



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 9923/1
Permit Holder:	Regional Power Corporation trading as Horizon Power
Duration of Permit:	From 8 June 2023 to 8 June 2033

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 purpose of constructing an overhead transmission line, supporting infrastructure and access tracks.

2. Land on which clearing is to be done

Lot 150 on Plan 242287, Maitland
Lot 1502 on Plan 75876, Maitland
Lot 324 on Plan 42631, Maitland
Lot 530 on Plan 221145, Maitland
Lot 650 on Plan 29591, Maitland
Lot 651 on Plan 29591, Maitland
Lot 693 on Plan 30490, Maitland
Lot 2656 on Plan 215106, Stove Hill
Lot 330 on Plan 46452, Stove Hill
Lot 4217 on Plan 217002, Stove Hill
Lot 501 on Plan 400632, Stove Hill
Lot 588 on Plan 77089, Stove Hill
Unallocated Crown Land (PIN 705585), Stove Hill
Lot 331 on Plan 46452, Stove Hill, Gap Ridge
Lot 589 on Plan 77089, Stove Hill, Gap Ridge
Road (PIN 11441929), Stove Hill, Gap Ridge
Lot 215 on Plan 216769, Gap Ridge
Lot 285 on Plan 242018, Gap Ridge
Lot 32 on Plan 47815, Gap Ridge
Lot 4659 on Plan 221145, Gap Ridge

Lot 559 on Plan 407846, Gap Ridge
Lot 590 on Plan 77089, Gap Ridge
Lot 591 on Plan 77089, Gap Ridge
Lot 603 on Plan 66690, Gap Ridge
Lot 931 on Plan 76543, Gap Ridge
Road (PIN 11733157), Maitland, Gap Ridge, Stove Hill, Cooya Pooya
Lot 450 on Plan 216916, Stove Hill, Gap Ridge, Baynton

3. Clearing authorised

The permit holder must not clear more than 30.5 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1.1 of Schedule 1.

4. Period during which clearing is authorised

The permit holder must not clear any *native vegetation* after 8 June 2028

5. Application

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

PART II – MANAGEMENT CONDITIONS

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

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

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

7. Weed management

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

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

8. Directional clearing

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

9. Wind erosion management

The permit holder must commence construction of the transmission line and associated activities no later than two (2) months after undertaking the authorised clearing activities to reduce the potential for wind erosion.

10. Rehabilitation and revegetation

The permit holder must:

- (a) 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) construct drainage around topsoil stockpiles;
- (c) at an optimal time within 12 months following completion of temporary clearing, *revegetate* the areas not required for the authorised purpose for which they were cleared under this permit, by:
 - (i) ripping the ground on the contour to remove soil compaction; and
 - (ii) laying the vegetative material and topsoil retained under condition 10(a) on the cleared area(s).
- (d) within 24 months of laying the vegetative material and topsoil on the cleared area in accordance with condition 10(c) of this permit:
 - (i) engage an *environmental specialist* to determine the species composition, structure and density of the area *revegetated* and rehabilitated; and
 - (ii) engage an *environmental specialist* to make a determination as to whether the composition, structure and density determined under condition 10(d)(i) of this permit will, without further *revegetation*, result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area.
- (e) if the determination made by the environmental specialist under condition 10(d)(ii) is that the species composition, structure, and density determined under condition 10(d)(i) will not, without further *revegetation*, result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, the permit holder must *revegetate* the area by deliberately planting and/or direct seeding native vegetation seeds that will result in a similar species composition, structure, and density of native vegetation to pre-clearing vegetation types in that area and ensuring only *local provenance* seeds and propagating material are used
- (f) where additional planting or direct seeding of native vegetation is undertaken in accordance with condition 10(e), the permit holder must repeat the activities required by condition 10(d) and 10(e) within 24 months of undertaking the additional planting or *direct seeding* of native vegetation.
- (g) where a determination is made by an *environmental specialist* under condition 10(d)(ii) that the composition, structure and density within areas *revegetated* and rehabilitated will result in a similar species composition, structure and density to

that of pre-clearing vegetation types in that area, that determination shall be submitted to the CEO within three months of the determination being made by the *environmental specialist*.

PART III - RECORD KEEPING AND REPORTING

11. Records that must be kept

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

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	<ul style="list-style-type: none"> (a) the species composition, structure, and density of the cleared area; (b) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (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 6; (f) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> in accordance with condition 7.
2.	In relation to rehabilitation and revegetation of areas pursuant to condition 10 of the permit	<ul style="list-style-type: none"> (a) actions taken to retain topsoil; (b) actions taken to construct drainage; (c) the size of the area <i>revegetated</i>; (d) the date(s) on which the area <i>revegetation</i> was undertaken; (e) the <i>revegetation</i> activities undertaken; (f) the date(s) where additional <i>planting</i> or <i>direct seeding</i> of <i>native vegetation</i> was undertaken; and (g) the boundaries of the area <i>revegetated</i>, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA20). Expressing the geographical coordinates in Eastings and Northings.

12. Reporting

The permit holder must provide to the *CEO* the records required under condition 11 of this permit when requested by the *CEO*.

DEFINITIONS

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

Table 2: Definitions

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the <i>Environmental Protection Act 1986</i> .
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
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.
EP Act	<i>Environmental Protection Act 1986</i> (WA)
fill	means material used to increase the ground level, or to fill a depression.
local provenance	means native vegetation seeds and propagating material from natural sources within 25 kilometres and the same Interim Biogeographic Regionalisation for Australia (IBRA) subregion of the area cleared;
mulch	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
planting	means a method of re-establishing vegetation through the use of seedlings/saplings of the desired plant species
revegetation, revegetate, revegetated	means the re-establishment of a cover of native vegetation in an area such that the species composition, structure and density is similar to pre-clearing vegetation types in that area, and can involve regeneration, direct seeding and/or planting;
weeds	means any plant – <ul style="list-style-type: none"> (a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i>; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and

Term	Definition
	(c) invasiveness ranking summary, regardless of ranking; or not indigenous to the area concerned.

END OF CONDITIONS

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by Ryan
Mincham
Date: 2023.05.16
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Ryan Mincham
MANAGER
NATIVE VEGETATION REGULATION

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

16 May 2023

Schedule 1

The boundary of the area authorised to be cleared is shown in the maps below (Figure 1.1 – 1.7).

CPS 9923/1 - Context

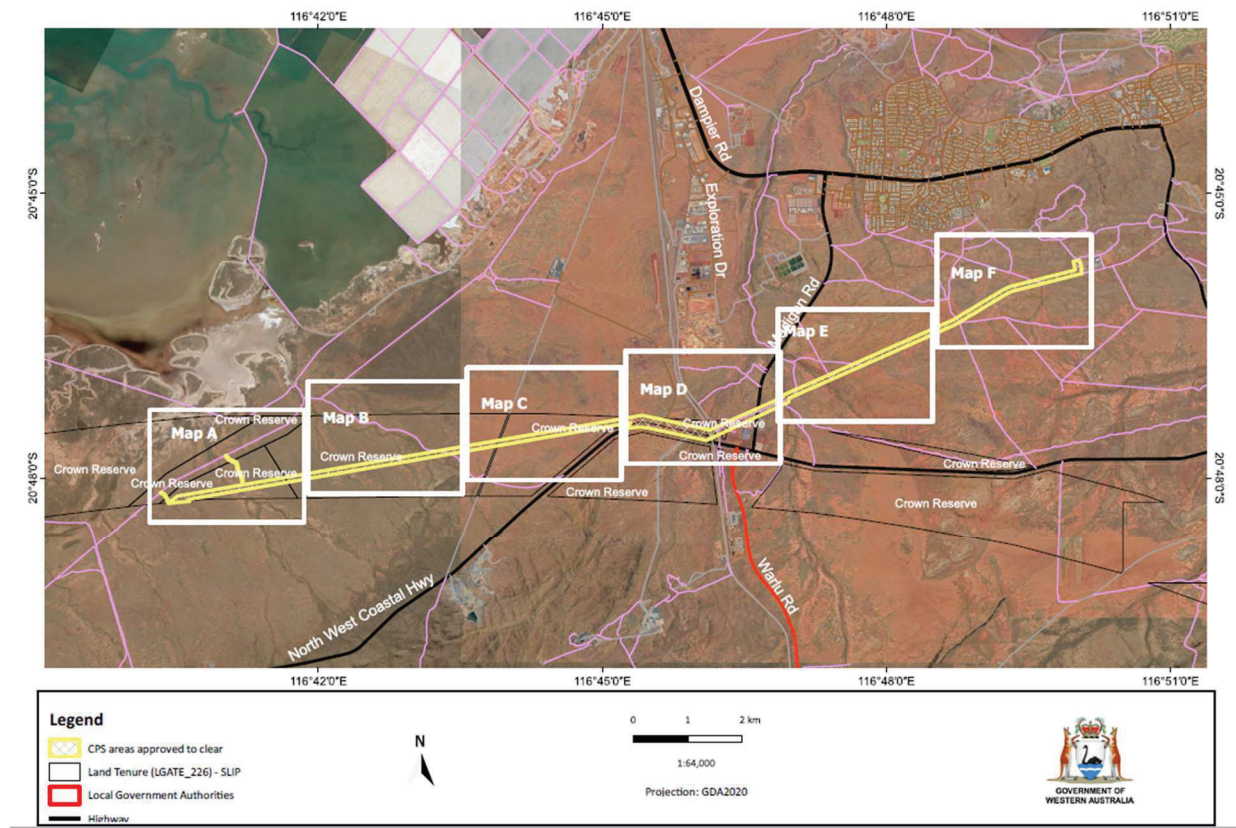


Figure 1.1: Context map of the boundary of the area within which clearing may occur.

