



Clearing Permit Decision Report

1. Application details and outcomes

1.1. Permit application details

Permit number:	CPS 9903/1
Permit type:	Purpose Permit
Applicant name:	Roy Hill Infrastructure Pty Ltd
Application received:	30 September 2022
Application area:	163.04 hectares
Purpose of clearing:	Geotechnical Investigations
Method of clearing:	Mechanical Removal
Tenure:	Section 91 Licence 00785/2023_A12423514 under the <i>Land Administration Act 1997</i> , Section 31 Licence under the <i>Aboriginal Affairs Planning Authority Act 1972</i>
Location (LGA area/s):	Town of Port Hedland and Shire of East Pilbara
Colloquial name:	Mulga Downs Hub and Rail Spur

1.2. Description of clearing activities

Roy Hill Infrastructure Pty Ltd proposes to clear up to 163.04 hectares of native vegetation within a boundary of approximately 3,827 hectares, for the purpose of geotechnical investigations. The project is located approximately 110 kilometres southwest of Marble Bar, within the Town of Port Hedland and the Shire of East Pilbara.

The application is to allow for the completion of geophysical, geotechnical and hydrogeological drilling investigation works which will guide the detailed engineering design to further reduce the proposed rail corridor and confirm the location of the rail centreline.

1.3. Decision on application and key considerations

Decision:	Grant
Decision date:	10 August 2023
Decision area:	163.04 hectares of native vegetation

1.4. Reasons for decision

This clearing permit application was made in accordance with section 51E of the *Environmental Protection Act 1986* (EP Act) and was received by the Department of Mines, Industry Regulation and Safety (DMIRS) on 30 September 2022. DMIRS advertised the application for a public comment for a period of 21 days, and two submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (Appendix C), relevant datasets (Appendix G), supporting information provided by the applicant (Appendix A) including information from a flora and vegetation survey, as well as a fauna survey (Appendix F), the clearing principles set out in Schedule 5 of the EP Act (Glossary), proposed avoidance and minimisation measures (Section 3.1), relevant planning instruments and any other matters considered relevant to the assessment (Section 3.3).

The assessment identified that the proposed clearing may result in:

- the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values;
- impacts to riparian vegetation;
- impacts to conservation significant flora;
- impacts to conservation significant fauna;
- the loss of native vegetation that is suitable habitat for conservation significant fauna;
- potential land degradation in the form of erosion.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing can be minimised and managed to be unlikely to lead to an unacceptable risk to environmental values.

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

- avoid, minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds;
- avoid clearing of riparian vegetation where possible and maintain water flows;
- conduct targeted surveys prior to clearing;
- create buffers to prevent the clearing of priority flora;
- have a fauna spotter/handler on site when clearing occurs;
- undertake slow, progressive one-directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity;
- retain cleared vegetation and topsoil to be used in rehabilitation activities; and
- commence activities no later than three months after undertaking clearing to reduce the risk of erosion.

1.5. Site map



Figure 1. The area cross-hatched yellow represents the proposed clearing boundary.

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
- the polluter pays principle

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Land Administration Act 1997* (WA)
- *Mining Act 1978* (WA)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2014)
- *Procedure: Native vegetation clearing permits* (DWER, October 2021)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- Technical guidance – *Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment* (EPA, 2020)

3. Detailed assessment of application

3.1. Avoidance and mitigation measures

Originally, the proponent had requested a larger amount of clearing within a larger boundary. However, due to land access approvals obtained and ongoing refinements to the designs, the proponent reduced the area to be cleared and the permit boundary. In their native vegetation clearing permit application, the proponent described the avoidance and mitigation measures in place for the proposed clearing as listed below (RHI, 2022):

Avoid and Minimise Clearing

- Aboriginal monitors on site in front of disturbing activities to determine prohibited areas;
- Clearly demarcate the area of vegetation required to be cleared prior to works commencing and after inspection by Aboriginal monitors;
- Ensure suitably qualified wildlife spotter/handler is on call during clearing works;
- Cleared areas to be surveyed for reporting in accordance with permit requirements;
- Where possible work should be conducted in already pre cleared/disturbed areas and avoid disturbance in watercourses; and
- Breaks in clearing to ensure surface water flow isn't impacted.

Weed Control

- Ensure clean earth-moving machinery prior to entering/leaving clearing area and inspected by a suitable personnel and restrict the movement of machines and other vehicles within the limits of the clearing areas;
- Ensure record keeping including weed and seed vehicle inspections.

Revegetation and Rehabilitation

- Retain the vegetative material and topsoil;
- Topsoil stripping to be avoided in windy conditions; and
- Topsoil stockpiles will not exceed 2 metres in vertical height and will not be compacted during stockpiling activities.

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

3.2. Assessment of impacts on environmental values

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

The assessment against the clearing principles identified that the impacts of the proposed clearing present a risk to biological values (fauna, flora and vegetation). The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

3.2.1. Biological values (flora) - Clearing Principle (a)

Assessment

One Priority flora species was recorded within the application area by field surveys (Attexo, 2022):

- *Gymnanthera cunninghamii* (P3)

- This species is known from 40 herbarium records scattered across the Pilbara and Gascoyne regions of WA. A few of these records are located within National Parks, conservation parks, or protected areas (Western Australian Herbarium, 1998-). Potential impacts from the proposed clearing are unlikely to impact the conservation significance of this species (DBCA, 2022).

Other records of Priority flora with the potential to occur within the application area are listed in Appendix C.2. These records are not restricted to the application area (Western Australian Herbarium, 1998-). The application area has been surveyed many times since 2008. Two of the most recent surveys were conducted by Maia Environmental (2022) and Strategen JBS&G (2021). Below is an assessment of the potential impacts for the species likely to occur within the application area.

- *Cochlospermum macnamarae* (P1)

- There are records of *C. macnamarae* within 200 metres of the application area (GIS Database). The current known population of this species is of less than 600 individuals (DBCA, 2022). This species is known from nine herbarium records and six locations within a restricted area of the Chichester IBRA subregion of the Pilbara, and all known locations are under live or pending mining tenements (DBCA, 2022). As suitable habitat occurs within the application area and there are a number of confirmed records in close proximity, it is possible that *C. macnamarae* could occur within the application area. The restricted distribution of this species and this area being at the south-western extent of its range, mean any impacts to this species could potentially be significant.

- *Pentalepis trichodesmoides* subsp. *hispida* (P2)

- This species is known from 60 herbarium records and numerous locations across the Pilbara. Given that this species has a restricted distribution and that most records are within live or pending mining tenements potential impacts to this species may be significant (DBCA, 2022).

