subsp. *sclerosperma*, *Stylobasium spathulatum*, and *Senna artemisioides* subsp. *oligophylla*. over and low open woodland of *Eucalyptus socialis* subsp. *eucentrica* or *Corymbia hamersleyana* on orange sandy stone plains.
Acacia Shrubland	AS3	Open Scrub (to Open Shrubland) of *Acacia aneura*, *A. sclerosperma* and *A. bivenosa* over Hummock Grassland of *Triodia basedowii*, *T. pungens* and *T.* sp. Shovelanna Hill (S. van Leeuwen 3835) with Scattered Low Trees of *Eucalyptus xerothermica* and *E. gamophylla* (Mallee) on Red-Brown Sandy Loam on Plains.
	MI AmAancPl ChEll TtAri	Shrubland of *Acacia monticola*, *Acacia ancistrocarpa* and *Petalostylis labicheoides* with Scattered Low Trees of *Corymbia hamerselyana* and *Eucalyptus leucophloia* subsp. *leucophloia* over Open Tussock Grassland of *Themeda triandra* and *Aristida inaequiglumis* on red loamy sand on minor drainage lines.
Corymbia Low Open Woodland	MI CocAa CcCs Tb	Low Open Woodland of *Corymbia candida* subsp. *dipsodes* and *Acacia aptaneura* over Open Tussock Grassland of **Cenchrus ciliaris* and **Cenchrus setiger* and Very Open Hummock Grassland of *Triodia basedowii* on red brown loam on floodplains and minor drainage lines.
	SP ChEoCd AancApaAad s TbTscTs	Low Open Woodland of *Corymbia hamersleyana*, *Eucalyptus odontocarpa* and *Corymbia deserticola* subsp. *deserticola* over Open Shrubland of *Acacia ancistrocarpa*, *Acacia pachyacra* and *Acacia adsurgens* over Open Hummock Grassland of *Triodia basedowii*, *Triodia schinzii* and *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) on red brown sandy loam on footslopes and stony plains.
Eucalyptus Low Woodland	ME TtEuaEte ApypAtpPl EvCh	Tussock Grassland of *Themeda triandra*, *Eulalia aurea* and *Eriachne tenuiculmis* with High Shrubland of *Acacia pyrifolia* var. *pyrifolia*, *Acacia tumida* var. *pilbarensis* and *Petalostylis labicheoides* and Open Woodland of *Eucalyptus victrix* and *Corymbia hamersleyana* on red brown silty loam on medium drainage lines and flood plains.
Eucalyptus Open Woodland	MA EcoAciCyix	Low open woodland of *Eucalyptus camaldulensis* and *Eucalyptus victrix* over high open shrubland of *Acacia citrinoviridis* and (+/-) *Melaleuca glomerata* over very open sedgeland of *Cyperus ixiocarpus* and *Cyperus vaginatus* with very open tussock grassland of **Cenchrus ciliaris* on orange sandy clay in major creek lines.
	MI EgAdTp	Low open woodland of Eucalyptus gamophylla over tall shrubland of *Acacia dictyophleba*, *Petalostylis labicheoides* and *Grevillea wickhamii* over hummock grassland of *Triodia pungens* on orange sandy clay in minor drainage line.

Broad Floristic Formation	Vegetation Association Description	
Eucalyptus Woodland	MA EcrEv AciApypMg CcEuaTt	Woodland of *Eucalyptus camaldulensis* subsp. *refulgens* and *Eucalyptus victrix* over High Open Shrubland of *Acacia citrinoviridis*, *Acacia pyrifolia* var. *pyrifolia* and *Melaleuca glomerata* over Tussock Grassland of **Cenchrus ciliaris*, *Eulalia aurea* and *Themeda triandra* on brown clay loam on banks of major drainage lines.
	MA EcrEvi Aci Mgl	Woodland of *Eucalyptus camaldulensis* and *Eucalyptus victrix* with Low Woodland of *Acacia citrinoviridis* and High Open Shrubland of *Melaleuca glomerata* with Low Scattered Shrubs of *Corchorus crozophorifolius* over Scattered Hummock Grass of *Triodia pungens* with Open Tussock Grassland of **Cenchrus ciliaris* and *Eulalia aurea* with Scattered Sedges of *Cyperus vaginatus* on orange sandy clay in major creek lines.
	MA EvAciEcr TercCocrApy p CcEuaTt	Woodland of *Eucalyptus victrix*, *Acacia citrinoviridis* and *Eucalyptus camaldulensis* subsp. *refulgens* over Low Open Shrubland of *Tephrosia rosea* var. *clementii*, *Corchorus crozophorifolius* and *Acacia pyrifolia* var. *pyrifolia* over Very Open Tussock Grassland of **Cenchrus ciliaris*, *Eulalia aurea* and *Themeda triandra* on brown loamy sand on channels of major drainage lines.
Glinus Herbs	ME Gll Ev Sen	Herbs of *Glinus lotoides* with Low Open Woodland of *Eucalyptus victrix* and Low Scattered Shrubs of *Senna notabilis* on pale brown loam on medium drainage lines.
Themeda Tussock Grassland	ME TtChfEua ExEvCh PlApaApyp	Tussock Grassland of *Themeda triandra*, *Chrysopogon fallax* and *Eulalia aurea* with Low Open Woodland of *Eucalyptus xerothermica*, *Eucalyptus victrix* and *Corymbia hamersleyana* and Shrubland of *Petalostylis labicheoides*, *Acacia pachyacra* and *Acacia pyrifolia* var. *pyrifolia* on red sandy loam on medium drainage lines.
Triodia Hummock Grassland	CP TwTa Ese AbPlApyp	Hummock Grassland of *Triodia wiseana* and *Triodia angusta* with Open Mallee of *Eucalyptus socialis* subsp. *eucentrica* and Open Shrubland of *Acacia bivenosa*, *Petalostylis labicheoides* and *Acacia pyrifolia* var. *pyrifolia* on light brown clay loam on calcrete plains and rises.
	FP Tb AaApr Erff	Hummock Grassland of *Triodia basedowii* with Low Open Woodland of *Acacia aptaneura* and *Acacia pruinocarpa* over Open Shrubland of *Eremophila forrestii* subsp. *forrestii* on red sandy loam on floodplains.
	FP Tp EtEg AbAancPl	Hummock Grassland of *Triodia pungens* with Very Open Mallee of *Eucalyptus trivalva* and *Eucalyptus gamophylla* over Shrubland of *Acacia bivenosa*, *Acacia ancistrocarpa* and *Petalostylis labicheoides* on red brown loam on uninsised drainage tracts on floodplains.
	HC TpTs Ell AaAkAsi	Hummock Grassland of *Triodia pungens* and *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) with Scattered Low Trees of *Eucalyptus leucophloia* subsp. *leucophloia* over Scattered Tall Shrubs of *Acacia aptaneura*, *Acacia kempeana* and *Acacia sibirica* on red brown loam on hill crests, hill slopes and breakaway slopes.
	HC TwTbrTp EllCh AmaGrwhAb	Hummock Grassland of *Triodia wiseana*, *Triodia brizoides* and *Triodia pungens* with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia* and *Corymbia hamersleyana* over High Open Shrubland of *Acacia maitlandii*, *Grevilllea wickhamii* subsp. *hispidula* and *Acacia bivenosa* on red brown sandy loam on hill crests and upper hill slopes.
	HS Tb Ell AbAiPl	Hummock Grassland of *Triodia basedowii* with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia* over Open Shrubland of *Acacia bivenosa*, *Acacia inaequilatera* and *Petalostlyis labicheoides* on red brown sandy loam on lower hill slopes.
	HS Ts	Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) on red brown sandy loam on hill slopes.
	HS TsAbEll	Hummock grassland of *Triodia vanleeuwenii* and *Triodia pungens* with very open tussock grassland of *Eriachne lanata* under open shrubland of *Acacia bivenosa* and or *Acacia hilliana* and woodland of Eucalyptus leucophloia subsp. leucophloia on stony hillslopes.
	HS TsTwTp EllCh AhiAaa	Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835), *Triodia wiseana* and *Triodia pungens* with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia* and *Corymbia hamersleyana* over Low Open Shrubland of *Acacia hilliana* and *Acacia adoxa* var. *adoxa* on red brown sandy loam on hill slopes.
	HS Tw EllChHc AancAbAa	Hummock Grassland of *Triodia wiseana* with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia*, *Corymbia hamersleyana* and *Hakea chordophylla* and Open Shrubland of *Acacia ancistrocarpa*, *Acacia bivenosa* and *Acacia aptaneura* on red sandy loam on hill slopes.