CPS 9923/1 - A

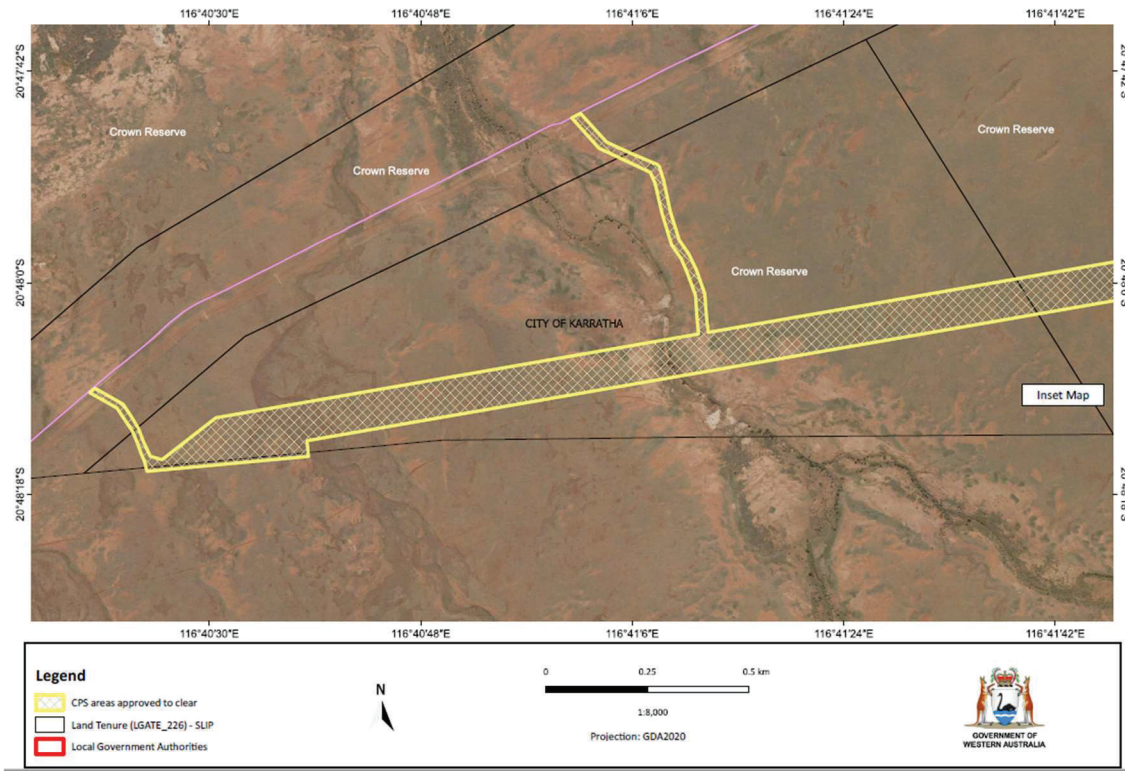


Figure 1.2: Map A of the boundary of the area within which clearing may occur.

CPS 9923/1 - B

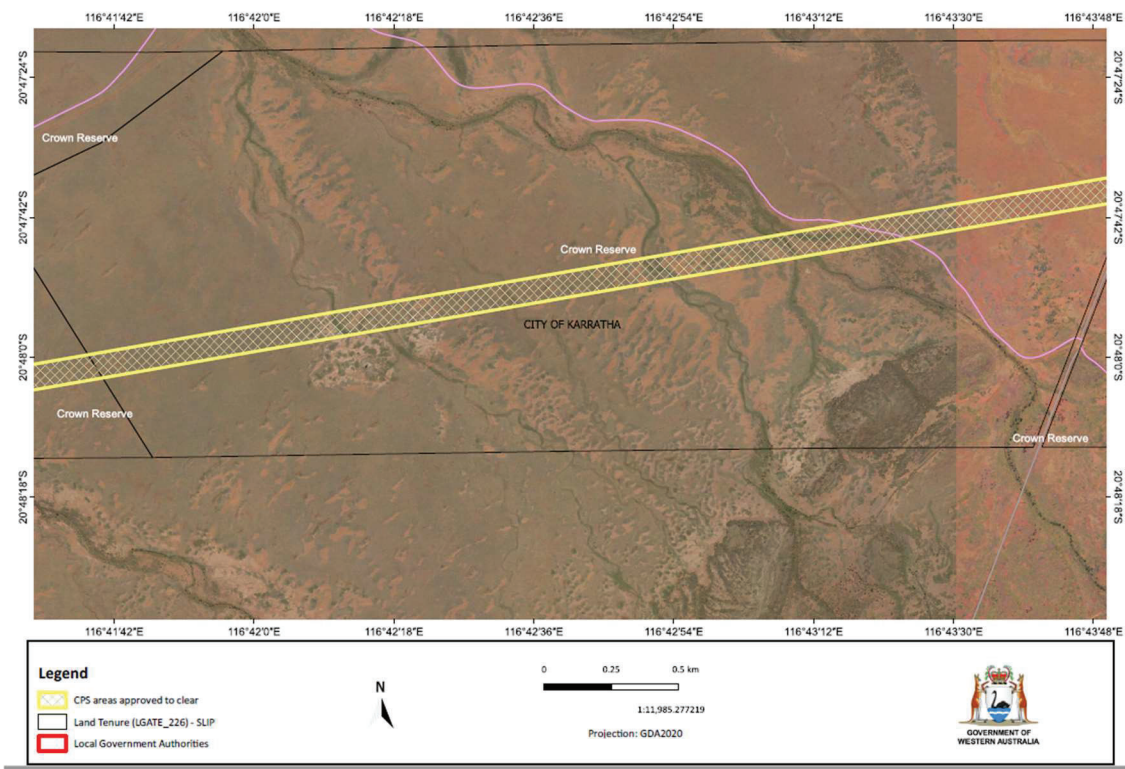


Figure 1.3: Map B of the boundary of the area within which clearing may occur.

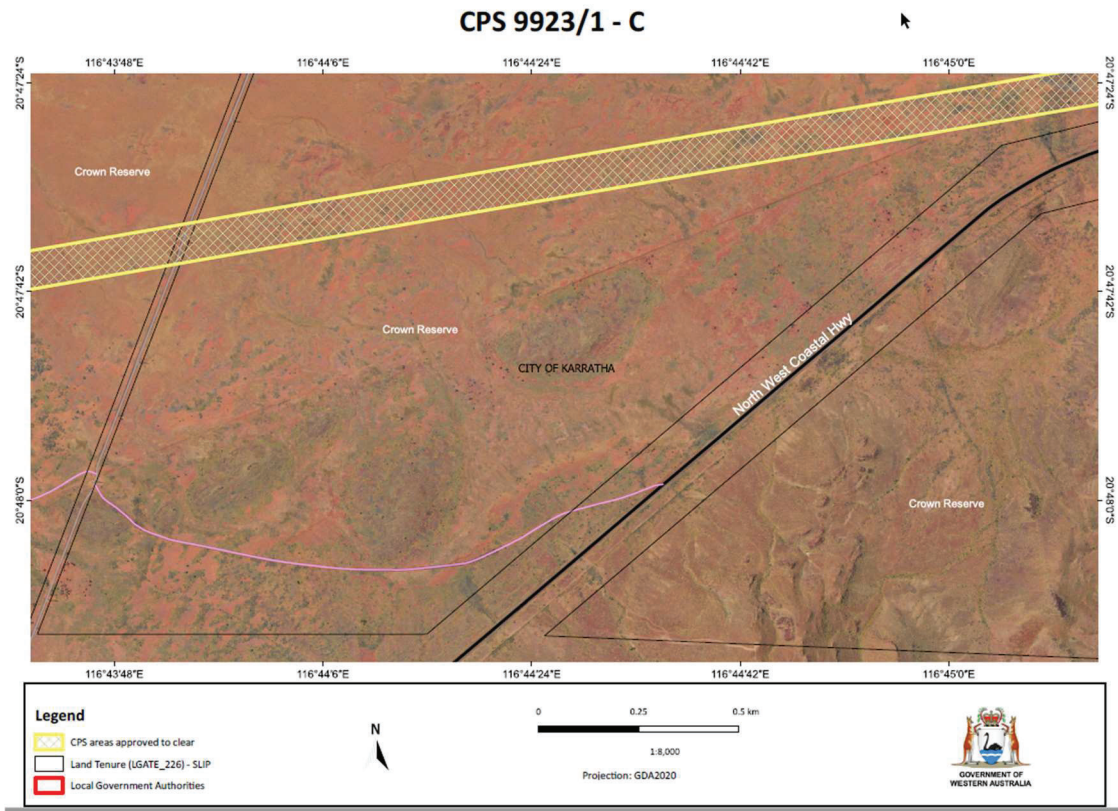


Figure 1.4: Map C of the boundary of the area within which clearing may occur.