- *Euphorbia stevenii* (P3)

- This species is known from 17 herbarium records from six locations within WA, five in the Pilbara and a disjunction location in the Eastern Kimberly. One of these records is located inside of Karijini National Park (Western Australian Herbarium, 1998-). Potential impacts from the proposed clearing are unlikely to impact the conservation significance of this species (DBCA, 2022).

- *Indigofera gilesii* (P3)

- This species is known from 39 herbarium records within five IBRA regions. Nine of these records are located within protected areas (Western Australian Herbarium, 1998-). Given the wide range of this species, potential impacts from the proposed clearing are unlikely to significantly impact the conservation significance of this species.

- *Ipomoea racemigera* (P2)

- This species is known from 17 herbarium records within three IBRA regions. Five of these records are located within protected areas (Western Australian Herbarium, 1998-). Given the wide range of this species, potential impacts from the proposed clearing are unlikely to significantly impact the conservation significance of this species.

The data from these surveys was analysed and the results of a species accumulation curve indicated that 82 per cent of the species estimated to be in the survey area were recorded from the quadrats assessed (Attexo, 2022). In addition to this analysis, a further 135 taxa were located opportunistically. Therefore, it was concluded that the total number of species detected indicates that, statistically, no further species are expected to occur (Attexo, 2022). However, it is important to note that the flora survey conducted by Strategen JBS&G (2021) was undertaken in November 2021 following four months with no rain while primary surveys in the Eremaean Botanical Province should be undertaken six to eight weeks following wet season rain (March-June) (EPA, 2016). Performing surveys at the wrong time of the year can limit the findings of the survey and overlook plant species in the survey area, especially if they are annual species. Priority species which were noted in the Strategen JBS&G (2021) report as "Likely" to occur based on preferred soil type and habitat occurring in the survey area but could have been missed due to dry conditions (DBCA, 2022) are listed and analysed below:

- *Calotis squamigera* (P1)

- This species is known from six herbarium records. All of these records are located within the Pilbara region. There are no records located within a protected area (Western Australian Herbarium, 1998-). Given that this species has a restricted distribution and that all records are within live or pending mining tenements (GIS Database), potential impacts to this species may be significant.

- *Helichrysum oligochaetum* (P1)

- This species is known from 13 herbarium records within two IBRA regions, though 11 of these records are located in the Pilbara region. Only one of these records is located inside a protected area, Cane River Conservation Park (Western Australian Herbarium, 1998-), the rest are located within live or pending mining tenements (GIS Database). Potential impacts to this species may be significant at a local level.

- *Rhodanthe ascendens* (P1)

- This species is known from only four herbarium records. Only one of these records is located in the Pilbara region, and it is located within Karijini National Park (Western Australian Herbarium, 1998-). The restricted distribution of this species within the Pilbara, means any impacts to this species, if present, could potentially be significant.

- *Paspalidium retiglume* (P2)
 - This species is known from 12 herbarium records. Eleven of these records are located in the Pilbara region with one disjunct location in the Central Kimberly region. There are three records of this species located within one protected area, Millstream Chichester National Park (Western Australian Herbarium, 1998-). Potential impacts from the proposed clearing may be significant to this species at a local and regional level.
- *Aristida jerichoensis* var. *subspinulifera* (P3)
 - This species is known from 45 herbarium records across four IBRA regions, though the majority of records are located across numerous locations in the Pilbara. Two records are located inside of Karijini National Park (Western Australian Herbarium, 1998-). Potential impacts from the proposed clearing are unlikely to impact this species.
- *Dolichocarpa* sp. Hamersley Station (P3)
 - This species is known from 38 herbarium records. All of these records are located across the Pilbara region. There are five records located within protected areas (Western Australian Herbarium, 1998-). Potential impacts from the proposed clearing are likely to impact this species at a local level.
- *Eragrostis crateriformis* (P3)
 - This species is known from 53 herbarium records across four IBRA regions, though the majority of records are located across numerous locations in the Pilbara. Four records are located within protected areas (Western Australian Herbarium, 1998-). Potential impacts from the proposed clearing are unlikely to significantly impact this species.
- *Euphorbia australis* var. *glabra* (P3)
 - This species is known from 23 herbarium records. All of these records are located within the Pilbara region. There are two records located within Karijini National Park (Western Australian Herbarium, 1998-). Given that this species has a restricted distribution and that most records are within live or pending mining tenements (GIS Database), potential impacts to this species may be significant at a local and regional level.
- *Themeda* sp. Hamersley Station (M.E. Trudgen 11431) (P3)
 - This species is known from 60 herbarium records and numerous locations across the Pilbara. A few of these records are located within National Parks (Western Australian Herbarium, 1998-). Potential impacts from the proposed clearing are unlikely to impact the conservation significance of this species (DBCA, 2022).

Conclusion

For the reasons set out above, it is considered that the impacts of the proposed clearing on priority flora can be managed by taking steps to prevent the clearing of priority flora within the application area.

Conditions

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

- flora management to prevent the clearing of conservation significant flora by placing a buffer around the Priority flora located within the application area; and
- pre-clearing targeted surveys to identify conservation significant plants that could have been overlooked in the initial survey.

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

Assessment

The western pebble-mound mouse (P4) was recorded within the application area during the field survey (Spectrum, 2022). Other records of conservation significant fauna located within a 20 kilometre radius from the application area are listed in Appendix C.3. These species are of high or medium likelihood to occur within the application area because there is suitable foraging and/or breeding habitat within the area proposed to be cleared. The habitats within the application area that are suitable for roosting/denning, foraging, and/or breeding for conservation significant species are drainage lines, rocky plains and footslopes, cracking clay, hilltops, mesas, and outcrops (Spectrum, 2022). Although the proposed clearing will cause disturbance to these habitats, the proposed clearing (163.04 hectares) will only affect 4.3 per cent of the application area. Additionally, given the purpose of the clearing is to conduct geotechnical investigations for the placement of a rail spur, clearing is unlikely to occur on areas considered to have unstable topography.

The application area also contains four habitat types (drainage lines, rocky plains and footslopes, cracking clay, and snakewood) that support short-range endemics (SREs) (Spectrum, 2022). The majority of the SRE specimens were recorded from drainage lines habitat type (Spectrum, 2022). None of the confirmed or potential SREs recorded during the survey are currently listed as a Threatened or Priority species (DBCA, 2022). Given that the proposed disturbance will be performed in relatively small areas of clearing over a large area, it is unlikely to have a significant impact on these species (DBCA, 2022).

The application area is within the 'High Priority Survey' area for night parrot and is within 100 kilometres of a known record (DBCA, 2022). Targeted surveys for night parrot were not conducted because no suitable known breeding habitat in the form of long unburnt spinifex adjacent to chenopod or samphire shrubland was observed during the survey (Spectrum, 2022). The entire application area has been affected by fire, the oldest fire recorded within the application area occurred 16 years ago (GIS Database). Given that suitable habitat for night parrots must contain old and large spinifex clumps (often >50 years unburnt) (DPaW, 2017), the application area is unlikely to contain suitable roosting habitat for the night parrot.