Broad Floristic Formation	Vegetation Association Description	
	MI TsTp AancAmGrw h	Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) and *Triodia pungens* with Shrubland of *Acacia ancistrocarpa*, *Acacia monticola* and *Grevillea wickhamii* subsp. *hispidula* on brown sandy loam on minor drainage lines.
	RP Tpu EsoExe AciAscAbi	Hummock Grassland of *Triodia pungens* and Low Woodland of *Eucalyptus socialis* and *Eucalyptus xerothermica* over High Open Shrubland of *Acacia citrinoviridis*, *Acacia sclerosperma*, and *Acacia bivenosa* and Very Open Tussock Grassland of **Cenchrus ciliaris* and *Paraneurachne muelleri* on rocky plains.
	SA Tb ChEg ScpBeKep	Hummock Grassland of *Triodia basedowii* with Low Open Woodland of *Corymbia hamersleyana* and *Eucalyptus gamophylla* over Low Open Shrubland of *Scaevola parvifolia*, *Bonamia erecta* and *Kennedia prorepens* on red loamy sand on sand plains.
	SP TbTp HlAancAi Ch	Hummock Grassland of *Triodia basedowii* and *Triodia pungens* with High Open Shrubland of *Hakea lorea* subsp. *lorea*, *Acacia ancistrocarpa* and *Acacia inaequilatera* and Scattered Low Trees of *Corymbia hamersleyana* on red brown loamy sand on stony plains.
	SP TpTb Eg PlAbAanc	Hummock Grassland of *Triodia pungens* and *Triodia basedowii* with Open Mallee of *Eucalyptus gamophylla* and Shrubland of *Petalostylis labicheoides*, *Acacia bivenosa* and *Acacia ancistrocarpa* on red brown loamy sand on stony plains and footslopes.
	SP TpTwTs ErfrSegpSea o	Hummock Grassland of *Triodia pungens*, *Triodia wiseana* and *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) with Open Shrubland of *Eremophila fraseri*, *Senna glutinosa* subsp. *pruinosa* and *Senna artemisioides* subsp. *oligophylla* on red brown loamy sand on stony plains and hill slopes.
	SP Ts Ai	Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) with High Open Shrubland of *Acacia inaequilatera* on red brown loamy sand on lower hill slopes and stony plains.
	SS TbApaCh	Hummock grassland of *Triodia basedowii* with scattered tussock grasses of *Paraneurachne muelleri* and *Eragrostis eriopoda* under open shrubland of *Acacia pachyacra*, *Acacia aptaneura*, and *Hakea chordophylla* and scattered tall *Corymbia hamersleyana* trees on orange sandy stone plains.
	THG6	Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) with Open Shrubland of *Acacia bivenosa* and *Grevillea wickhamii* subsp. *hispidula* with Scattered Low Trees of *Eucalyptus leucophloia* subsp. *leucophloia* on Red-Brown Skeletal Loam on Hill Slopes.
	UH TsSeglCh	Hummock grassland of *Triodia vanleeuwenii*, and *Triodia pungens* with very open tussock grassland of *Paraneurachne muelleri* under open shrubland of *Senna glutinosa* subsp. x *luerssenii*, (+/-) *Acacia bivenosa* and *Grevillea wickhamii* subsp. *aprica* and woodland of *Corymbia deserticola* subsp. *deserticola*, *Corymbia hamersleyana*, and *Eucalyptus gamophylla* on orange sandy stone undulating low hills.
Triodia Open Hummock Grassland	TOHG1	Open Hummock Grassland of *Triodia schinzii* with Open Shrubland of *Acacia pachyacra*, *A. aneura* var ?*pilbarana* and *A. catenulata* subsp. *occidentalis* with Scattered Mallees of *Eucalyptus gamophylla* on Red-Brown Clay Loam on Sand Plains.
	TOHG2	Open Hummock Grassland of *Triodia angusta* and *Triodia pungens* with Scattered Shrubs of *Acacia tetragonophylla*, *A. bivenosa* and *Senna glutinosa* subsp. *glutinosa* with Scattered Low Trees of *Eucalyptus leucophloia* subsp. *leucophloia* and *E. trivalva* (Mallee) on Red-Brown Sandy Loam on Hill Slopes.
	TOHG3	Open Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) and *T. wiseana* with Open Shrubland of *Acacia bivenosa* with Scattered Mallees of *Eucalyptus gamophylla* and *E. leucophloia* subsp. *leucophloia* (Trees) on Red-Brown Skeletal Loam on a Low Hill Slopes.
	TOHG4	Open Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835), *T. pungens* and *T. wiseana* with Scattered shrubs of *Acacia bivenosa*, *A. synchronicia* and *A. tetragonophylla* on Red-Brown Loam on Low Rocky Hill Slopes.
	SL TvuTpu ElIApr SggAbi	Open Hummock Grassland of *Triodia vanleeuwenii* and *Triodia pungens* with Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia* and *Acacia pruinocarpa* over High Open Shrubland of *Senna glutinosa* subsp. *glutinosa* and *Acacia bivenosa* on orange sand clay slopes.

Broad Floristic Formation	Vegetation Association Description	
	SP TI AancApa ApAprCh	Open Hummock Grassland of *Triodia lanigera* with Open Shrubland of *Acacia ancistrocarpa* and *Acacia pachyacra* and Scattered Low Trees of *Acacia paraneura*, *Acacia pruinocapra* and *Corymbia hamerselyana* on red sandy loam on stony plains.
Typha Sedges	MA TydCyv EcrEv AciAcp	Sedges of *Typha domingensis* and *Cyperus vaginatus* with Open Woodland of *Eucalyptus camaldulensis* subsp. *refulgens* and *Eucalyptus victrix* over Low Open Woodland of *Acacia citrinoviridis* and *Acacia coriacea* subsp. *pendens* on brown clayey sand on permanent pools along major drainage lines.

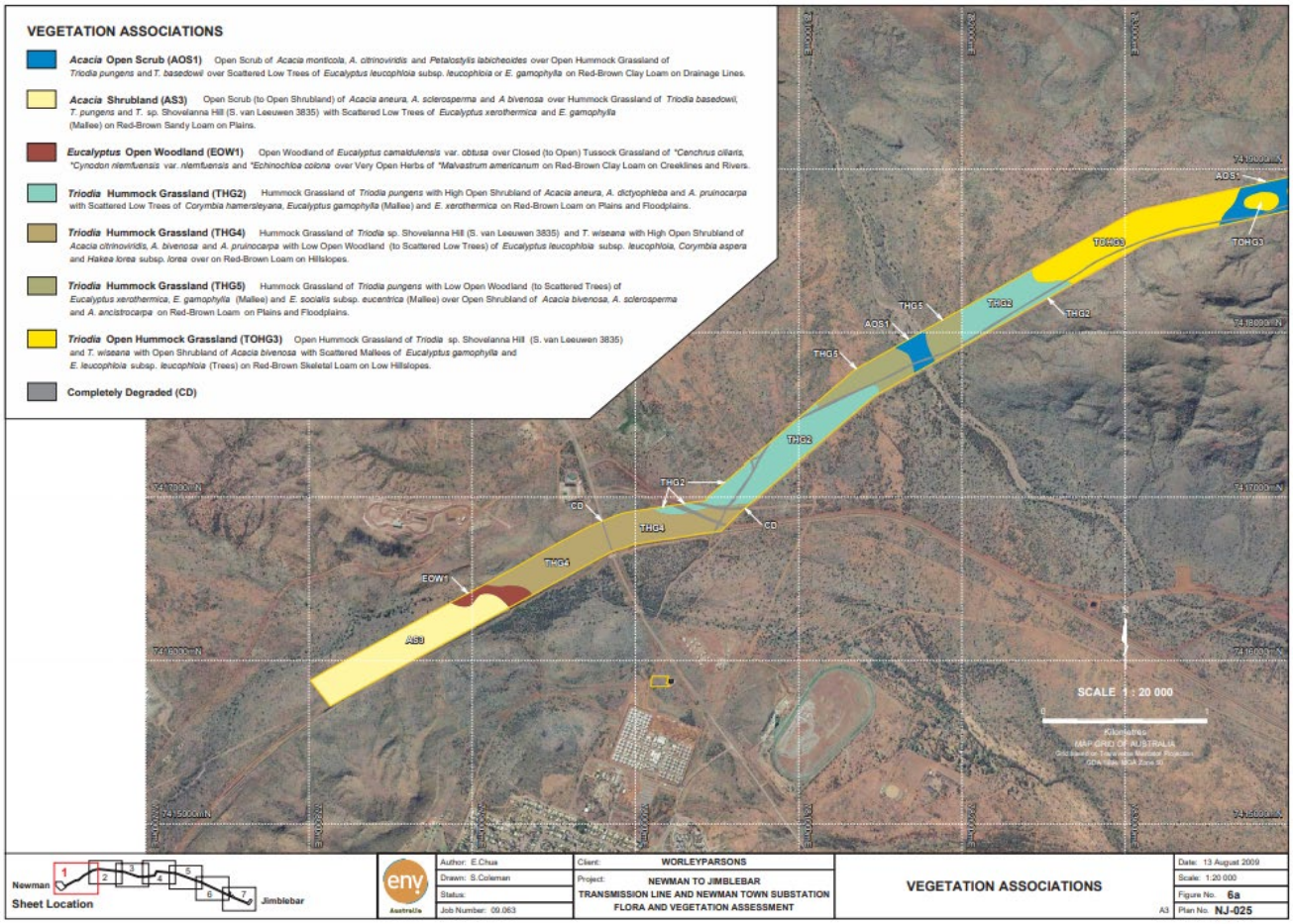

Figure E-1. Vegetation associations within the application area (ENV, 2009)