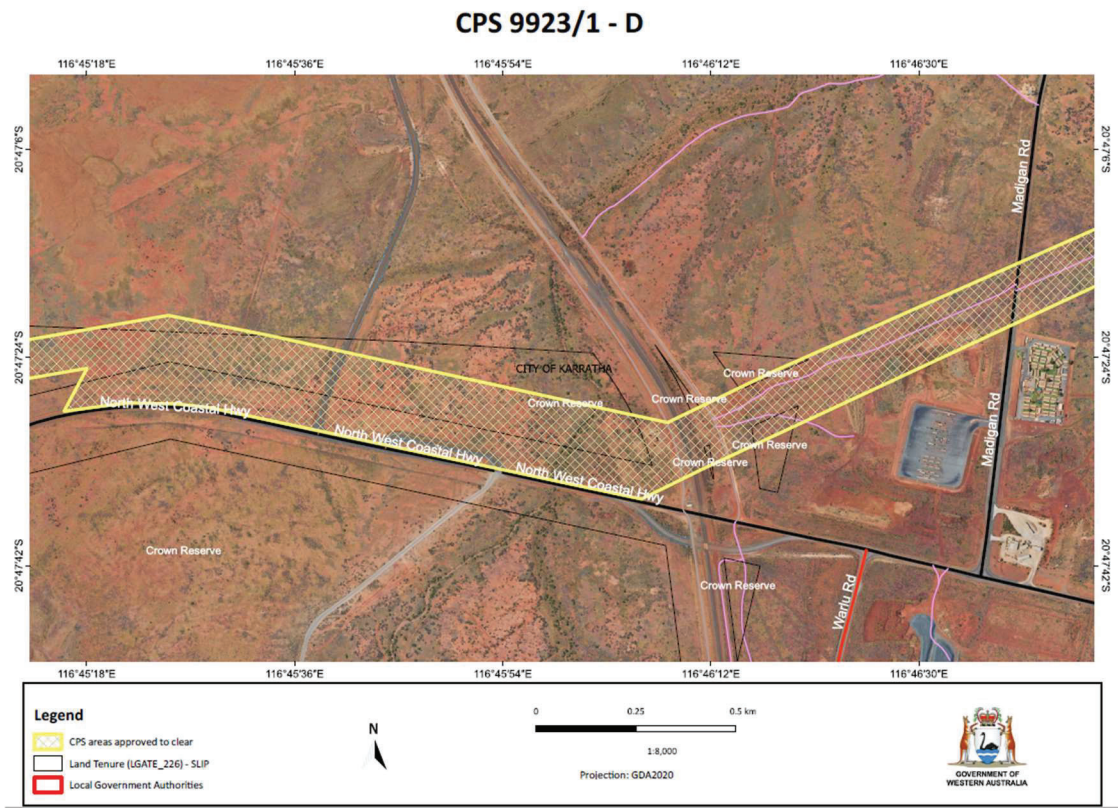


Figure 1.5: Map D of the boundary of the area within which clearing may occur.

CPS 9923/1 - E

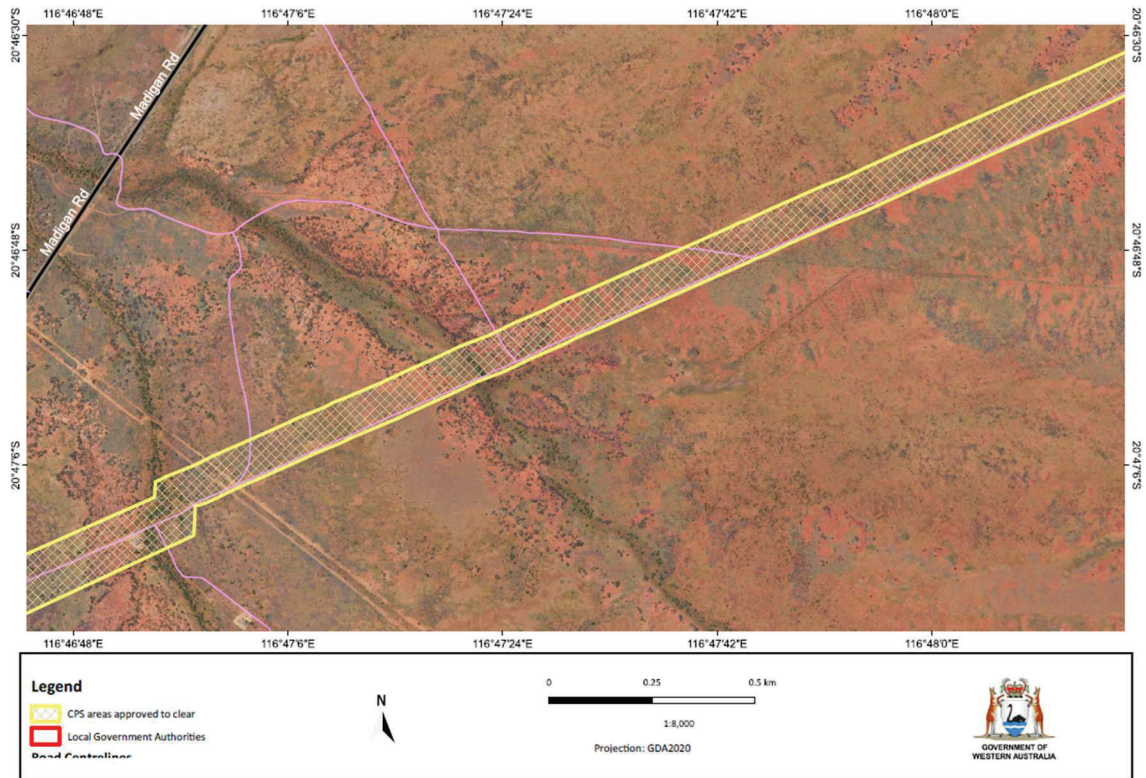


Figure 1.6: Map E of the boundary of the area within which clearing may occur.

CPS 9923/1 - F

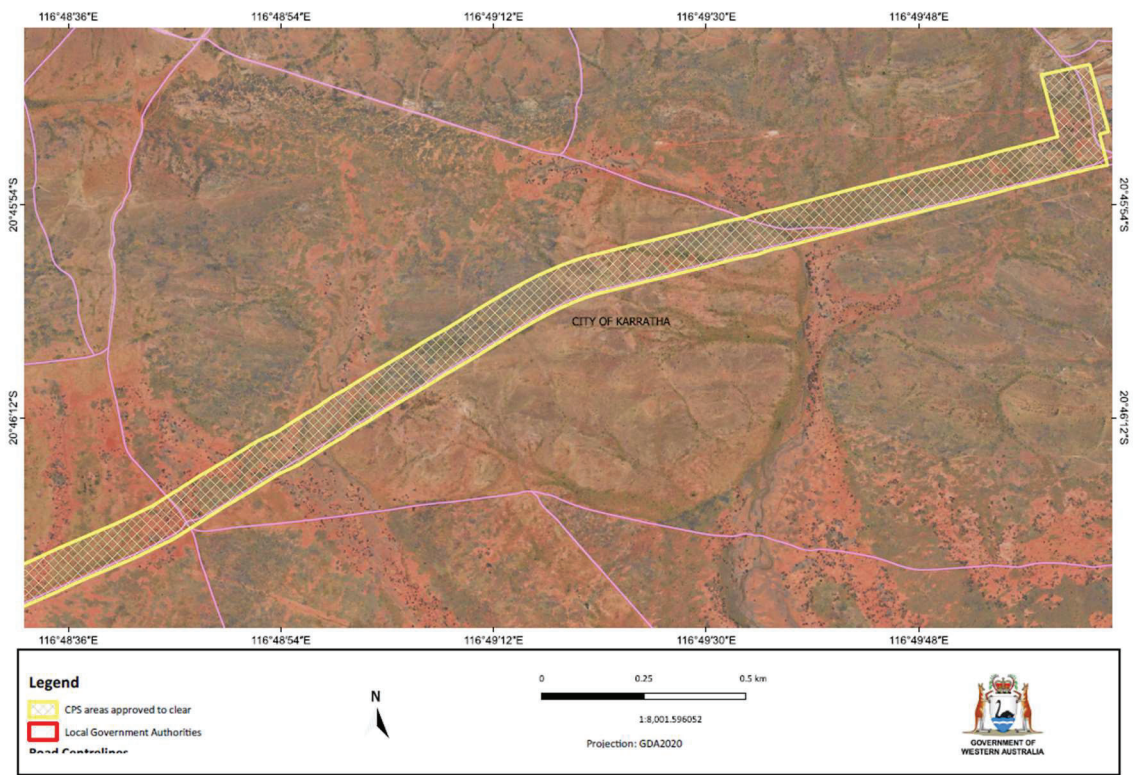


Figure 1.7: Map F of the boundary of the area within which clearing may occur.



Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 9923/1
Permit type:	Purpose permit
Applicant name:	Regional Power Corporation trading as Horizon Power
Application received:	19 October 2022
Application area:	30.5 hectares of native vegetation within a 205.7 ha of clearing footprint
Purpose of clearing:	Construction of an overhead transmission line, supporting infrastructure and access tracks
Method of clearing:	Mechanical
Property:	Lot 150 on Plan 242287, Maitland Lot 1502 on Plan 75876, Maitland Lot 324 on Plan 42631, Maitland Lot 530 on Plan 221145, Maitland Lot 650 on Plan 29591, Maitland Lot 651 on Plan 29591, Maitland Lot 693 on Plan 30490, Maitland Lot 2656 on Plan 215106, Stove Hill Lot 330 on Plan 46452, Stove Hill Lot 4217 on Plan 217002, Stove Hill Lot 501 on Plan 400632, Stove Hill Lot 588 on Plan 77089, Stove Hill Unallocated Crown Land (PIN 705585), Stove Hill Lot 331 on Plan 46452, Stove Hill, Gap Ridge Lot 589 on Plan 77089, Stove Hill, Gap Ridge Road (PIN 11441929), Stove Hill, Gap Ridge Lot 215 on Plan 216769, Gap Ridge Lot 285 on Plan 242018, Gap Ridge Lot 32 on Plan 47815, Gap Ridge Lot 4659 on Plan 221145, Gap Ridge Lot 559 on Plan 407846, Gap Ridge Lot 590 on Plan 77089, Gap Ridge Lot 591 on Plan 77089, Gap Ridge Lot 603 on Plan 66690, Gap Ridge Lot 931 on Plan 76543, Gap Ridge Road (PIN 11733157), Maitland, Gap Ridge, Stove Hill, Cooya Pooya Lot 450 on Plan 216916, Stove Hill, Gap Ridge, Baynton
Location (LGA area/s):	City of Karratha

Localities (suburb/s): Maitland, Stove Hill, Gap Ridge, Cooya Pooya and Baynton

1.2. Description of clearing activities

Horizon Power is expanding the North West Interconnected System (NWIS) electricity network by constructing an approximately 19 kilometre (km) long 132 kilovolt (kV) overhead transmission line between the Karratha substation on Stovehill Road and the Maitland Strategic Industrial Area (SIA) (the Project). The Maitland SIA is not currently connected to the NWIS. The Project will provide common user transmission infrastructure, owned and operated by Horizon Power, between the Maitland SIA and Karratha, supporting the connection of future renewable energy projects in this SIA into the NWIS.