Conclusion

For the reasons set out above, it is considered that the impacts of the proposed clearing on conservation significant fauna and their habitats can be managed by taking steps to prevent the loss of fauna and rehabilitate lost habitat within the application area.

The applicant may have notification responsibilities under the EPBC Act for impacts to bilby, ghost bat, grey falcon, northern quoll, Pilbara leaf-nosed bat, and Pilbara olive python and their habitats, as set out in the EPBC Act. The applicant has been advised to contact the federal Department of Climate Change, Energy, the Environment and Water (DCCEEW) to discuss EPBC Act referral requirements.

Conditions

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

- undertake slow, progressive one-directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity;
- engage a fauna spotter to traverse the project area ahead of clearing machinery at the time of clearing and alert machinery operators to avoid certain conservation significant fauna; and
- undertake rehabilitation efforts on areas that have been cleared to recover lost habitat.

3.3. Relevant planning instruments and other matters

The clearing permit application was advertised on 28 April 2023 by the Department of Mines, Industry Regulation and Safety inviting submissions from the public. Two submissions were received in relation to this application.

There are two native title claims (WCD2019/002, WCD2018/015) over the area under application (DPLH, 2023). These claims have been determined by the Federal Court on behalf of the claimant groups (Kariyarra Aboriginal Corporation and Palyku-Jartayi Aboriginal Corporation). However, any future mining tenure will be granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore, the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are 28 registered Aboriginal Sites of Significance within the application area (DPLH, 2023). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

Other relevant authorisations required for the proposed land use include:

- A Programme of Work approved under the *Mining Act 1978*.

It is the proponent's responsibility to liaise with the Department of Water and Environmental Regulation and the Department of Biodiversity, Conservation and Attractions, to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

End

Appendix A. Additional information provided by applicant

Summary of comments	Consideration of comment
The proponent provided updated shapefiles which showed a reduction in the initial permit boundary	The environmental impact assessment was conducted with consideration of the potential impacts on the environmental values in the updated application area.
Section 91 Licence	The proponent provided the granted section 91 licence which is part of the application area.
Section 31 Licence	The proponent provided the granted section 31 licence which is part of the application area.

Appendix B. Details of public submissions

Summary of comments	Consideration of comment
Concern about impacts to Aboriginal cultural heritage in the application area.	Impacts to Aboriginal cultural heritage are outside of the scope on this environmental impact assessment as Aboriginal cultural heritage is not legislated by the <i>Environmental Protection Act 1986</i> .
Further information wanted in regards to the exact clearing area, the proximity of the proposed clearing to the Town's Visual Protection Corridor, method of clearing, need for erosion and sediment control plan, and environmental management plan.	The submitter was advised to liaise directly with the proponent to discuss the available information in regards to their concerns. Proponent and submitter reached an agreement.

Appendix C. Site characteristics**C.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 and drainage lines (GIS Database).
Ecological linkage	According to available databases and aerial imagery, the application area does not form part of any mapped ecological linkages (GIS Database).
Conservation areas	The application area is not located within any mapped conservation areas (GIS Database). The closest mapped conservation area is Mungaroona Range Nature Reserve, located approximately 22 kilometres west of the application area (GIS Database).
Vegetation description	<p>The vegetation of the application area is broadly mapped as the following Beard vegetation associations:</p> <p>93: Hummock grasslands, shrub steppe; kanji over soft spinifex; 173: Hummock grasslands, shrub steppe; kanji over soft spinifex and <i>Triodia wiseana</i> on basalt and 175: Short bunch grassland - savanna/grass plain (Pilbara) (GIS Database).</p> <p>A flora and vegetation survey was conducted over the application area by Strategen-JBS&G during November, 2021. The following vegetation types were recorded within the application area (Attexo, 2021):</p> <p>MSW: Shrublands and woodlands of <i>Eucalyptus</i> spp., <i>Atalaya hemiglauca</i>, and <i>Melaleuca</i> and <i>Acacia</i> species associated with drainage lines. MTGW: Mixed tussock grasslands of <i>Eragrostis xerophila</i>, <i>Aristida latifolia</i> and <i>Astrelbia pectinata</i>, with patches of <i>Triodia</i> spp. and sparse mixed shrubs. THGB: <i>Triodia epactia</i> and <i>Triodia brizoides</i> hummock grassland with sparse <i>Acacia inaequilatera</i> and <i>Grevillea pyramidalis</i> subsp. <i>leucadendron</i>. THGG: <i>Triodia basedowii</i>, <i>Triodia epactia</i> and <i>Triodia wiseana</i> hummock grassland with mixed <i>Acacia</i> species. TwHG: <i>Triodia basedowii</i> hummock grassland with <i>Ptilotus calostachyus</i>, <i>Goodenia stobbsiana</i> and isolated mixed shrubs.</p> <p>Mapping of vegetation types within the survey area is available in Appendix F.</p>
Habitat description	A fauna survey was conducted over the application area by Spectrum Ecology Pty Ltd from November 2021 to April 2022. The following fauna habitats were recorded within the application area (Spectrum, 2022):