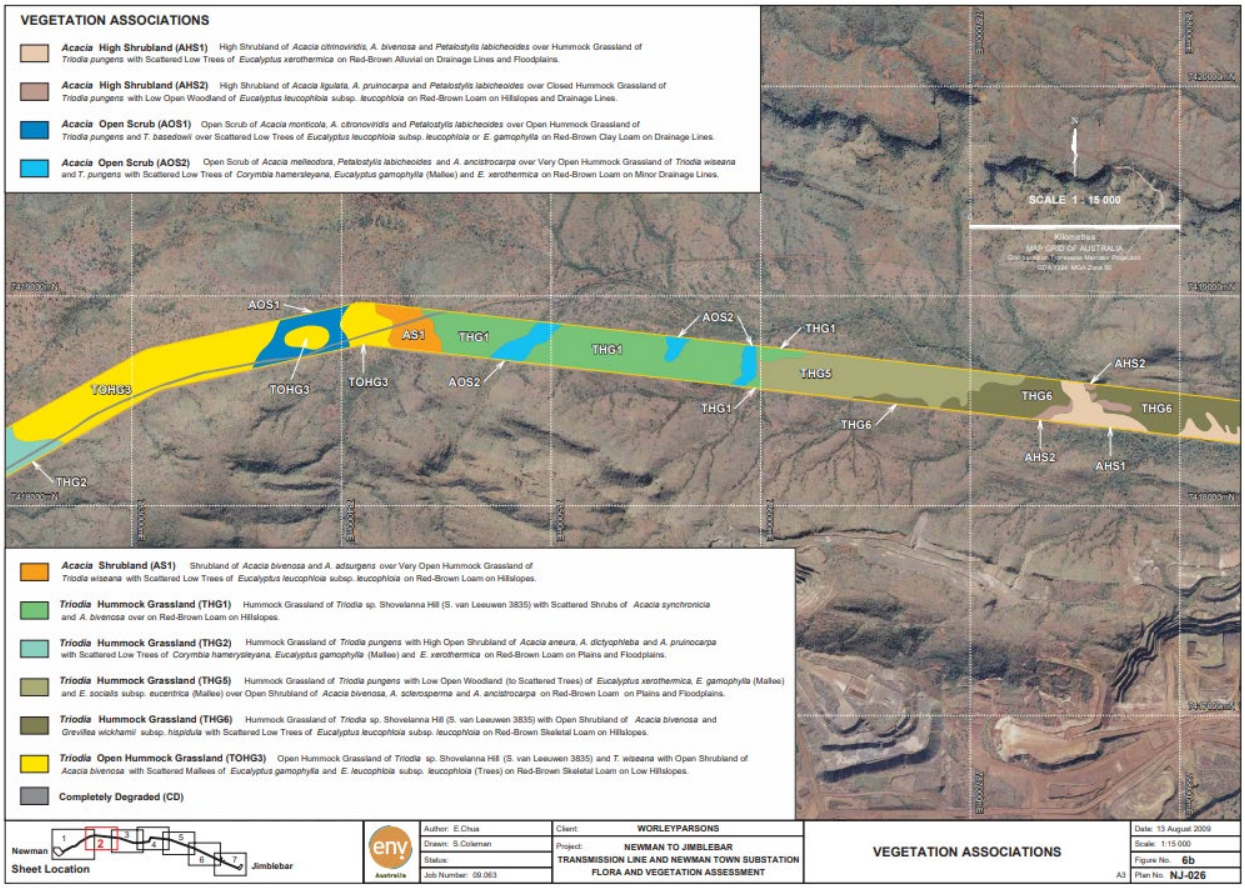

Figure E-2. Vegetation associations within the application area (ENV, 2009)

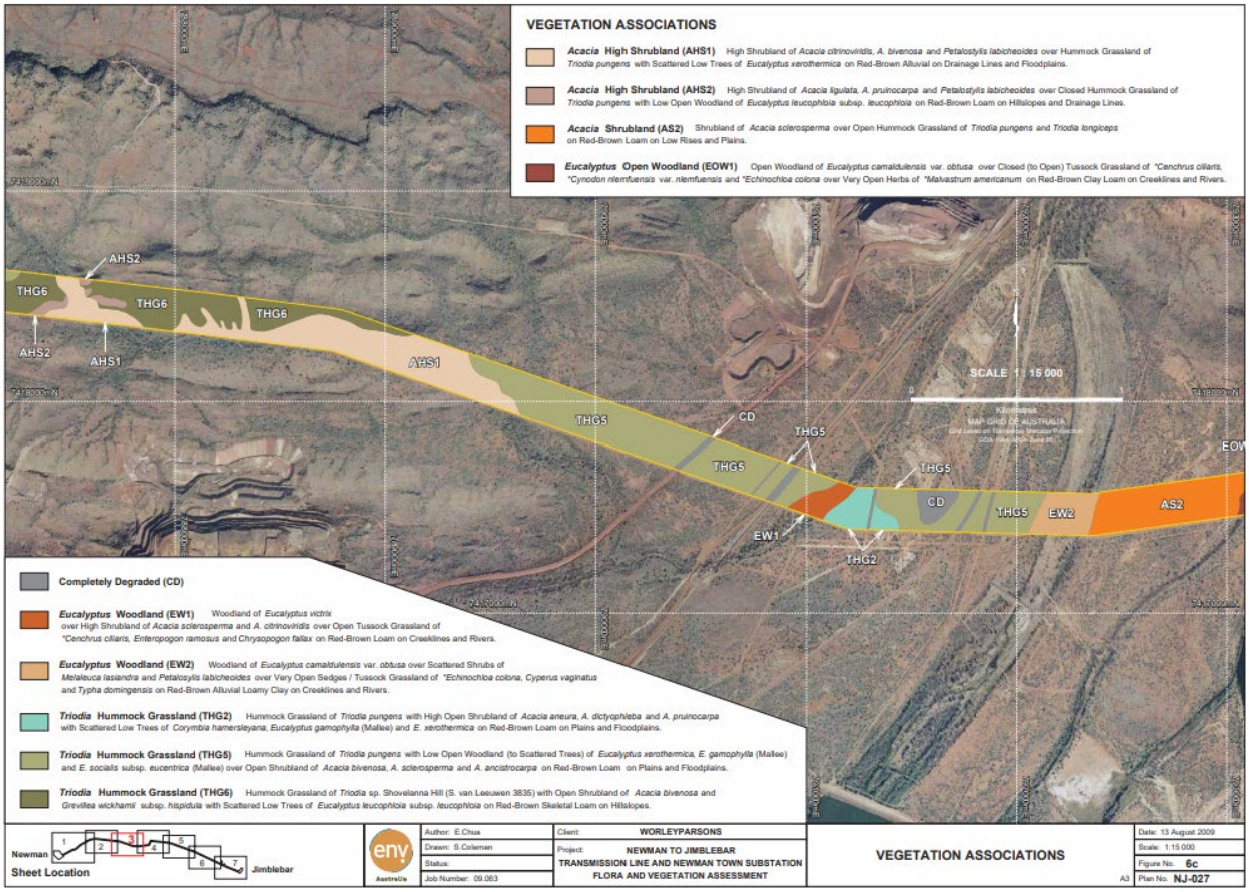

Figure E-3. Vegetation associations within the application area (ENV, 2009)