The proposal is to clear up to 30.5 ha of native vegetation within the development envelope (clearing footprint) of 205.7 ha. The proposed clearing area represents the boundary within which all native vegetation will be contained (see Figure 1, Section 1.5). The proposed clearing comprises of 18.7 ha of permanent clearing and 11.8 ha of temporary clearing. The permanent clearing is required for the construction of the substation site, access tracks, poles and stay wires. Temporary clearing is required for line stringing, winch sites and temporary laydown area, which will be rehabilitated upon completion of construction.

1.3. Decision on application

Decision:	Granted
Decision date:	16 May 2023
Decision area:	30.5 ha of native vegetation as depicted in Section 1.5, below.

1.4. Reasons for decision

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

In 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, vegetation and fauna survey (see Appendix E), the clearing principles set out in Schedule 5 of the EP Act (see Appendix C), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3). The Delegated Officer also took into consideration the purpose of the clearing is to provide the provision of power infrastructure supporting the economic development of the region. The Delegated Officer gave particular consideration to the following:

- Clearing will remove vegetation representative of the Priority 3 Horseflat Land System of the Roebourne Plains Ecological Community (Horseflat PEC), which is known to provide habitat for conservation significant flora species. No conservation significant species, however, was identified over the application area including in the patches of vegetation identified as the Horseflat PEC. The proposed clearing over this identified PEC has been minimised and limited to localised areas for the construction of transmission poles. Within the context of the vast extents of native vegetation in Very Good condition (Trudgen, 1991) and the PEC in the local and regional areas, removal of a minor amount of vegetation from the area is unlikely to impact on the conservation value of the PEC in the local and regional contexts, nor result in biodiversity loss.
- Clearing may remove four broad fauna habitat types present in the application area. Based on vegetation mapping, the four broad habitat types found within the local application area also present within the local area. Within the context of approximately 140,870 ha of similar vegetation in Very Good condition within a 10 km radius, the clearing of 30.5 ha is unlikely to have a significant impact on habitat values in a local and regional context.
- Clearing may introduce and spread weeds into adjacent vegetation, which could impact on the quality of adjacent vegetation and its habitat values. The likelihood of weed introduction and spread can be reduced by applying stringent weed management measures. The rehabilitation and revegetation program will further reduce the exposure time of cleared area to weed spread and infestation.
- Clearing may exacerbate sediment transport via the ephemeral drainage lines occurring within the application area, as well as increase the risk of wind erosion and dust deposition. The impacts, however,

are likely to be localised and temporary. Noting the narrow and linear shape of clearing within the context of largely vegetated surrounds, the relatively minimal clearing is unlikely to result in appreciable land degradation. The potential impact is further mitigated by the revegetation and rehabilitation program required and committed to be performed over the temporary cleared areas.

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 is unlikely to lead to appreciable land degradation or have long-term adverse impacts on nearby vegetation and fauna habitats. Potential impacts on the above-mentioned environmental values can be minimised and managed to unlikely to lead to an unacceptable risk to the environmental values. The applicant has suitably demonstrated avoidance and minimisation measures.

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

- avoid, minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds;
- commencing construction works within 2 months of authorised clearing;
- 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 and respread this on the revegetation area within 12 months of clearing to ensure that the habitat value of the vegetation is not permanently lost.

1.5. Site maps

CPS 9923/1 - Context

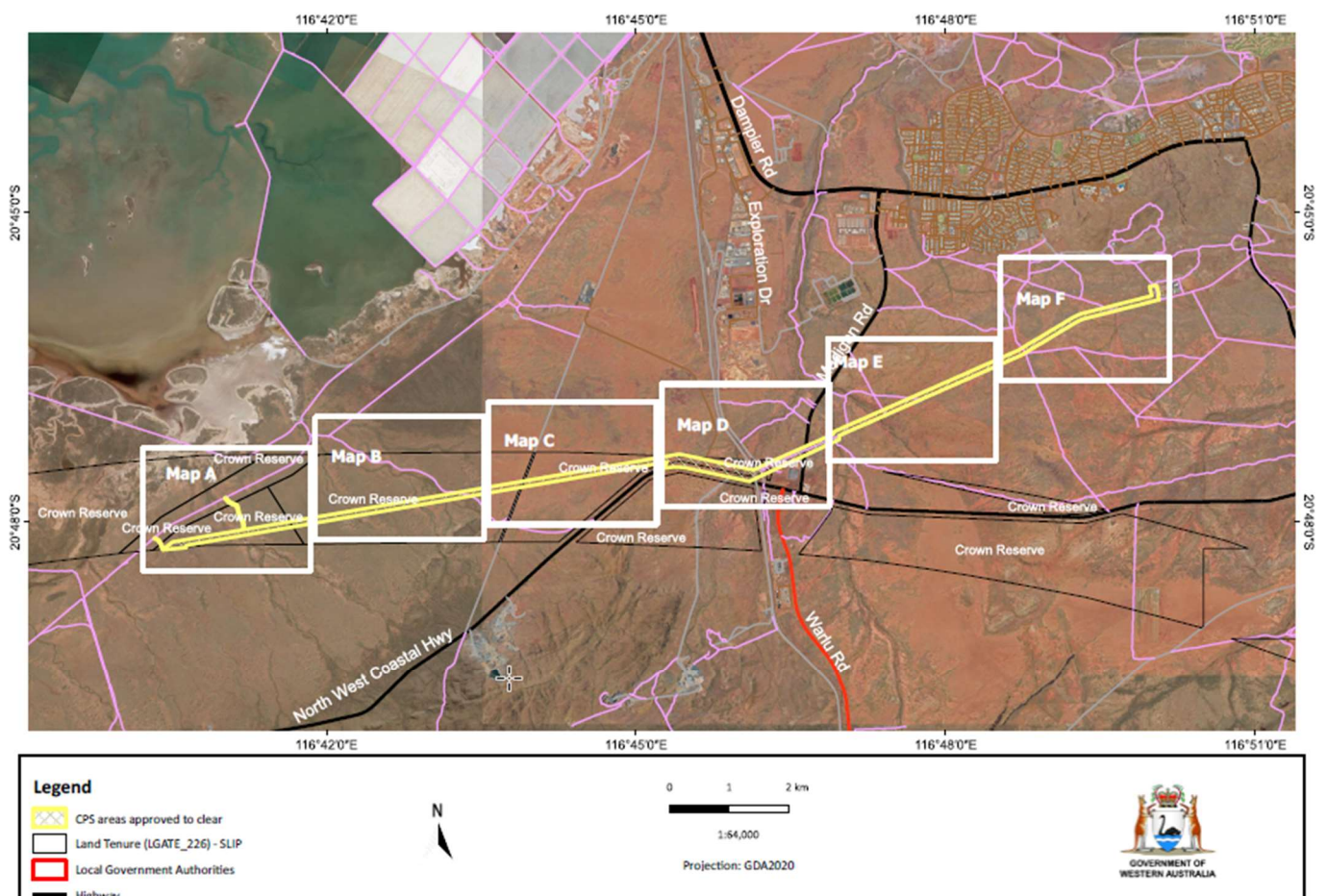
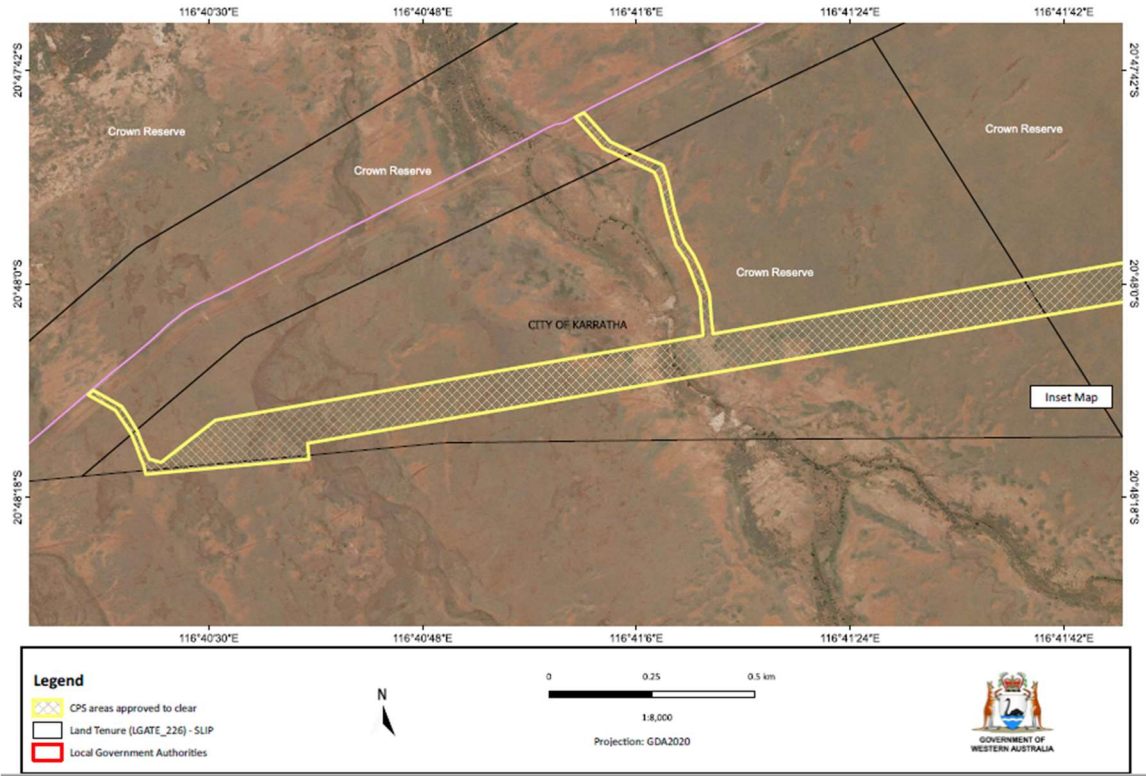
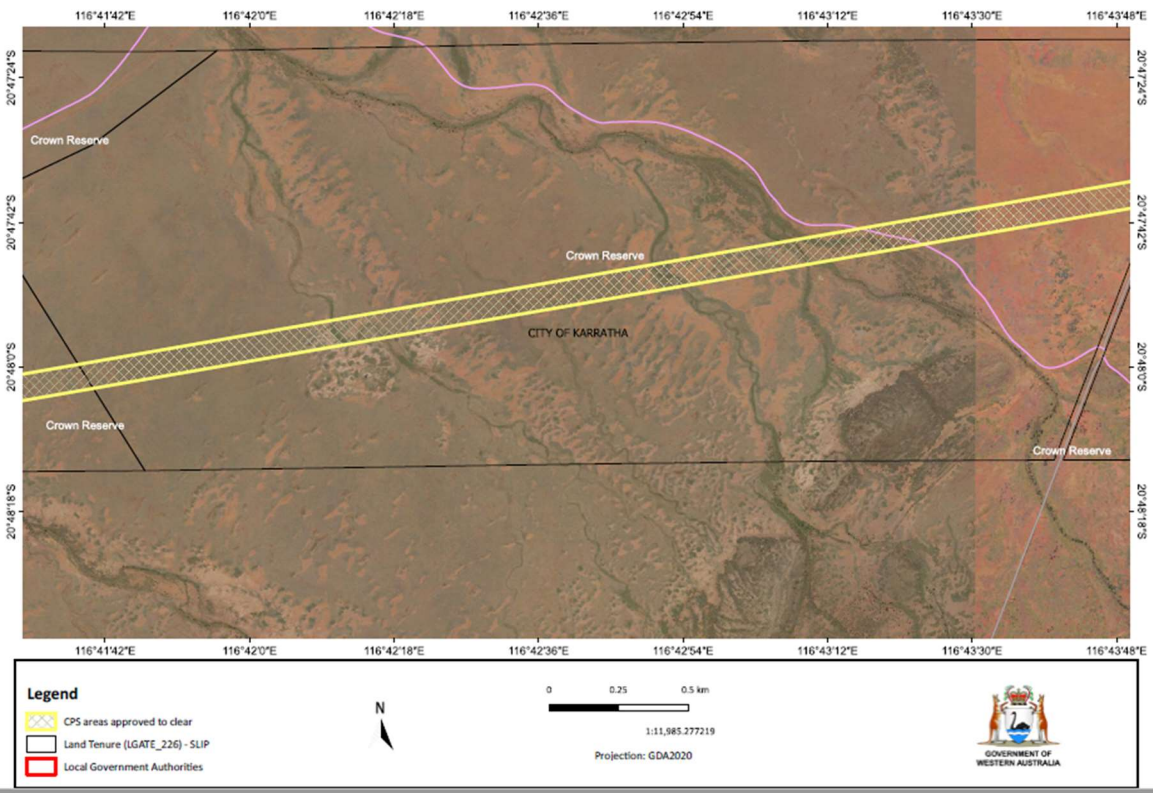