Characteristic	Details
	<p>Rocky Plains and Footslopes: Vegetation characterising this habitat included <i>Corymbia hamersleyana</i>, <i>Acacia inaequilatera</i> and <i>Hakea chordophylla</i> over <i>Triodia</i> sp. There was high abundance of pebbles and stones, while leaf litter was generally very sparse to absent, restricted to beneath shrubs with occasional fallen timber. The substrate consisted of loamy clay. Some areas of this habitat type had recently been burnt.</p> <p>Cracking Clay: Vegetation was generally very sparse with patches of scattered Snakewood and occasional Mulga over dominant Buffel and scattered native grasses. Leaf and wood litter was sparse or absent due to lack of vegetation and basalt rock cover was abundant. This fauna habitat overlaps a Priority Ecological Community: Four Plant Assemblages of the Wona Land System (Priority 1). This land system consists of cracking clays, with little vegetative cover during the dry season. However, during the wet season, numerous ephemerals/annuals along with short-lived perennials emerge. Many of these species are poorly known or occur at the edge of their range.</p> <p>Drainage Lines: Drainage Line vegetation comprised of <i>Eucalyptus camaldulensis</i>, <i>Eucalyptus victrix</i>, <i>Acacia citrinoviridis</i> and <i>Melaleuca</i> sp. over mixed <i>Triodia</i> sp., sedges and grasses. The majority of the drainage lines had a sandy substrate with abundant creek stones, however, some areas had continuous rock formations.</p> <p>Hilltops, Mesas and Outcrops: Vegetation is characterised by <i>Corymbia hamersleyana</i> over <i>Acacia inaequilatera</i>, with sparse <i>Hakea chordophylla</i> over <i>Eremophila</i> sp., over mixed <i>Triodia</i> sp. Leaf and wood litter was sparse and restricted to shrubs. The substrate was loamy clay with abundant and sometimes continuous rock cover.</p> <p>Snakewood: This habitat was dominated by <i>Acacia xiphophylla</i> (Snakewood) and it was restricted to scattered patches on cracking clay. Other vegetation recorded in this habitat type included <i>Acacia inaequilatera</i> and scattered Mulga and Mesquite over Buffel grass. Leaf and wood litter was very sparse and basalt rock cover was abundant.</p> <p>Cleared/Disturbed: Cleared areas or areas of disturbance due to road/rail infrastructure. Vegetation regrowth was observed in some sections of these areas; however, use of this habitat by conservation significant fauna is unlikely.</p> <p>Mapping of habitat types within the survey area is available in Appendix F.</p>
Vegetation condition	<p>The vegetation survey (Attexo, 2022) and aerial imagery indicate the vegetation within the proposed clearing area is in Excellent to Completely Degraded (Trudgen, 1991) condition.</p> <p>The full Trudgen (1991) condition rating scale is provided in Appendix E.</p> <p>Mapping of vegetation condition within the survey area is available in Appendix F.</p>
Climate and landform	<p>The application area is located within an arid zone where the annual average rainfall is 391.8 millimetres (Marble Bar station) (BoM, 2022).</p>
Soil description	<p>The soil is mapped as soil units Gf1, MM19, Oc62, Oc63, and Oc64. These soil units are described by Northcote et al. (1960-68) as:</p> <p>Gf1: Steep ranges on basic lavas along with dolomites, tuff, banded iron formations, and dolerite dykes, with some narrow valley plains and high-level gently undulating areas of limited extent. The soils are generally shallow and stony and there are large areas without soil cover: chief soils are brown loams along with significant areas of earthy loam soils.</p> <p>Oc62: Very gently undulating pediplain with low granite outcrops and tors; occasional basic dykes occur as low elongate ridges: chief soils are hard alkaline red soils having coarse-textured A horizons up to 18 inches thick.</p> <p>Oc63: Pediplains on granite; more dissected than unit Oc62 and usually occurring as a zone flanking the main stream courses: chief soils are hard alkaline red soils.</p> <p>Oc64: Low stony hills and dissected pediments on granite with occasional basic dykes: chief soils are hard, alkaline red soils having shallow stony A horizons.</p>
Land systems	<p>The application area has been mapped as the Boolgeda, Granitic, Macroy, McKay, River, Rocklea, and White Springs land systems (DPIRD, 2022). These land systems are described by van Vreeswyk et al. (2004) as:</p> <p>Boolgeda land system: Stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands and mulga shrublands. Vegetation is generally not prone to degradation and the system is not susceptible to erosion.</p> <p>Granitic land system: Rugged granitic hills supporting shrubby hard and soft spinifex grasslands. The system is subject to fairly frequent burning and is not susceptible to erosion.</p> <p>Macroy land system: Stony plains and occasional tor fields based on granite supporting hard and soft spinifex grasslands. The system has low or very low erosion hazard.</p> <p>McKay land system: Hills, ridges, plateaux remnants and breakaways of meta sedimentary and sedimentary rocks supporting hard spinifex grasslands. The system is not prone to degradation or soil erosion.</p> <p>River land system: Active flood plains and major rivers supporting grassy eucalypt woodlands, tussock grasslands and soft spinifex grasslands. 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.</p>

Characteristic	Details
	Rocklea land system: Basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex (and occasionally soft spinifex) grasslands. The system has very low erosion hazard. White Springs land system: Stony gilgai plains supporting tussock grasslands and hard spinifex grasslands. The system is generally not susceptible to erosion.
Waterbodies	The desktop assessment and aerial imagery indicated that several, non-perennial watercourses transect the area proposed to be cleared (GIS Database).
Hydrogeography	The application area is located within the Pilbara Groundwater Area which is legislated by the <i>RIWI Act 1914</i> (GIS Database). The mapped groundwater salinity is 500-1000 milligrams per litre total dissolved solids which is described as marginal (GIS Database).
Flora	One Priority 3 flora species was recorded within the application area during the field survey (Attexo, 2022). There are no other records of conservation significant flora within the application area (GIS Database).
Ecological communities	No Threatened Ecological Communities or Priority Ecological Communities occur within the application area (Strategen, 2021; GIS Database). The closest record is Priority 1 Ecological Community, Four plant assemblages of the Wona Land System, located 0.2 kilometres south of the application area (GIS Database).
Fauna	There is one record of a Priority 4 fauna species occurring within the application area (Spectrum, 2022; GIS Database). There are other records of conservation significant fauna in the local area (20 kilometre radius from the application area) (GIS Database).

C.2. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix G.1), and biological survey information, impacts to the following conservation significant flora required further consideration. Potential impacts to the species considered likely to occur within the application area based on soil type and vegetation suitability have been analysed and described in section 3.2.1.

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Abutilon</i> sp. Pritzelianum (S. van Leeuwen 5095)	P3	N	N	N	21.1 km	48	N
<i>Acacia levata</i>	P3	N	N	N	7.4 km	17	N
<i>Aristida jerichoensis</i> var. <i>subspinulifera</i>	P3	Y	Y	Y	62.6 km	45	N
<i>Bulbostylis burbridgeae</i>	P4	N	N	Y	0.8 km	35	N
<i>Calotis squamigera</i>	P1	Y	Y	Y	46 km	6	N
<i>Cochlospermum macnamarae</i>	P1	Y	Y	Y	0.2 km	9	N
<i>Dipteracanthus chichesterensis</i>	P1	N	N	Y	8.8 km	8	N
<i>Dolichocarpa</i> sp. Hamersley Station	P3	Y	Y	Y	17.8 km	38	N
<i>Eragrostis crateriformis</i>	P3	Y	Y	Y	26 km	53	N
<i>Euphorbia australis</i> var. <i>glabra</i>	P3	Y	Y	Y	60.3 km	23	N
<i>Euphorbia stevenii</i>	P3	Y	Y	Y	4.5 km	17	N
<i>Fimbristylis sieberiana</i>	P3	N	N	N	7.5 km	28	N
<i>Gymnanthera cunninghamii</i>	P3	Y	Y	Y	0 km	40	Y
<i>Helichrysum oligochaetum</i>	P1	Y	Y	Y	41.4 km	13	N
<i>Indigofera gilesii</i>	P3	Y	Y	Y	12 km	39	N
<i>Ipomoea racemigera</i>	P2	Y	Y	Y	0.3 km	17	N
<i>Paspalidium retiglume</i>	P2	Y	Y	Y	4.5 km	12	N
<i>Pentalepis trichodesmoides</i> subsp. <i>hispida</i>	P2	Y	Y	Y	3.1 km	14	N
<i>Rhodanthe ascendens</i>	P1	Y	Y	Y	121.7 km	4	N
<i>Themeda</i> sp. Hamersley Station (M.E. Trudgen 11431)	P3	Y	Y	Y	7.1 km	60	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]
<i>Triodia veniciae</i>	P1	N	N	Y	13.8 km	26	N

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority (Attexo, 2022; Western Australian Herbarium, 1998-; GIS Database)

C.3. Fauna analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix G.1), and biological survey information, impacts to the following conservation significant fauna required further consideration. Only records located within a 20 kilometre radius were included.