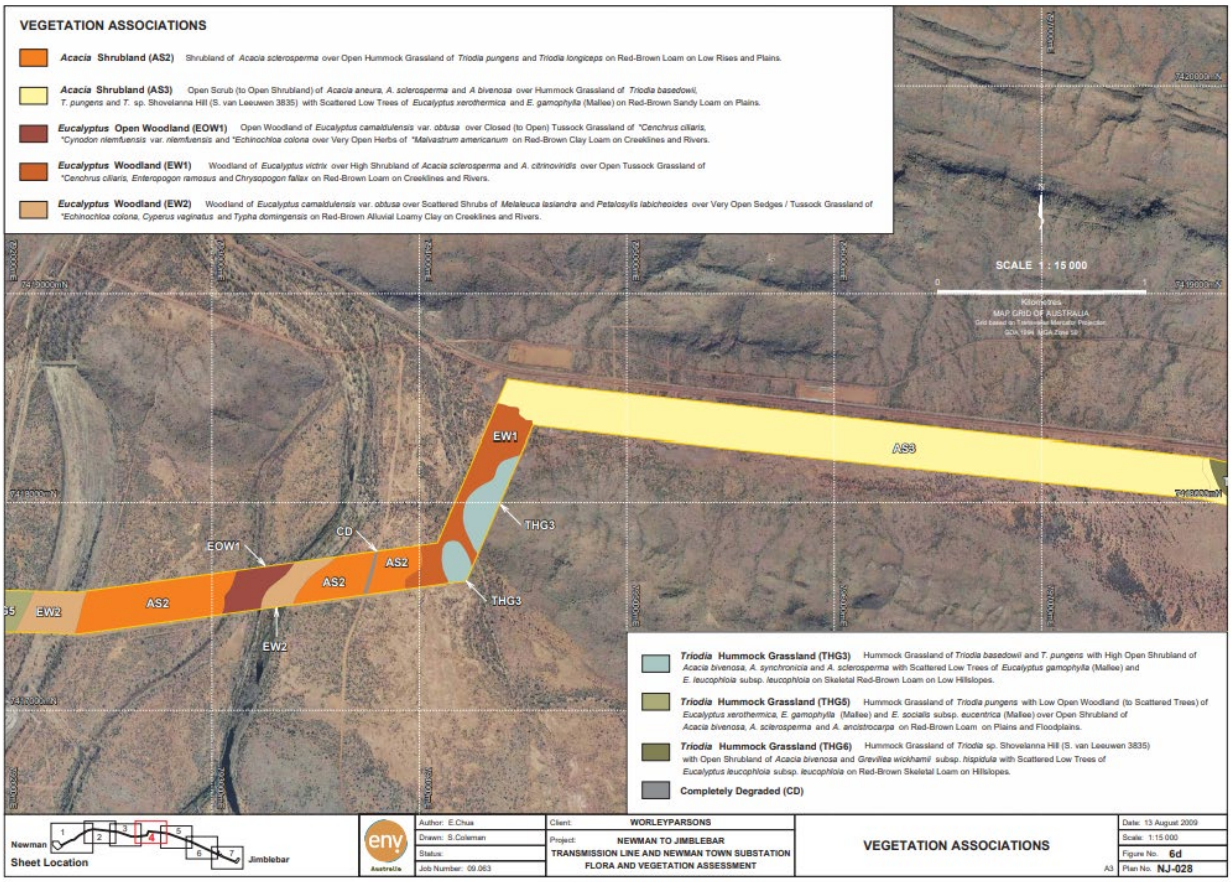

Figure E-4. Vegetation associations within the application area (ENV, 2009)

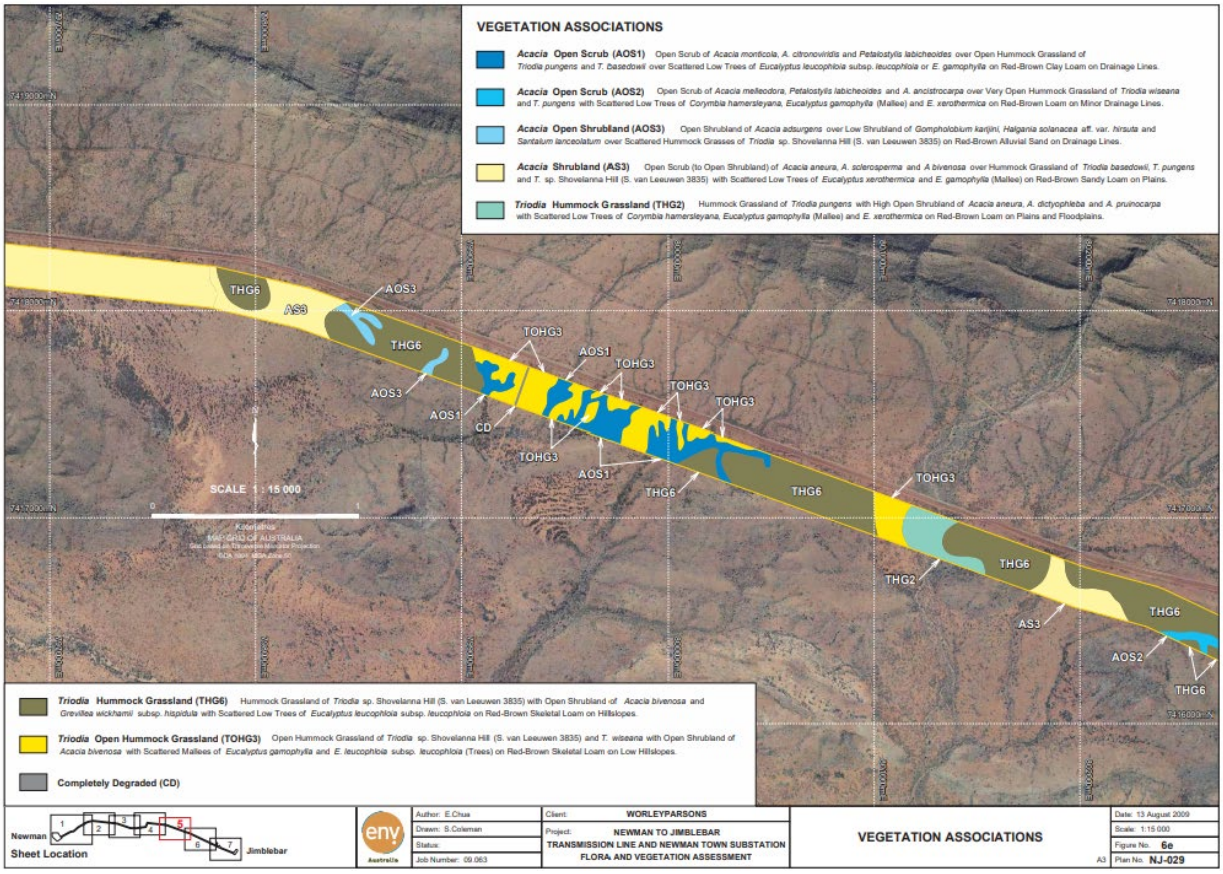

Figure E-5. Vegetation associations within the application area (ENV, 2009)

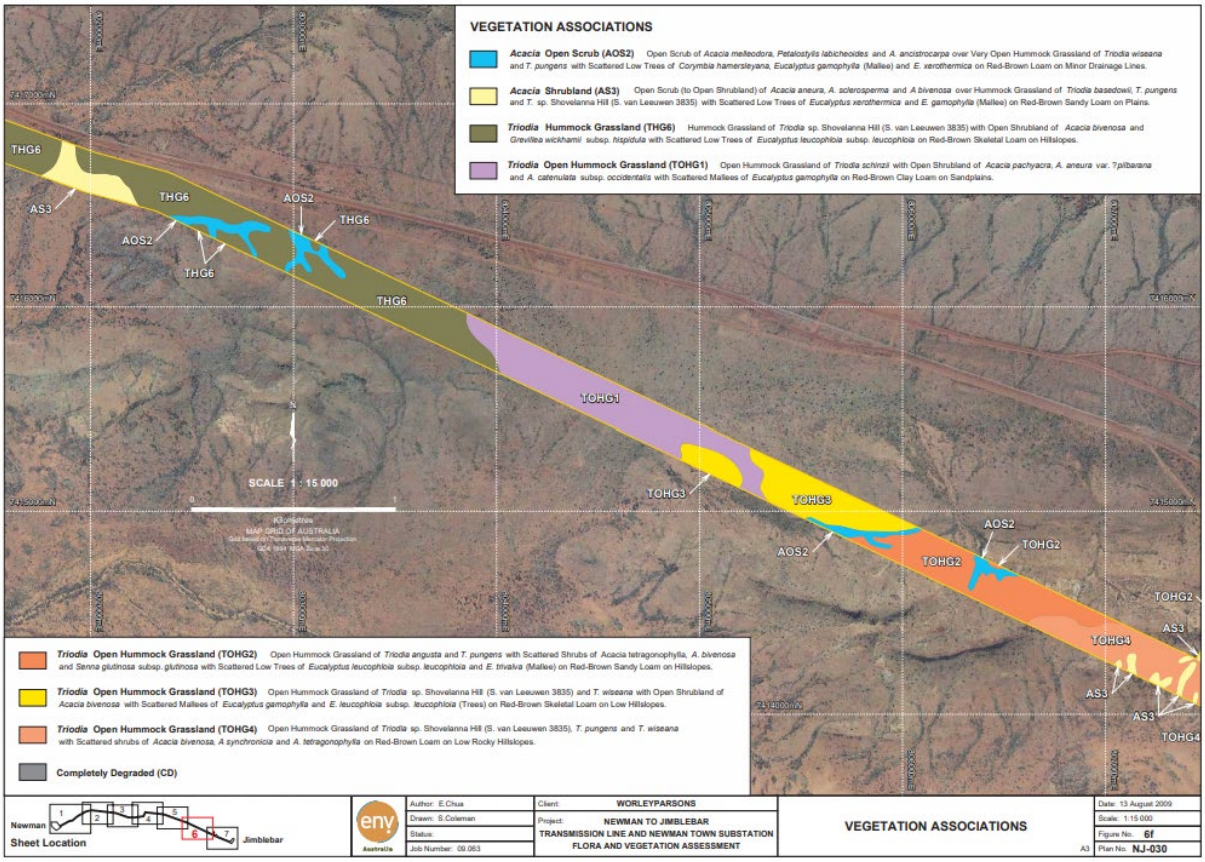

Figure E-6. Vegetation associations within the application area (ENV, 2009)