Figure 1. Map of the application area – Context

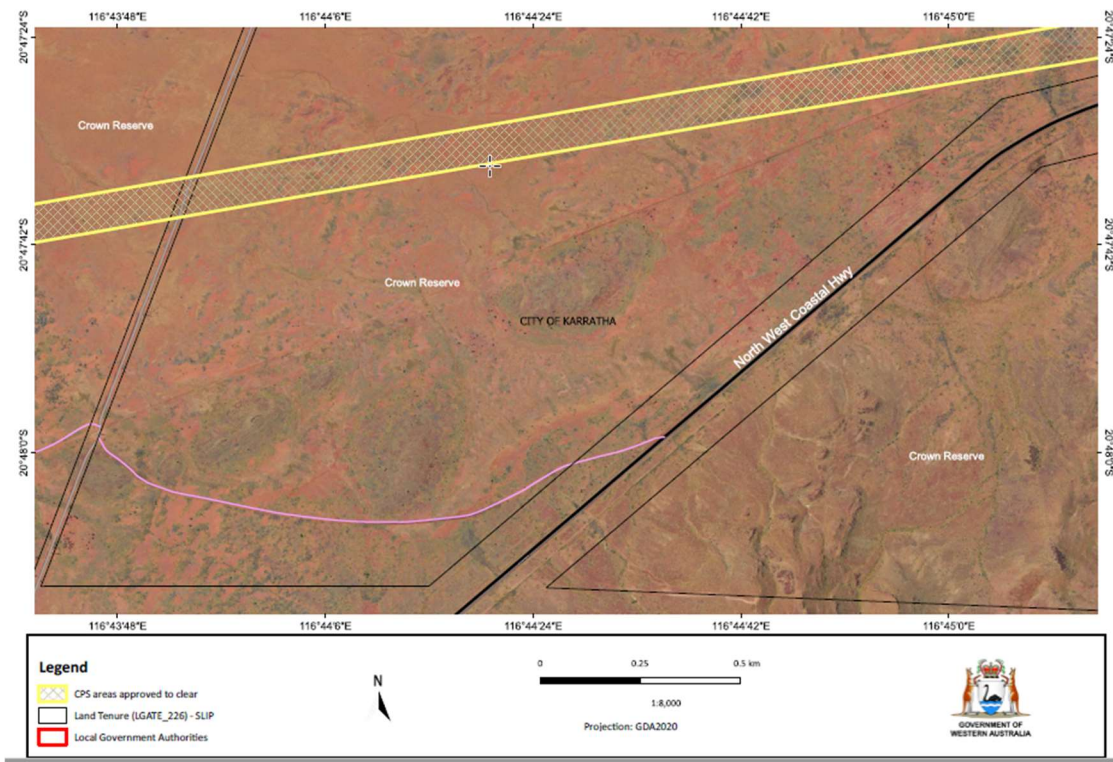
CPS 9923/1 - A



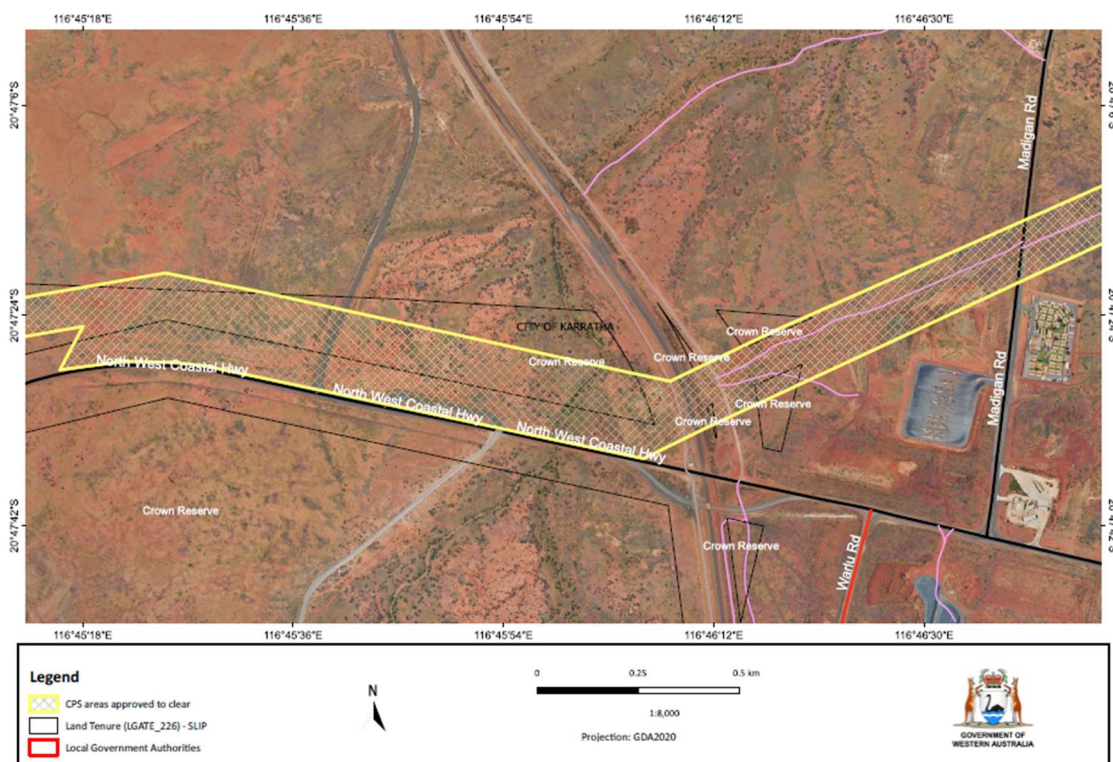
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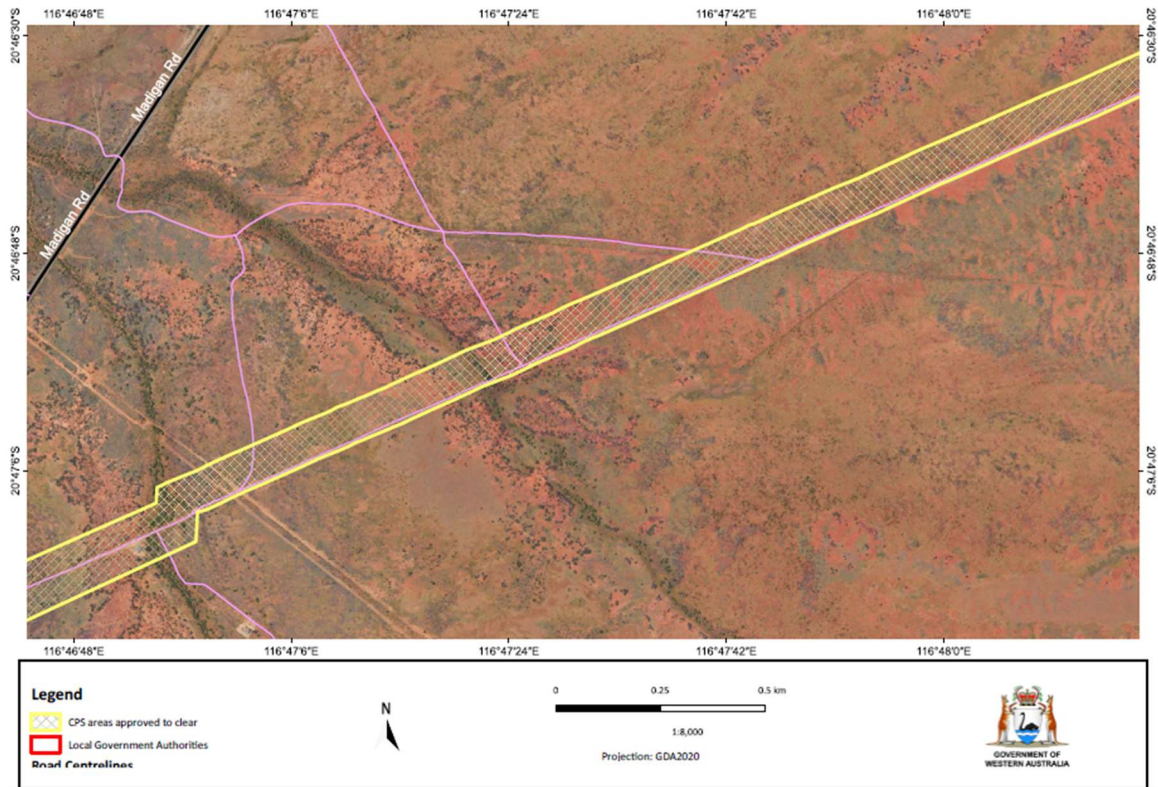
CPS 9923/1 - C



CPS 9923/1 - D



CPS 9923/1 - E



CPS 9923/1 - F

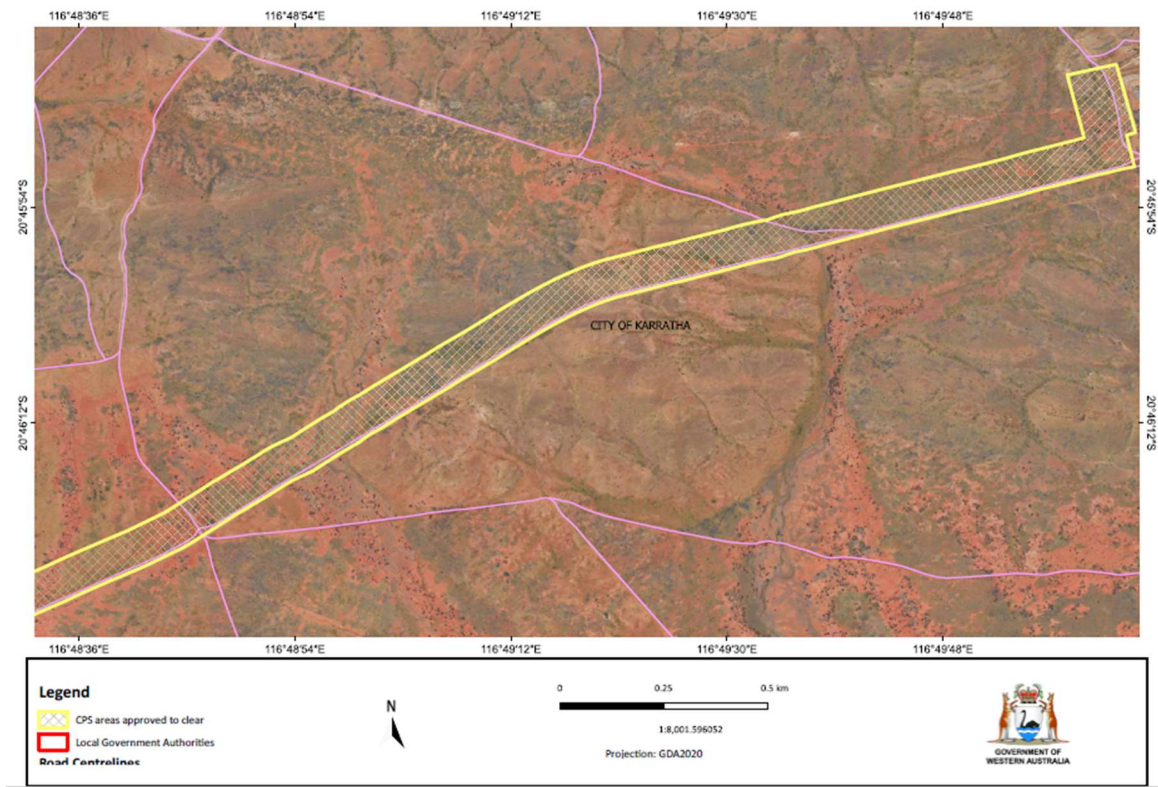


Figure 2 A-F. Maps of the application area. The areas cross-hatched yellow indicate the areas authorised to be cleared under the granted clearing permit.

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)
- *Planning and Development Act 2005* (WA) (P&D Act)
- *Soil and Land Conservation Act 1945* (WA)

The key guidance documents which inform this assessment are:

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

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

The applicant submitted that the clearing and project area have been selected through an iterative design process that minimised clearing of native vegetation and impacts on the environment.

The applicant also committed to :

- implement a flexible approach to the project design which will allow adjustment of pole spans to avoid impacts on waterways, drainage pathways and other sensitive environments;
- optimise the use of existing cleared areas;
- temporary clearing for access tracks will be limited to driving, storing and moving equipment, without mechanical clearing;
- topsoil stockpiling for the use in rehabilitation of cleared areas;
- applying standard construction dust control and mitigation measures during clearing.

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

3.2. Assessment of impacts on environmental values

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

The assessment against the clearing principles (see Appendix C) identified that the impacts of the proposed clearing may present a risk to flora, fauna and land / water resources. 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. Biodiversity and flora – Clearing Principles (a) and (b)