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Bilby	VU	Y	Y	2.6 km	4223	Y
Brush-tailed mulgara	P4	Y	Y	0.2 km	1069	Y
Crest-tailed mulgara	P4	Y	Y	1.4 km	78	Y
Gane's blind snake	P1	Y	Y	13.1 km	40	Y
Ghost bat	VU	Y	Y	15.6 km	823	Y
Grey falcon	VU	Y	Y	0.3 km	190	Y
Letter-winged kite	P4	Y	Y	3.3 km	49	Y
Northern quoll	EN	Y	Y	0.08 km	7925	Y
Northern short-tailed mouse	P4	Y	Y	15.8 km	759	Y
Peregrine falcon	OS	Y	Y	6.9 km	1756	Y
Pilbara leaf-nosed bat	VU	Y	Y	2.4 km	2469	Y
Pilbara olive python	VU	Y	Y	0.4 km	233	Y
Striated grasswren	P4	Y	Y	15 km	70	Y
Western pebble-mound mouse	P4	Y	Y	0 km	1213	Y

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority, OS: Specially Protected, MI: Migratory (Spectrum, 2022; GIS Database)

C.4. Ecological community analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix G.1), and biological survey information, impacts to the following ecological community 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]
Four plant assemblages of the Wona Land System	P1	Y	Y	N	0.2 km	1	Y

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority (Strategen, 2021; GIS Database)

Appendix D. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Principle (a):</u> <i>“Native vegetation should not be cleared if it comprises a high level of biodiversity.”</i></p> <p><u>Assessment:</u></p> <p>The application area does not fall within any known or mapped Priority Ecological Communities (PEC) (GIS Database). Although the survey conducted by Strategen (2021) identified vegetation type MTGW to match the description of the vegetation forming Priority 1 PEC ‘Four plant assemblages of the Wona Land system’, the section of the application area containing vegetation type MTGW is not located in the Wona land system and the soil type is different than the soil characteristic of the PEC (GIS Database). Therefore, the PEC is not likely to occur within the application area.</p> <p>One priority flora species was recorded within the application area during the detailed flora survey (Attexo, 2022). There are records of conservation significant flora and fauna within the application area (refer to Appendix C.2 and C.3) (GIS Database). Only one priority fauna species was recorded within the application area during the field survey (Spectrum, 2022). There are records of other conservation significant fauna around the application area (GIS Database).</p>	May be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (b):</u> <i>“Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared contains habitat types that are widespread and well represented in the Pilbara region and are not limited to the application area (Spectrum, 2022). The application area contains four habitat types that support confirmed or potential SREs (Spectrum, 2022). The habitats present within the application area have the potential to provide breeding and/or foraging habitat to conservation significant fauna.</p>	May be at variance	Yes <i>Refer to Section 3.2.2, above.</i>
<p><u>Principle (c):</u> <i>“Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared is unlikely to contain Threatened flora species. There were no records of Threatened flora within 20 kilometres of the application area (GIS Database). There were no Threatened flora species identified during the field survey (Attexo, 2022).</p>	Not likely to be at variance	No
<p><u>Principle (d):</u> <i>“Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared does not form part of any mapped Threatened Ecological Communities (Attexo, 2022; GIS Database).</p>	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u></p> <p>The application area falls within the Pilbara bioregion of the Interim Biogeographic Regionalisation for Australia (GIS Database). Over 99 per cent of the pre-European vegetation still exists in the Pilbara bioregion (Government of Western Australia, 2019). The application area is broadly mapped as Beard vegetation associations 93, 173, and 175 (GIS Database). These vegetation associations have not been extensively cleared as over 99 per cent of the pre-European extent of these vegetation associations remain uncleared at both state and bioregional level (Government of Western Australia, 2019).</p>	Not at variance	No
<p><u>Principle (h):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.”</i></p> <p><u>Assessment:</u></p> <p>Given the distance to the nearest conservation area (22 kilometres) (GIS Database), the proposed clearing is not likely to have an impact on the environmental values of conservation areas.</p>	Not likely to be at variance	No
Environmental value: land and water resources		

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u></p> <p>There are several drainage lines that intersect the application area (GIS Database). These drainage lines are abundant in the local area and the proposed clearing is not likely to represent a significant impact for riparian vegetation. However a vegetation management condition placed on the clearing permit will minimise clearing of riparian vegetation and maintain water flows.</p>	At variance	No
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u></p> <p>The land systems mapped within the application area are not generally susceptible to erosion with the exception of the River land system (refer to Appendix C.1). The proposed clearing has the potential to cause appreciable land degradation in the form of erosion. This potential impact can be managed by a staged clearing condition to prevent cleared areas from being exposed for an extended period.</p>	May be at variance	No
<p><u>Principle (i):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.”</i></p> <p><u>Assessment:</u></p> <p>Given no wetlands or Public Drinking Water Sources Areas are recorded within the application area (GIS Database), the proposed clearing is unlikely to impact surface or ground water quality.</p>	Not likely to be at variance	No
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u></p> <p>No permanent water courses or wetlands are recorded within the application area (GIS Database), and the annual evaporation average (3200 millimetres) is larger than the annual rainfall average (391.8 millimetres). Therefore, the proposed clearing is unlikely to cause, or exacerbate, the incidence or intensity of flooding.</p>	Not likely to be at variance	No

Appendix E. Vegetation condition rating scale

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

Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from Trudgen, M.E. (1991) *Vegetation condition scale* in National Trust (WA) 1993 Urban Bushland Policy. National Trust of Australia (WA), Wildflower Society of WA (Inc.), and the Tree Society (Inc.), Perth.