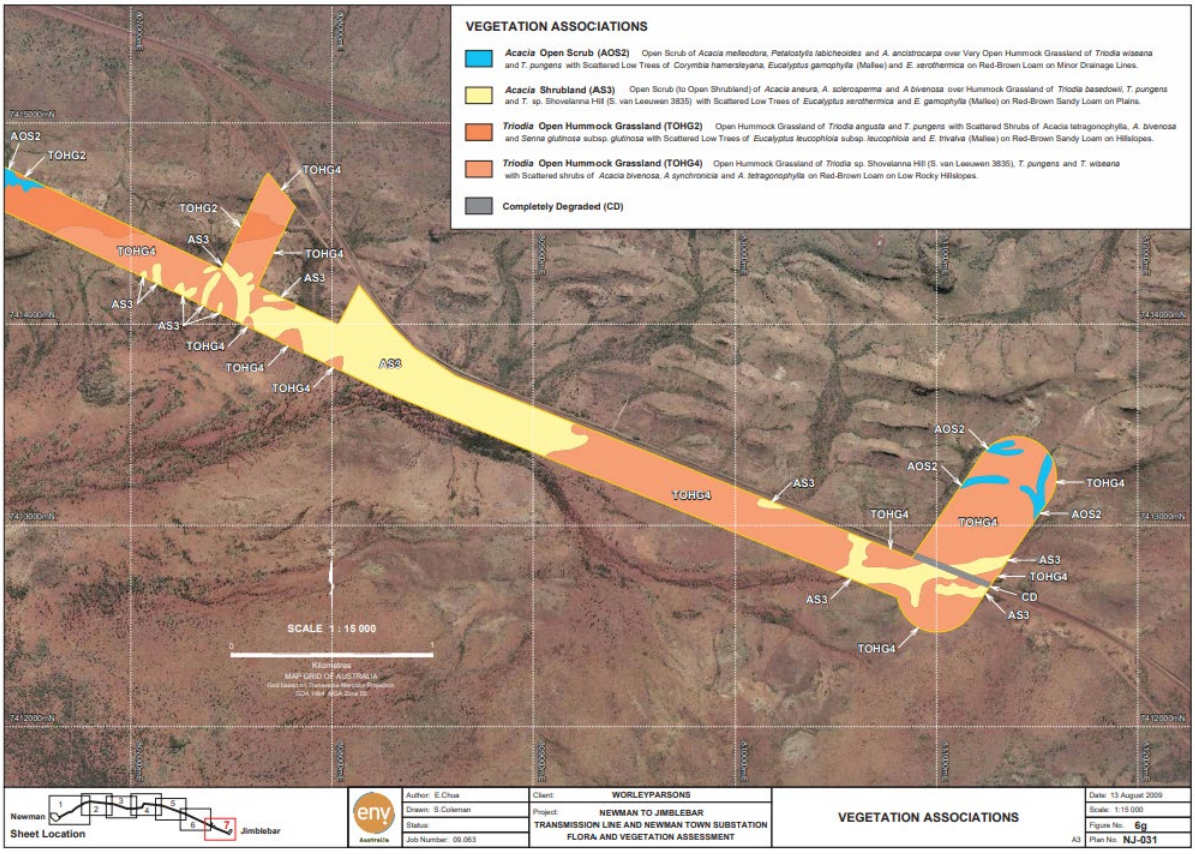

Figure E-7. Vegetation associations within the application area (ENV, 2009)

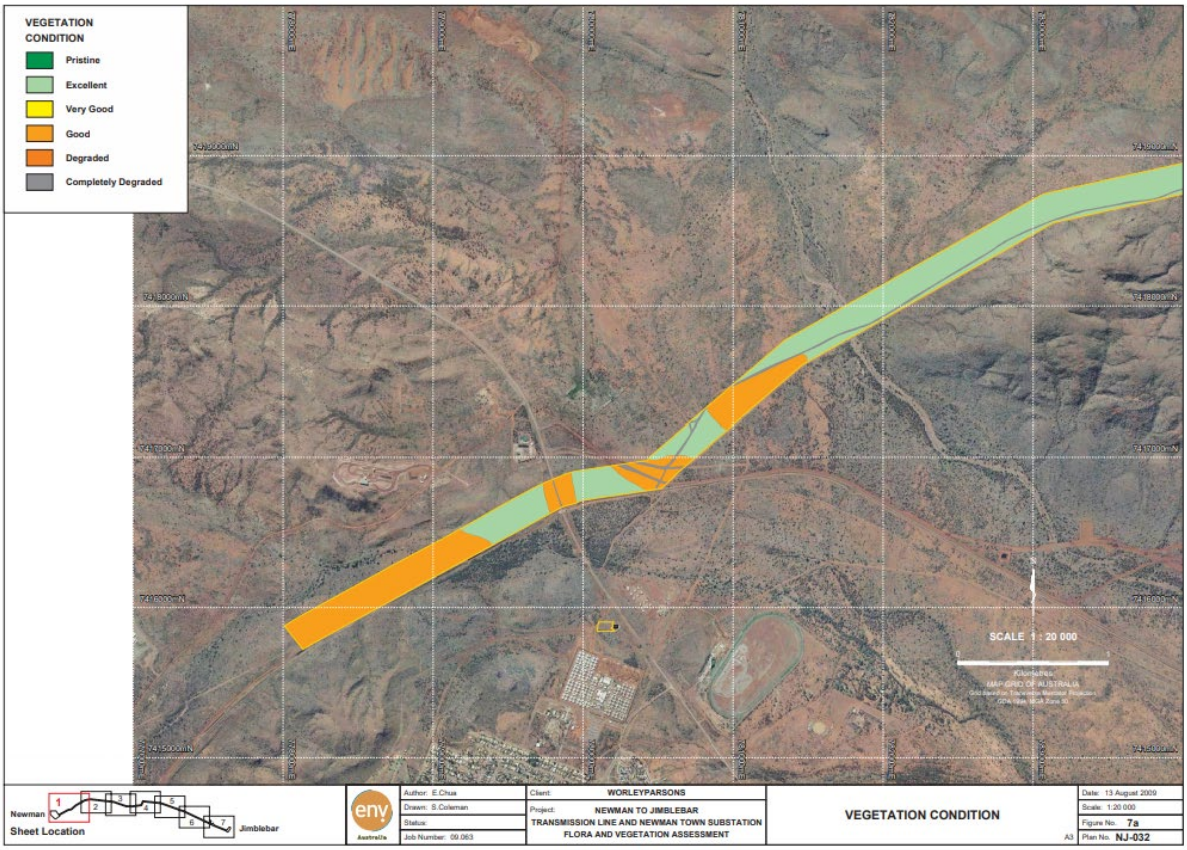

Figure E-8. Vegetation condition within the application area (ENV, 2009)

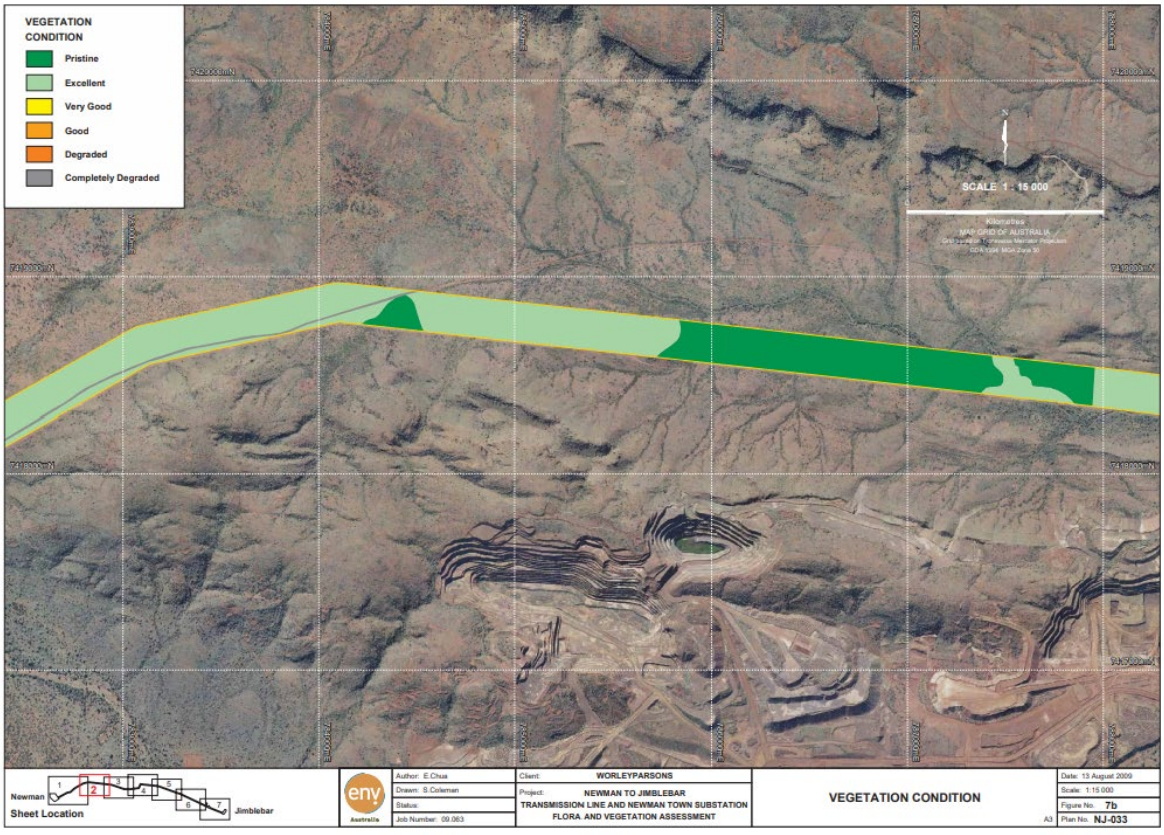

Figure E-9. Vegetation condition within the application area (ENV, 2009)