The proposed clearing footprint intersects two broadscale vegetation associations (VAs) mapped by Beard (1979), including VA 589 and VA 157. These VAs are well represented across all scales (i.e. State, IBRA Bioregion, IBRA Sub-region and Local Government Area (LGA)), with over 96% of the pre-European extent remaining.

The application area is a long, linear strip of approximately 19 kilometres of vegetation and is part of an expansive tract of native vegetation. A detailed flora, vegetation and fauna survey was conducted by GHD Pty Ltd over six days (23 – 28 April 2022)(GHD 2022a) and an additional survey was undertaken (GHD 2022b) to describe key

flora, vegetation and fauna values within the survey area and to determine the potential impact to areas of sensitivity. The time of survey was the preferred survey timing from an ecological perspective (EPA 2016).

The surveys identified seven vegetation types. The vegetation within the eastern half of the development envelope (DE) primarily consists of hummock grasslands of *Triodia epactia* and *T. wiseana* with scattered to open shrublands dominated by *Acacia*, *Hakea*, and *Senna* species on rocky sandy loam plains and low undulating rocky rises and slopes. The eastern half of the DE is also dominated by tussock grasslands on weakly gilgaied red clay loams. Minor drainage lines which dissect the plain are lined by either *Corymbia hamersleyana* or *Eucalyptus victrix* and *Acacia coriacea*. These vegetation types are consistent with the two broadscale vegetation associations mentioned above. The vegetation is in Completely Degraded to Excellent condition (Trudgen, 1991), with the majority being in Very Good condition (Trudgen, 1991). Signs of disturbance and weed infestation are minimal, although weed presence (particularly *Cenchrus ciliaris*) was also identified particularly along a minor drainage line (GHD, 2022). These vegetations may provide habitat to fauna species in the region.

The survey confirmed that vegetation within the application area is impacted by edge effects due to adjacent infrastructure, pipelines and roads. Consequently, there are areas of native vegetation in the general region and adjacent to the application area that have similar and higher levels of biodiversity to that within the application area.