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

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

Condition	Description
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 F. Biological survey information excerpts

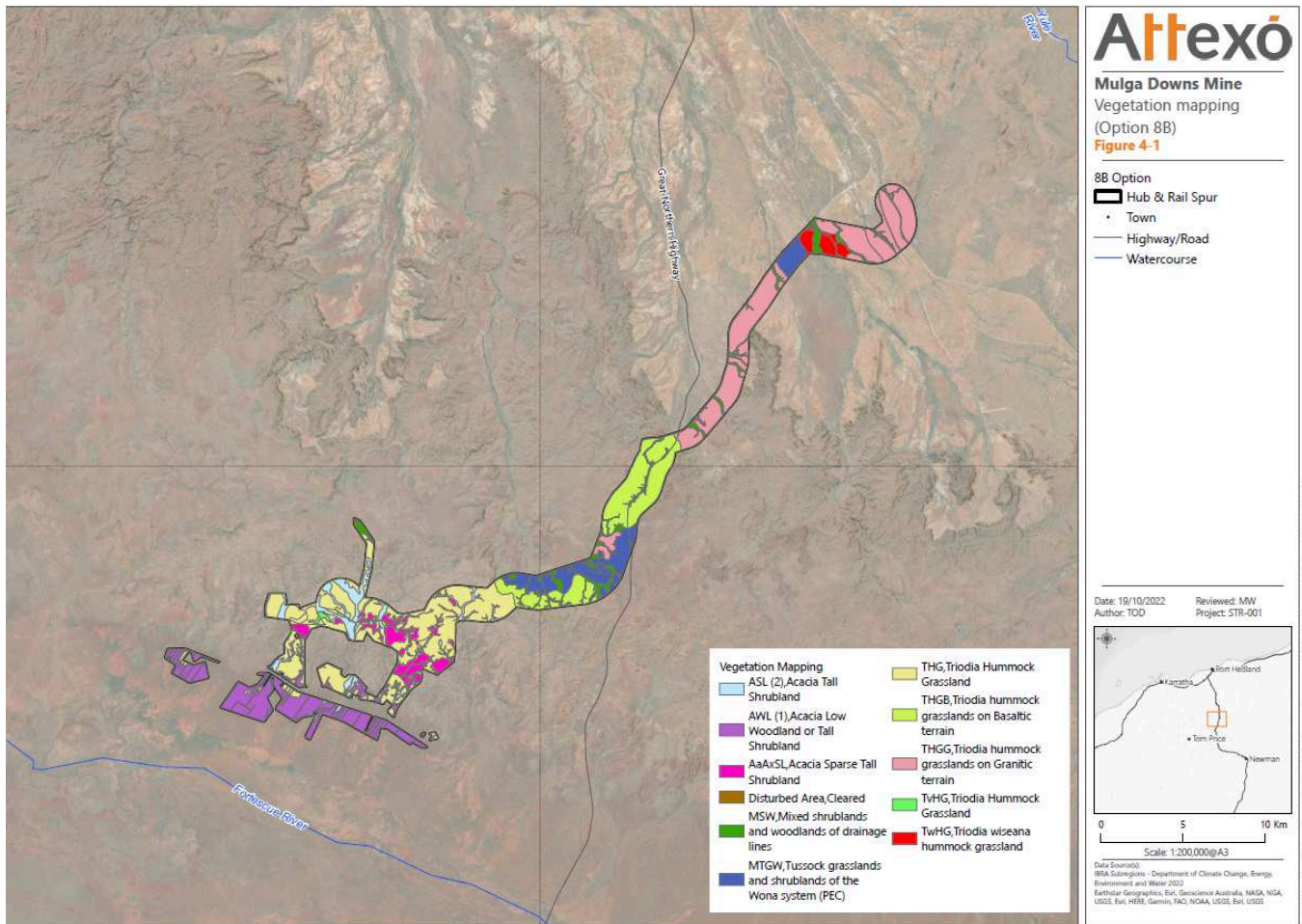


Figure 1. Map of vegetation types within the survey area (Attexo, 2022)