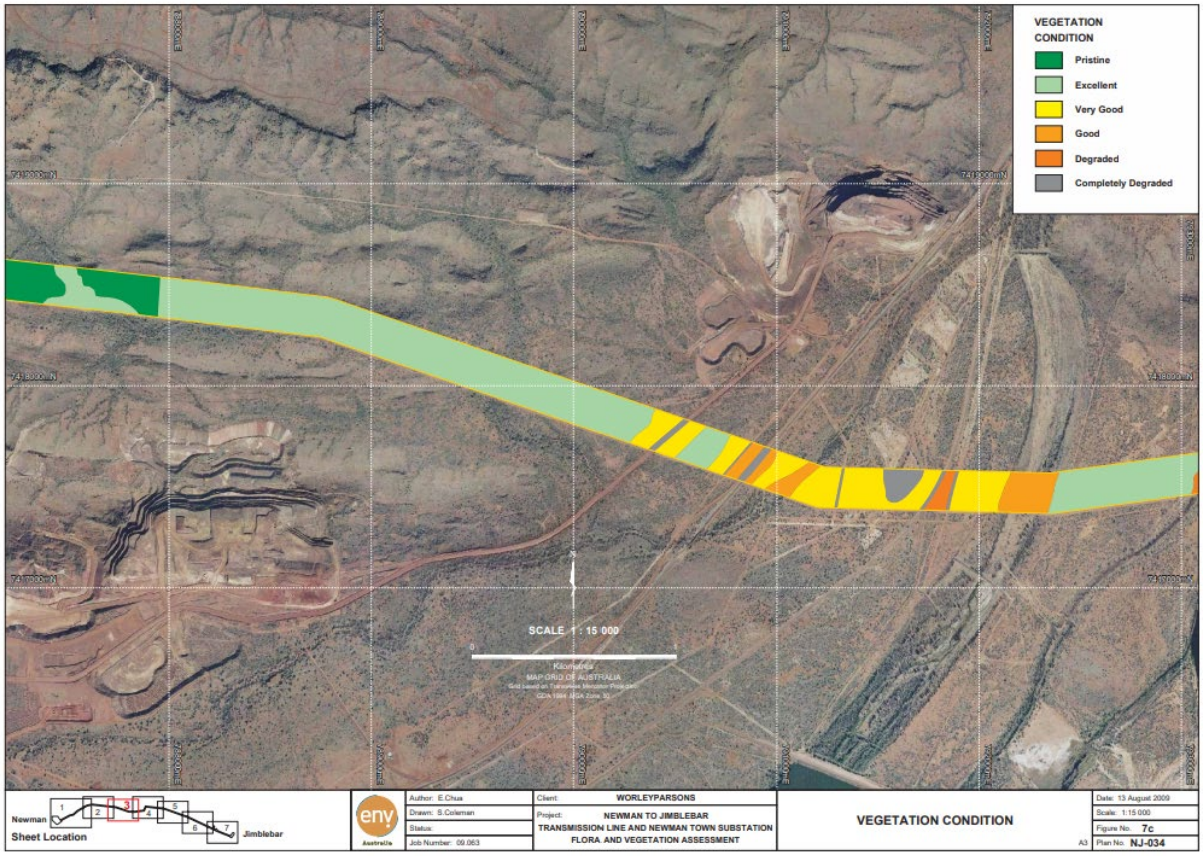

Figure E-10. Vegetation condition within the application area (ENV, 2009)

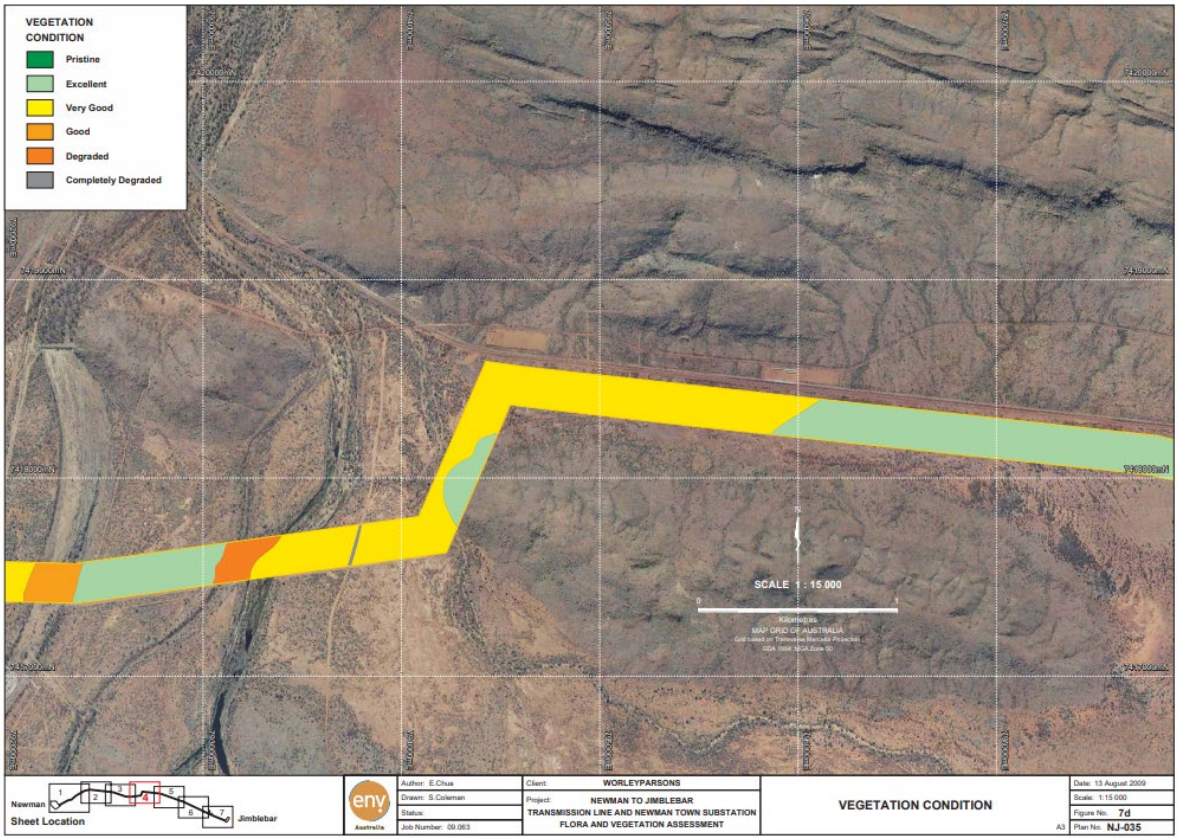

Figure E-11. Vegetation condition within the application area (ENV, 2009)