Flora

Twenty-two (22) conservation significant flora species have been recorded from the local area (50 km radius from the application area), none of which is classified as Threatened under the EPBC Act and BC Act. Four priority flora species listed by the DBCA were recorded within the survey area performed by GHD (2020, 2022), namely *Rhynchosia bungarensis* (Priority 4), *Terminalia supranitifolia* (Priority 3), *Vigna triodiophila* (Priority 3) and *Oldenlandia* sp. Hamersley Station (A.A. Mitchell PRP 1479) (Priority 3). Surveys undertaken over the application area, however, did not identify the occurrence of these flora species nor any flora species of conservation Priority (GHD, 2020 & 2022).

The survey has identified the occurrence of vegetation representative of the Horseflat land system of the Roebourne Plains, a Priority 3 ecological community (Horseflat PEC) in parts of the application area. The PEC is described as an extensive weakly gilgaied clay plains dominated by tussock grasslands on mostly alluvial non-gilgaied, red clay loams or heavy clay loams. Perennial tussock grasses include *Eragrostis xerophila* (Roebourne Plains grass) and other *Eragrostis* spp., *Eriachne* spp. and *Dichanthium* spp. The community also supports a suite of annual grasses including *Sorghum* spp. and rare *Astrebela* spp. The community extends from Peedamulla to Balla Balla surrounding the towns of Karratha and Roebourne (DBCAs, 2021). The survey undertaken over the application area and surround, however, did not find the rare flora species commonly supported by the PEC nor any conservation significant flora species. Noting that clearing in this area is limited to that of for the installation of transmission poles and incidental temporary access, clearing in the area identified as the Horseflat PEC is considered minimal. Within the context of a large extent of native vegetation and the PEC in Good condition in the region, the removal of vegetation within this patch of PEC is unlikely to impact on the conservation value of the Horseflat land system of the Roebourne Plains PEC or directly lead to biodiversity loss.

Clearing removes topsoil which contain a seed bank and vegetative propagules of locally provenanced taxa. Retention or storage of this resource for future rehabilitation and revegetation of parts of the cleared areas can further mitigate potential impact on local biodiversity. Progressive revegetation of areas requiring temporary clearing using salvaged topsoil will increase the likelihood of the re-establishment of local provenance flora, including the conservation significant flora species. Further discussion on progressive rehabilitation and revegetation in provided in Section 3.2.2 below.

Despite its large remnant vegetation cover, the Horseflat PEC and vegetation in the Arid Region has been identified as being threatened by weed invasion, grazing and fragmentation (DBCAs, 2021). Five introduced species, one of which is a Declared Pest under the *Biosecurity and Agriculture Management Act 2007* and Weed of National Significance, were recorded during a survey in the area (GHD, 2020). The declared weed *Cenchrus ciliaris* (Buffel grass) found over the application area, has been known as the most widespread weed species in the arid and semi-arid zones of Australia, introduced and spread by people movement, feral animals including camels, road and rail corridor development, and the application of dust control measures in the widely scattered Aboriginal communities (Scott et.al. in H. Lambers, 2018). Long-lived seedbanks and vegetative parts of the weed species may be present in the soil and other materials from an area previously infested by the weed species. As the application area contains the weed, a stringent measure that controls the transport and transfer of such soils or materials from the proposed clearing activities is therefore crucial to minimise and mitigate the risks of weed spread and introduction to nearby vegetation. A weed control condition is imposed on the permit to mitigate this impact. In addition, the applicant is committed to the stockpiling of topsoil salvaged from cleared areas in designated areas,

which can minimise the weed transport and transfer. Progressive rehabilitation and revegetation of temporary cleared sites using the salvaged topsoils is also required as a condition to the permit, which would further mitigate the potential impacts by reducing the exposure time of the cleared areas and stockpiles to weed seeds deposition, as discussed in section 3.2.2 below.

Fauna

Seventy-three (73) conservation significant fauna species have been recorded from within 50 km radius of the application area. Of the recorded fauna species, migratory birds and / or marine or coastal fauna species comprise the majority. The application area may provide suitable habitat for many of the bird and reptile species. Being migratory, most bird species may fly over or utilise the area for foraging or dispersal, however, the application area is unlikely to comprise significant habitat for the fauna species. Within the context of the abundant vegetated area of similar types of vegetation in Very Good to Excellent condition surrounding the application area, removal of a limited extent of vegetation is unlikely to impact on the conservation value or viability of these species.

No conservation significant fauna species was identified during the survey. However, considering habitat requirements, proximity to the application area, number of records, and historical nature of the records, the following conservation significant fauna species considered likely to occur over the application area have been assessed further; *Pseudomys chapmani* (Western pebble-mound mouse; Priority 4), *Dasyurus hallucatus* (Northern quoll, Endangered), *Leggadina lakedownensis* (P4), *Notoscincus butleri* (line soil-crevice skink, Priority 4), and *Falcon peregrinus* (Special).

Several Northern quoll, Western pebble-mound mouse and Northern short-tailed mice were recorded within the local area, and the vegetation type in the application area could be suitable to support these species. It is considered possible that the vegetation within the application area may provide habitats to these species. However, with a home range of up to 6.7 hectares for *P. chapmani*, 64.2 hectare for *D. hallucatus*; and 5.3 ha for *L. lakedownensis*, these species are transient and potentially only visit the area on an occasional basis. Given the abundance of potential habitats for northern quoll and the mouse species in the local area, including vegetation immediately surrounding the application area, the proposed clearing is not considered to be locally significant for the survival of these species, should they be present within the application area. Similarly, several line soil-crevice skinks have been recorded in the local area. This reptile species is known to inhabit stony grasslands, similar to that of the application area. Within the context of the vast grasslands available surrounding the application area, it is unlikely that the vegetation within the application area comprises a significant habitat for the reptile species. The proposed clearing is unlikely to impact on the presence or conservation value of *N. butleri*. Potential impacts of clearing on any individual present can be minimised by conducting clearing in slow, one-directional manner.

Records of Peregrine falcon occur within the local area, with the closest record located approximately within one kilometre from the application area. The Peregrine Falcon typically nests on rocky ledges in tall, vertical cliff faces and gorges, or in tall trees associated with drainage lines. The falcon is known to have a wide range of habitat types including plains, open woodlands, and pylons and spires of buildings mimicking the cliff (DAWE, 2021). The application area and surrounds exhibit some of these characteristics that are likely to provide suitable habitat for the Peregrine Falcon. Whilst the Peregrine Falcon may fly by or utilise the area in transit, given the large home range of the Peregrine Falcon, and the availability of the large and intact tracts of vegetation and rocky landscape within the region, it is unlikely that the application area represents a significant habitat for this species. Clearing is unlikely to impact on the conservation values or significant habitat of this fauna species.

Four broad fauna habitat types were identified within the proposed clearing footprint (GHD, 2022; Horizon Power, 2022). The types of fauna habitat (See appendix E for details) may be suitable for birds, small mammals and small reptiles. These habitats align with the vegetation types mapped for the area; therefore, they are likely to also occur within the 10 km radius of the application area. The proposed clearing area comprises approximately 0.02% mapped vegetation within the local area, on which basis the proposed clearing is unlikely to affect the number of habitats available to the fauna species in the local and regional context.

Conclusion:

Based on the above assessment, the Delegated Officer has determined that the proposed clearing is not likely to have a significant impact on any conservation significant flora or fauna recorded within the local area. Management conditions imposed on the permit will further reduce impacts to conservation significant flora and fauna.

Conditions:

To address the above impacts, the following conditions will be imposed on the permit:

- implement stringent weed management strategies;
- store topsoils for revegetation of temporary cleared areas;

- progressively revegetate temporary cleared areas using topsoil salvaged from the location within three months of the area no longer being required for the purpose of clearing;
- conduct clearing in a slow, one-directional manner to allow any fauna individuals present to move into adjacent vegetation ahead of the clearing activity.

3.2.2. Land and water resources - Clearing Principles (f) and (g)

Primary watercourses and wetlands are absent from the application area, however, the application area intersects several broad, ephemeral drainage lines which are largely reliant on weather patterns. Surface water in these waterlines only flows in response to cyclonic rainfall events between November and April (GHD, 2022). Two vegetation types (VT06 and VT07) occur within the application area which are identified as representative of riparian vegetation. The applicant has committed to place laydown areas and other infrastructure for which there is flexibility for placement, including some poles, outside of the mapped VT06 and VT07 vegetation types. Despite the mitigation and avoidance measures applied to the project designs, it is understood that minor clearing within the two types of riparian vegetation is required especially for the construction of transmission poles, associated pole pads and access tracks for construction. The minor clearing is not expected to impact the function, alter hydrological flows, or contaminate intersecting drainage lines.

The application area is in the semi-arid region where the soils comprise of sands and clays and the climate is dry. Consequently, in the absence of ground cover, the loose soils are prone to wind erosion. Given rainfall is limited and evaporation is high, the risk from water erosion is low. However, where rainfall is sufficient, which may occur in the late summer months, runoff in the area can drain as sheet flow which may transport sediment to nearby areas. Indiscriminate flows of runoff may also exacerbate the spread of seedbank of weeds contained in the sediment (Scott, J.K. et.al, 2018). This could particularly happen during cyclone events. It is noted that the applicant has cyclone warning systems in place. Cyclone warnings will be monitored by the Contractor and if a cyclone warning is issued, a site audit and clean-up will be undertaken prior to the cyclone. This will include filling in any holes, as well as stabilisation or dispersal of piles of dirt and removal of rubbish (Horizon Power, 2023). Given the above, potential impact of clearing related to water erosion and the cyclone events is considered minimal.