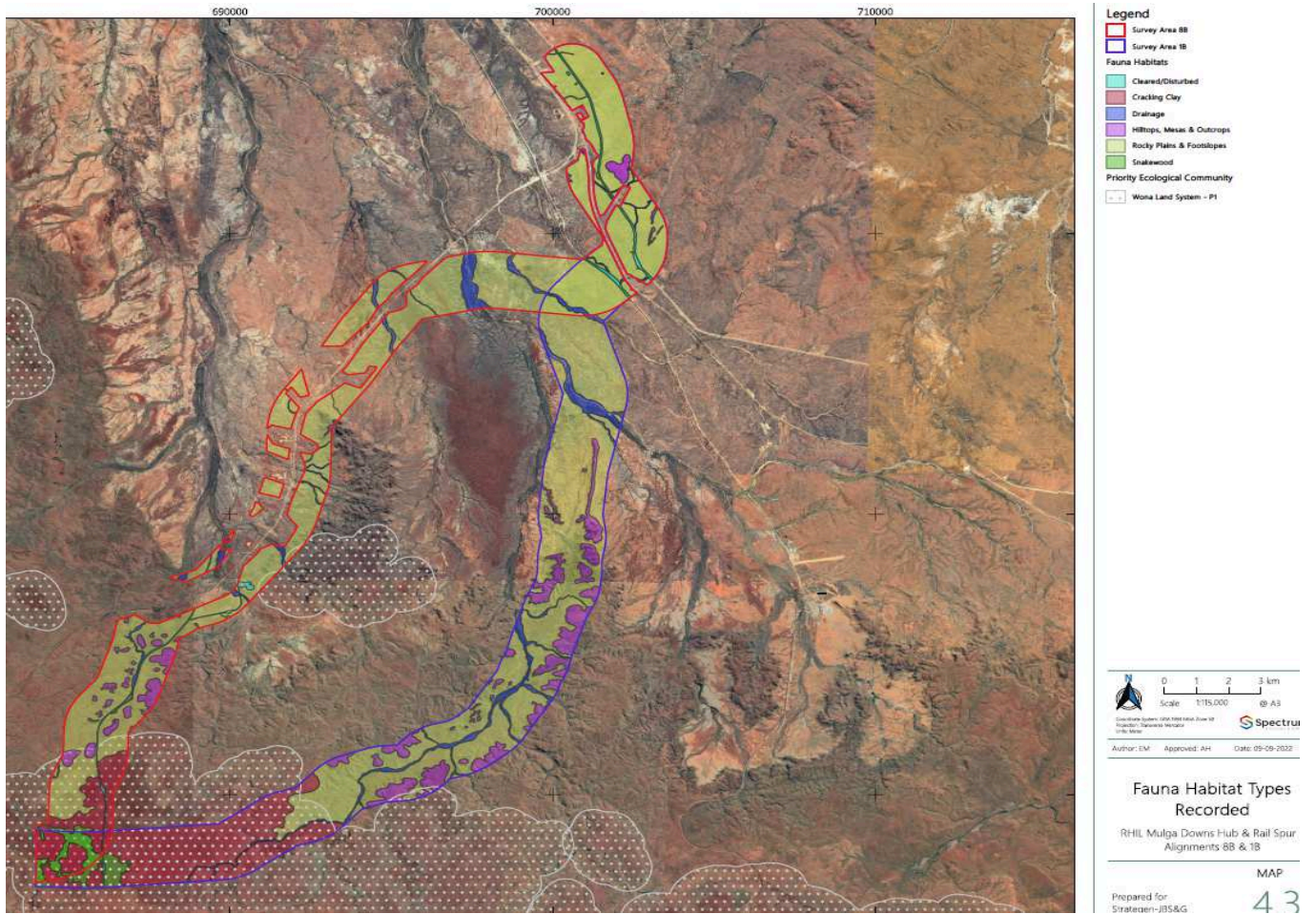


Figure 2. Fauna habitat types recorded (Spectrum, 2022)

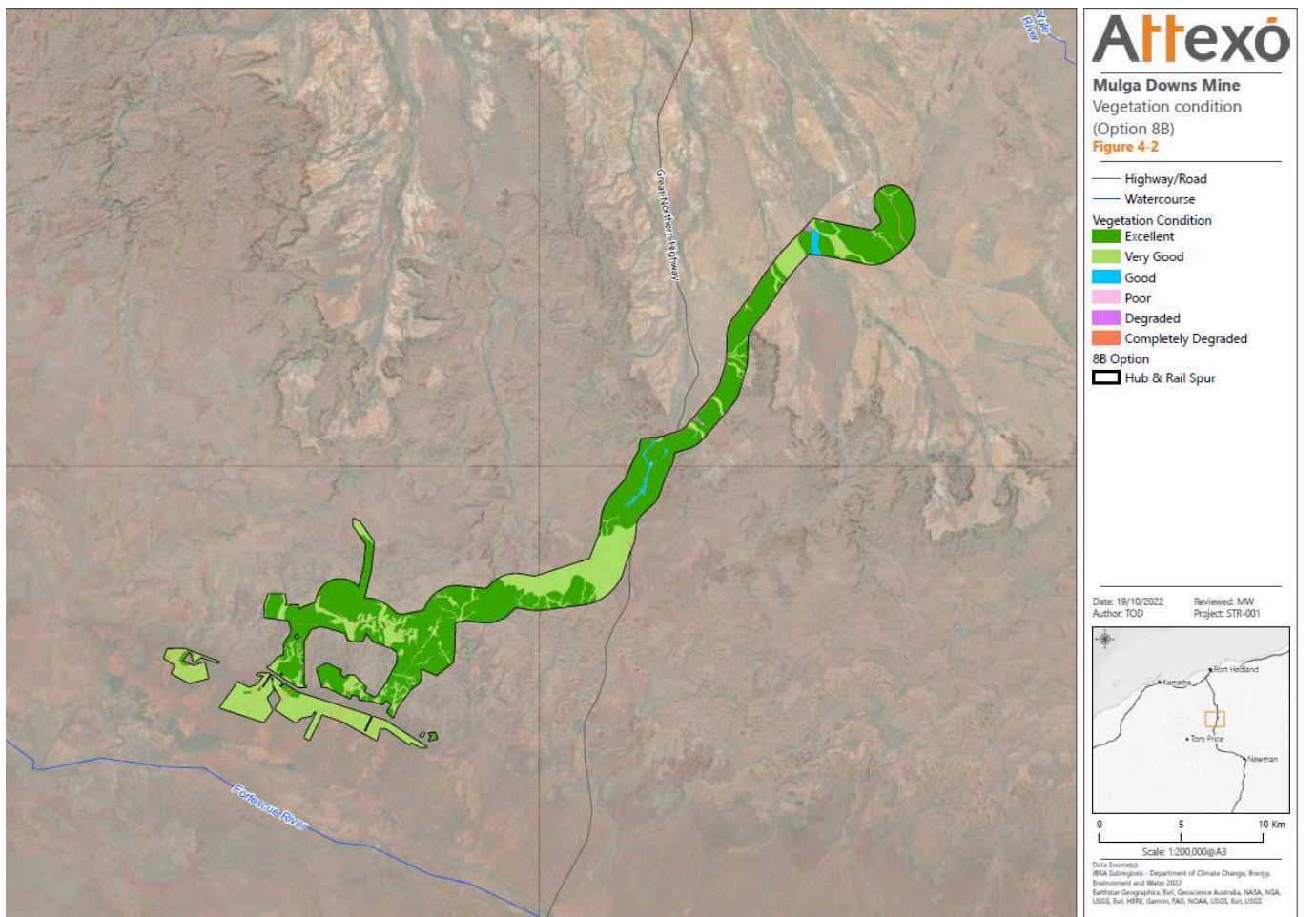


Figure 3. Map of vegetation condition within the survey area (Attexo, 2022)

Appendix G. Sources of information

G.1. GIS databases

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

- Aboriginal Heritage Places (DPLH-001)
- Clearing Regulations – Schedule One Areas (DWER-057)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Environmentally Sensitive Areas (DWER-046)
- Groundwater Salinity Statewide (DWER-026)
- Hydrographic Catchments – Catchments (DWER-028)
- Hydrography – Inland Waters – Waterlines
- Hydrography, Linear (DWER-031)
- IBRA Vegetation Statistics
- Pre-European Vegetation Statistics
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Mapping – Rangelands (DPIRD-064)
- WA Now Aerial Imagery

Restricted GIS Databases used:

- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

G.2. References

- Attexo (2022) Mulga Downs Hub and Rail Spur: Alignment 8B Flora and Vegetation Consolidated Report. Report prepared for Hancock Prospecting Pty Ltd by Attexo Group Pty Ltd, October 2022.
- BoM (2022) Bureau of Meteorology Website – Climate Data Online. Bureau of Meteorology. <http://www.bom.gov.au/climate/data/> (Accessed on 18 October, 2022).
- Department of Biodiversity, Conservation and Attractions (DBCA) (2022) Advice received in relation to Clearing Permit Application CPS 9903/1. Species and Communities Branch, Department of Biodiversity, Conservation and Attractions, Western Australia, December 2022.
- Department of Environment Regulation (DER) (2014) *A guide to the assessment of applications to clear native vegetation*. Perth. Available from: https://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/Guide2_assessment_native_veg.pdf
- Departments of Parks and Wildlife (DPaW) (2017) Interim guideline for preliminary surveys of night parrot (*Pezoporus occidentalis*) in Western Australia, May 2017. Available from: https://www.dpaw.wa.gov.au/images/documents/plants-animals/animals/interim_guideline_for_night_parrot_survey.pdf
- Department of Planning, Lands and Heritage (DPLH) (2023) Aboriginal Heritage Inquiry System. Department of Planning, Lands and Heritage. <https://espatial.dplh.wa.gov.au/AHIS/index.html?viewer=AHIS> (Accessed 7 August 2023).
- Department of Water and Environmental Regulation (DWER) (2021) Procedure: Native vegetation clearing permits. Joondalup. Available from: https://dwer.wa.gov.au/sites/default/files/Procedure_Native_vegetation_clearing_permits.pdf#:~:text=This%20Procedur e%3A%20Native%20vegetation%20clearing%20permit%20outlines%20how,Act%29%20and%20to%20manage%20gr anted%20clearing%20permits.%20Scope
- Environmental Protection Authority (EPA) (2016) Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment. Available from: http://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/EPA%20Technical%20Guidance%20-%20Flora%20and%20Vegetation%20survey_Dec13.pdf
- Environmental Protection Authority (EPA) (2020) Technical Guidance – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment. Available from: https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/2020.09.17%20-%20EPA%20Technical%20Guidance%20-%20Vertebrate%20Fauna%20Surveys%20-%20Final.pdf
- Government of Western Australia (2019) 2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of March 2019. WA Department of Biodiversity, Conservation and Attractions. <https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics>
- Maia Environmental (2022) Strategen-JBS&G: Mulga Downs Iron Ore Project, Mine and Borefield Study area detailed Flora and vegetation Assessment 2019-2022. Draft 4 July 2022
- Northcote, K. H. with Beckmann G G, Bettenay E., Churchward H. M., van Dijk D. C., Dimmock G. M., Hubble G. D., Isbell R. F., McArthur W. M., Murtha G. G., Nicolls K. D., Paton T. R., Thompson C. H., Webb A. A. and Wright M. J. (1960-68) Atlas of Australian Soils, Sheets 1 to 10, with explanatory data. CSIRO and Melbourne University Press: Melbourne.
- Roy Hill Infrastructure Pty Ltd (RHI) (2022) Clearing permit application form, CPS 9903/1, received 30 September 2022.
- Spectrum (2022) RHIL Mulga Downs Hub and Rail Spur – Eastern Portion of Alignments 8B & 1B Basic & Targeted Terrestrial Fauna Assessment. Report prepared by Spectrum Ecology Pty Ltd for Roy Hill Infrastructure Pty Ltd, September, 2022.
- Strategen (2021) Reconnaissance Flora and Vegetation Assessment – Mulga Downs Rail (8B). Report prepared for Hancock Prospecting Pty Ltd by Strategen –JBS&G, November 2021.

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

van Vreeswyk, A M, Leighton, K A, Payne, A L, and Hennig, P. (2004), *An inventory and condition survey of the Pilbara region, Western Australia*. Department of Agriculture, Western Australia, Perth. Technical Bulletin 92.

Western Australian Herbarium (1998-) FloraBase - the Western Australian Flora. Department of Biodiversity, Conservation and Attractions, Western Australia. <https://florabase.dpaw.wa.gov.au/> (Accessed 18 October 2022).

4. Glossary

Acronyms:

BC Act	<i>Biodiversity Conservation Act 2016</i> , Western Australia
BoM	Bureau of Meteorology, Australian Government
DAA	Department of Aboriginal Affairs, Western Australia (now DPLH)
DAFWA	Department of Agriculture and Food, Western Australia (now DPIRD)
DAWE	Department of Agriculture, Water and the Environment, Australian Government
DBCA	Department of Biodiversity, Conservation and Attractions, Western Australia
DER	Department of Environment Regulation, Western Australia (now DWER)
DMIRS	Department of Mines, Industry Regulation and Safety, Western Australia
DMP	Department of Mines and Petroleum, Western Australia (now DMIRS)
DoEE	Department of the Environment and Energy (now DAWE)
DoW	Department of Water, Western Australia (now DWER)
DPaW	Department of Parks and Wildlife, Western Australia (now DBCA)
DPIRD	Department of Primary Industries and Regional Development, Western Australia
DPLH	Department of Planning, Lands and Heritage, Western Australia
DRF	Declared Rare Flora (now known as Threatened Flora)
DWER	Department of Water and Environmental Regulation, Western Australia
EP Act	<i>Environmental Protection Act 1986</i> , Western Australia
EPA	Environmental Protection Authority, Western Australia
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Federal Act)
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
IBRA	Interim Biogeographic Regionalisation for Australia
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
PEC	Priority Ecological Community, Western Australia
RIWI Act	<i>Rights in Water and Irrigation Act 1914</i> , Western Australia
TEC	Threatened Ecological Community

Definitions:

{DBCA (2019) Conservation Codes for Western Australian Flora and Fauna. Department of Biodiversity, Conservation and Attractions, Western Australia}:-

T **Threatened species:**

Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the *Biodiversity Conservation Act 2016* (BC Act).

Threatened fauna is that subset of 'Specially Protected Fauna' listed under schedules 1 to 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for Threatened Fauna.

Threatened flora is that subset of 'Rare Flora' listed under schedules 1 to 3 of the *Wildlife Conservation (Rare Flora) Notice 2018* for Threatened Flora.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

CR **Critically endangered species**

Threatened species considered to be “*facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines*”.

Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for critically endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for critically endangered flora.

EN **Endangered species**

Threatened species considered to be “*facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines*”.

Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for endangered flora.

VU

Vulnerable species

Threatened species considered to be “*facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines*”.

Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for vulnerable fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for vulnerable flora.

Extinct Species:

EX

Extinct species

Species where “*there is no reasonable doubt that the last member of the species has died*”, and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).

Published as presumed extinct under schedule 4 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for extinct fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for extinct flora.

EW

Extinct in the wild species

Species that “*is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form*”, and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).

Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.

Specially protected species:

Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.

Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.

MI

Migratory species

Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).

Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.

Published as migratory birds protected under an international agreement under schedule 5 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

CD

Species of special conservation interest (conservation dependent fauna)

Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).

Published as conservation dependent fauna under schedule 6 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

OS

Other specially protected species

Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

Published as other specially protected fauna under schedule 7 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

P **Priority species:**

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

P1 **Priority One - Poorly-known species**

Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

P2 **Priority Two - Poorly-known species**

Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

P3 **Priority Three - Poorly-known species**

Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

P4 **Priority Four - Rare, Near Threatened and other species in need of monitoring**

(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.

(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.

(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

Principles for clearing native vegetation:

- (a) Native vegetation should not be cleared if it comprises a high level of biological diversity.
- (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.
- (c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.
- (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.
- (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.
- (f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.
- (g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.
- (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.
- (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.

- (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.