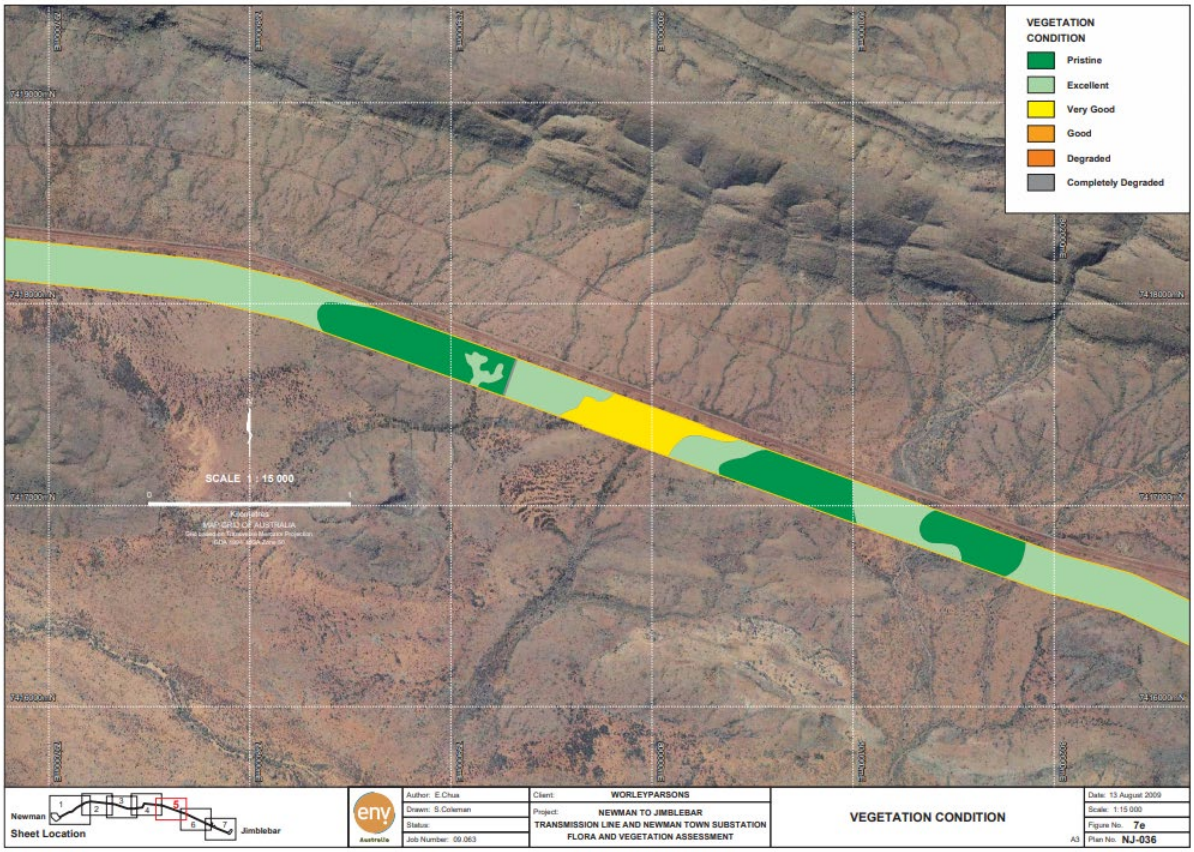

Figure E-12. Vegetation condition within the application area (ENV, 2009)

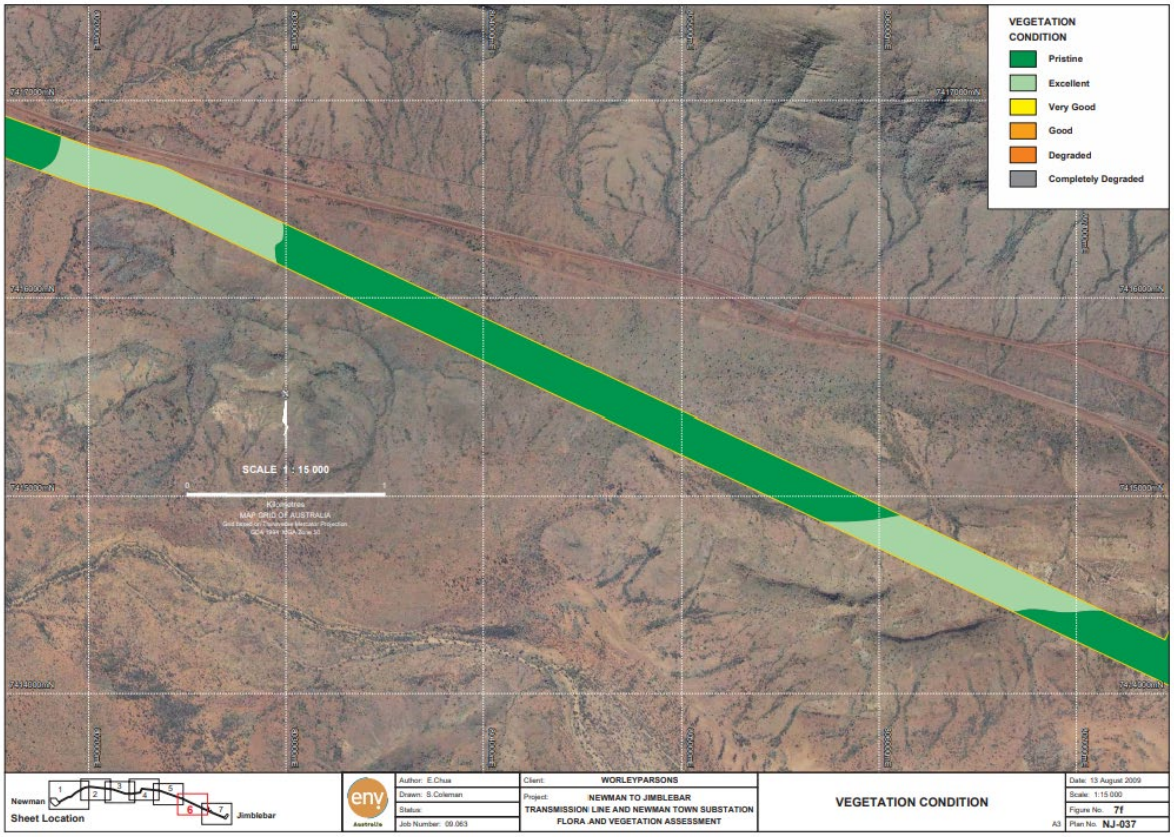

Figure E-13. Vegetation condition within the application area (ENV, 2009)

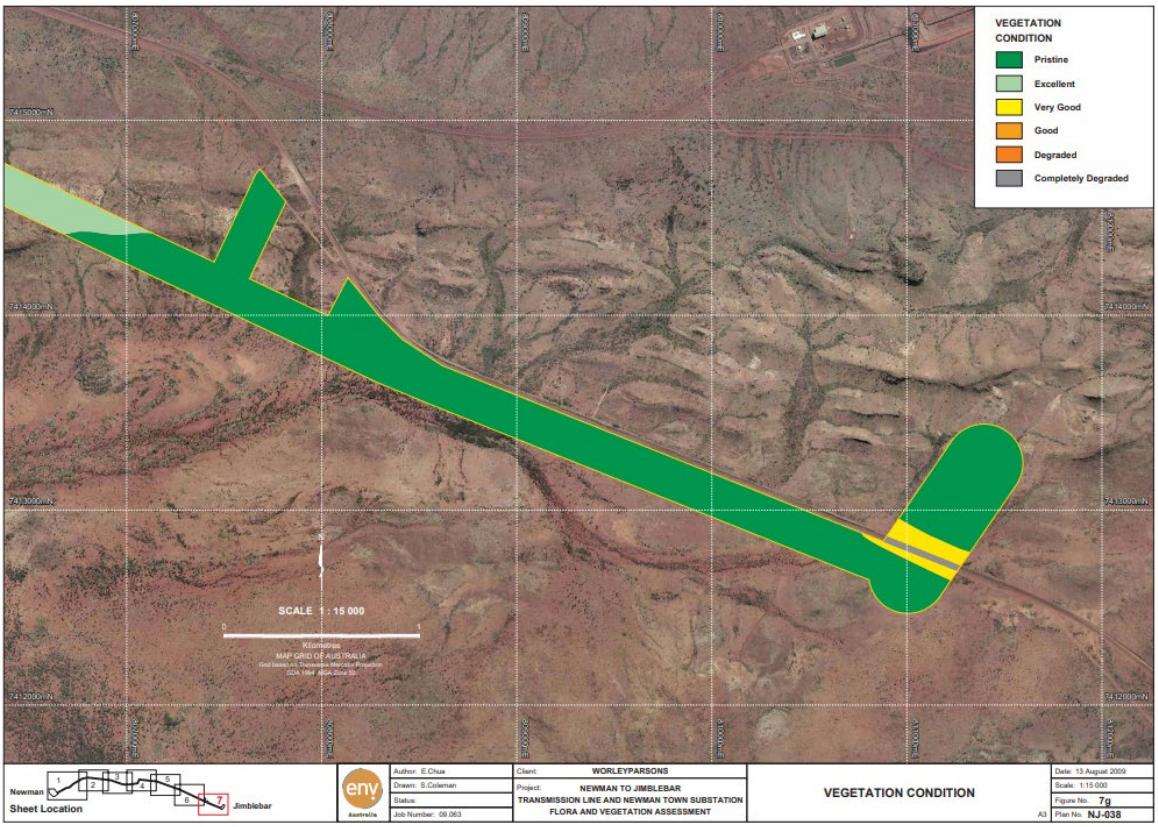

Figure E-14. Vegetation condition within the application area (ENV, 2009)

1. **Drainage Area / Floodplain:** Characterised by *Eucalyptus xerothermica* and *Corymbia hamersleyana* woodland over broad-leafed *Acacia* shrubland on sandy loam soils sometimes with exposed rocky areas. These can have high vegetation density, complexity and diversity, and because they tend to occur on accretional or depositional areas, and often have deeper and richer soils than other fauna habitats. Grasses tend to be dominated by tussock grasses rather than spinifex, or the weed Buffel Grass **Cenchrus ciliaris*.
2. **Minor Drainage Line:** Located within the minor gullies and depressions, generally through the Crest/Slope habitat. Consists primarily of *Acacia* low shrubland. The understorey generally lacks density and often consists solely of sparse tussock grassland, often including the weed Buffel Grass **Cenchrus ciliaris* where it has been introduced. The substrate can be sandy in places but generally consists of a skeletal loam gravel or stone.
3. **Major Drainage Line:** Major Drainage Lines comprise mature River Red Gums, Coolibahs and stands of Silver Cadjeput over river pools. Open, sandy or gravelly riverbeds characterise this habitat type. In ungrazed areas, the vegetation adjacent to the main channel or channels is denser, taller and more diverse than adjacent terrain and can include reedbeds around pools.
4. **Mulga:** This habitat includes woodlands and other ecosystems in which Mulga (*Acacia aneura*) is dominant, either as the principal *Acacia* species or mixed with others. It consists of disintegrating groves on stony soils with spinifex. This habitat type is grouped with other habitat occurring on the plains; however it is noted that small groves of Mulga occur on ridgelines.
5. **Sand Plain:** Sand Plain habitat is characterised by relatively deep sandy soils supporting dense spinifex grasslands and sparse shrubs. This habitat transitions into patches of Mulga in places. This habitat often occurs as terraces along Major Drainage Lines.
6. **Stony Plain:** These are erosional surfaces of gently undulating plains, ridges and associated footslopes. Mainly support hard spinifex (and occasionally soft spinifex) with a mantle of gravel and pebbles.
7. **Hillcrest / Hillslope:** These fauna habitats tend to be more open and structurally simple due to their recent depositional history than other fauna habitats, and are dominated by varying species of spinifex. A common feature of these habitats is a rocky substrate, often with exposed bedrock, and skeletal red soils. These are usually dominated by *Eucalyptus* woodlands, *Acacia* and *Grevillea* scrublands and *Triodia* spp. low hummock grasslands.

Figure E-15. Description of fauna habitats identified within the application area (BHP, 2024b)

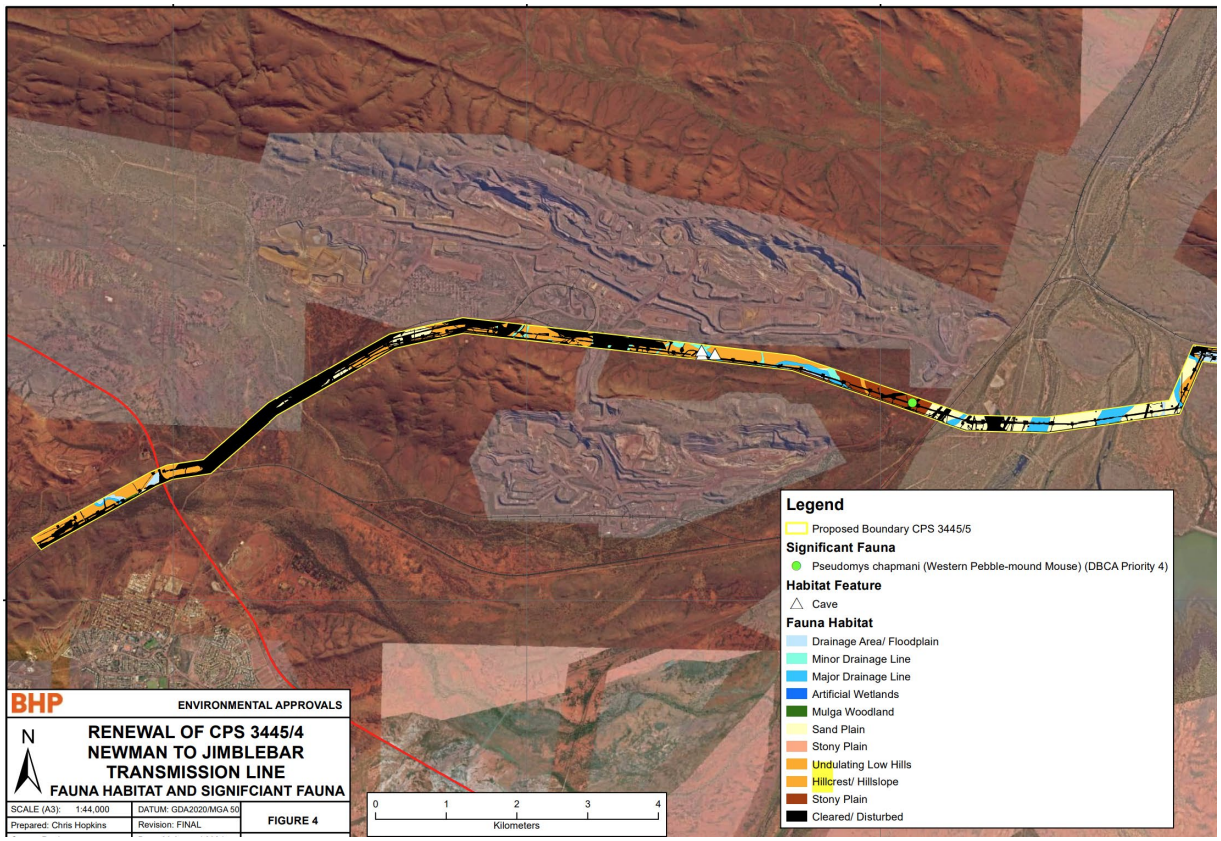

Figure E-16. Map of fauna habitats identified within western application area (BHP, 2024b)

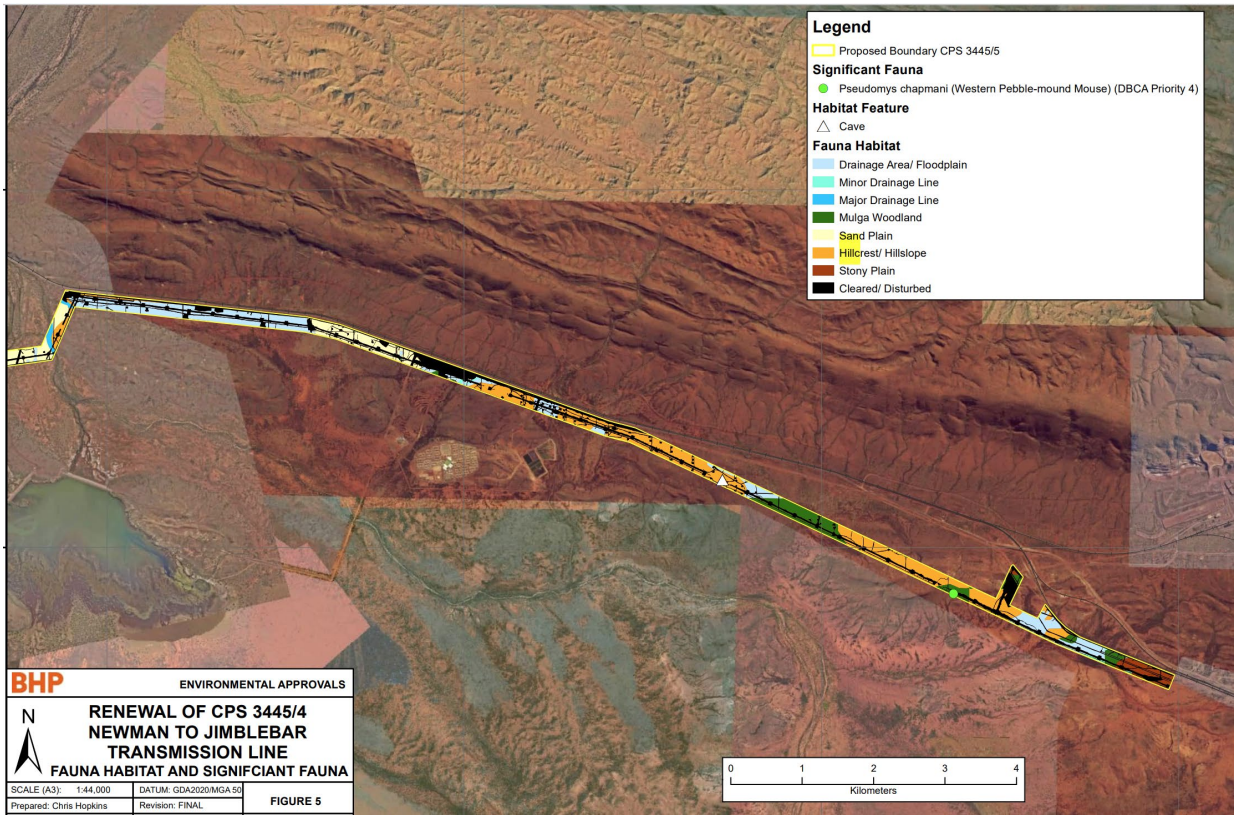

Figure E-17. Map of fauna habitats identified within western application area (BHP, 2024b)

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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