The application area, typical of the semi-arid region, may have a high dust load. Dust is known to accumulate on plants, particularly near to the source, and may affect the plant health and the nearby vegetation, even if temporarily. Research on the impacts of dust on plant health in the semi-arid and arid zones asserted that the accumulation of dust and impacts on plant health in the arid region are driven more by the variability of cumulative rainfall than dust load (Matsuki et.al., 2016). Clearing may increase the risks of dust deposition and land degradation. This may be exacerbated by the longer time required to clear and perform the construction works which would prolong the exposure of cleared ground to the wind. With water scarcity and low rainfall in the area, watering of the cleared area to suppress dust is not practical. Noting the considerably limited area of clearing within the development envelope, the linear and narrow shape of the clearing area and the large extent and condition of vegetation cover surrounding the proposed clearing area, it is considered that although clearing may lead to some land degradation in the form of soil erosion and sediment and dust deposition, these impacts are likely to be minor, localised and temporary due to the limited construction timeframe. Limiting the exposure time of cleared areas to wind and application of appropriate land management measures during clearing and construction works can mitigate the impact.

These measures include conducting staged clearing and progressive rehabilitation and revegetation of temporary disturbed areas using stockpiled topsoil at the end of clearing and construction works. Progressive rehabilitation and revegetation of the temporary clearing area using stockpiled topsoil from the sites can minimise potential impacts to the surrounding environment by:

- reducing the potential for long-term wind and water erosion;
- reducing the time overburden piles and loose soils are exposed to wind;
- reducing the potential of dust deposition;
- reducing the time topsoil piles are exposed to weeds;
- ensuring topsoil seed viability for use in the revegetation program; and
- re-establishing ecological values that facilitate the movement of fauna.

Construction and placement of drains around the topsoil stockpiles could avoid and minimise the potential for indiscriminate flows of runoff during the rainy season. This in turn would minimise and mitigate the risks of sediment transports.

Conclusion

Given the above, the proposed clearing is considered unlikely to result in appreciable and long-term land degradation and dust deposition provided appropriate land management measures are applied.

Conditions:

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

- commencement of construction works no later than two months after authorised clearing;
- store topsoils and construct drainage around the topsoil stockpile to avoid loss of soil;
- conduct progressive rehabilitation on temporary cleared area.

3.3. Relevant planning instruments and other matters

The application area is a part of the Common User Infrastructure Corridor that will link Maitland SIA and the Burrup SIA and the Maitland Improvement Scheme Area. Consultation with Development WA and the Department of Jobs, Tourism, and Innovation has been undertaken regarding the application (Horizon Power, 2023).

The proposed clearing permit area includes land within the Pilbara Energy Pipeline (PEP) Corridor and the Dampier to Bunbury Natural Gas Pipeline (DBNGP) Corridor. Horizon Power had engaged DBNGP who had no objections to the proposed works. Given the share of some existing assets located in close vicinity to the pipeline, Horizon Power works regularly with DBNGP in regard to operational / maintenance requirements, including the relevant safety requirements.

A large portion of the area to be cleared is located within Reserve 36991, under Management Order to the Water Corporation. The applicant has engaged with Water Corporation who has no objections to the application and related project (Horizon Power, 2023).

A portion of the proposed area (to be cleared) is located within Reserve 9701 – De Grey Mullewa Stock Route. The stock route is currently being considered by the Heritage Council of Western Australia (HCWA) for inclusion in the State Register for Heritage Places. The impact area is very small in relation to the overall size of reserve 9701 and the proposed works is not expected to significantly alter the heritage values of the stock route (Horizon Power, 2023).

The City of Karratha has provided its comments regarding the project, and stated that local government approvals were not required, and that the proposed clearing was consistent with the City's Local Planning Scheme. The City did not have any objections to the proposed clearing it has no objections.

The Project is located within the Pilbara Groundwater Area and the Pilbara Surface Water Area, both proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act) (GoWA 2022). There are no Public Drinking Water Source Areas (PDWSAs), rivers or waterways within the DE (GoWA 2022). The project will not impact groundwater and does not need Licences or Permits under the RIWI Act.

The application area intersects the mapped areas of two registered Aboriginal sites: Karatha West 1 (ID: 7509) and Field Site 1 (ID: 17092). It is noted that Horizon Power has commenced stakeholder consultation with the Ngarluma Aboriginal Corporation to ensure heritage sites or areas of significance are identified and incorporated into the design. Horizon Power is committed to ensure that heritage monitors are present during all ground disturbing works (Horizon Power, 2022). It is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972* (WA) and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

End

Appendix A. Additional information provided by applicant

The applicant has provided information acquired from several biological surveys in support of the application. Excerpt of the surveys are presented in Appendix E.

Appendix B. Site characteristics

B.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is, a linear strip of native vegetation approximately 19 kilometres long in the extensive land use zone of Western Australia. The application area is located within the Pilbara IBRA Bioregion of Thackway and Cresswell (1995) and extends from Maitland to Stove Hill. Aerial imagery 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	The application area is not mapped within any formal ecological linkages.
Conservation areas	The application area is adjacent to the Murujuga National Park located on the Burrup Peninsula.
Vegetation description	<p>Vegetation survey undertaken over the application area in 2020 and 2022 (GHD, 2020 and GHD, 2022a and 2022b) identified seven types of vegetation namely:</p> <p>VT01 : <i>Triodia Grassland</i> <i>Acacia inaequilatera</i>, <i>Acacia bivenosa</i> and <i>Hakea lorea</i> subsp. <i>lorea</i> open shrubland to scattered shrubs over <i>Eremophila longifolia</i>, <i>Senna</i> spp. And <i>Solanum horridum</i> sparse shrubland over <i>Cymbopogon ambiguus</i>, <i>Themeda triandra</i> and <i>Cenchrus ciliaris</i> open tussock grassland over <i>Triodia wiseana</i> and <i>Triodia epactia</i> hummock grassland on low undulating rocky rises and slopes.</p> <p>VT02: <i>Eragrostis Tussock Grassland</i> <i>Eragrostis xerophila</i>, <i>Aristida latifolia</i> and <i>Chrysopogon fallax</i> tussock grassland over <i>Neptunia dimorphantha</i>, <i>Indigofera trita</i> subsp. <i>trita</i> and <i>Sida fibulifera</i> scattered herbs on weak gilgai cracking clay plains. Other common species include <i>Salsola australis</i>, <i>*Cenchrus ciliaris</i>, <i>Operculina aequisejala</i>, <i>Heliotropium cunninghamii</i> and <i>Stemodia kingii</i>. Representative of Priority 3 PEC Horseflat land system of the Roebourne Plains.</p> <p>VT03: <i>Acacia xiphophylla</i> open shrubland over <i>Triodia epactia</i> and <i>T. wiseana</i> very open hummock grassland with <i>Eragrostis xerophila</i>, <i>Chrysopogon fallax</i> and <i>Themeda triandra</i> very open tussock grassland on sandy claypan with some patches of cracking clays.</p> <p>VT04: <i>Acacia bivenosa</i> open shrubland over <i>Triodia wiseana</i> open hummock grassland on sandy clay loam plain with some rocky outcropping.</p> <p>VT05: <i>Acacia ancistrocarpa</i>, <i>A. bivenosa</i> and <i>A. inaequilatera</i> open shrubland over <i>Triodia wiseana</i> and <i>T. epactia</i> open hummock grassland on sandy clay loam plains.</p> <p>VT06: <i>Eucalyptus victrix</i> low open forest over <i>Acacia coriacea</i> tall shrubland over <i>Carissa lanceolata</i> open shrubland over <i>*Cenchrus ciliaris</i>, <i>Chrysopogon fallax</i> and <i>Themeda triandra</i> tussock grassland along alluvial broad drainage lines.</p> <p>VT07: <i>Corymbia hamersleyana</i> low open forest to scattered trees over <i>Acacia coriacea</i> tall shrubland to scattered shrubs over <i>*Vachellia farnesiana</i> and <i>Carissa lanceolata</i> low shrubs over <i>*Cenchrus ciliaris</i> and <i>Chrysopogon fallax</i> tussock grassland on brown sandy loam on minor/broad drainage lines. The full survey descriptions and maps are available in Appendix E.</p>

Characteristic	Details
	<p>This survey findings are consistent with the Vegetation within the Pilbara bioregion and Roebourne sub-bioregion as described by IBRA, particularly:</p> <ul style="list-style-type: none"> • Vegetation association 589: Mosaic: Short bunch-grassland - savanna / grass plain (Pilbara) / Hummock grasslands, grass steppe; soft spinifex • Vegetation association 157: Hummock grasslands, grass steppe; hard spinifex, <i>Triodia wiseana</i>. <p>The mapped vegetation types retain greater than 96 per cent of the original extent (Government of Western Australia, 2019).</p>
Vegetation condition	<p>The vegetation condition was assessed and mapped in accordance with the Eremaean and Northern Botanical Provinces of Western Australia scale devised by Keighery (1994) and adapted by EPA (2016). The scale recognises the intactness of vegetation and consists of six rating levels.</p> <p>Vegetation condition within the application area ranges between Excellent to Completely Degraded, with 64.1% being in good or better condition (GHD 2022) showing minimal signs of disturbance, with little to no weeds evident. The vegetation immediately adjacent to cleared areas, such as linear infrastructure (roads and vehicle tracks) is generally more disturbed. These areas are rated to be Degraded to Poor condition.</p> <p>The full vegetation condition for the Eremaean and Northern Botanical Provinces (Trudgen, 1991) rating scale is provided in Appendix D. Excerpts of the surveys are available in Appendix E.</p>
Climate and landform	<p>The project is located in the Karratha Coast Zone of the Pilbara Province. The Karratha Coast Zone is characterised by coastal mudflats with sandy coastal plains and some hills on marine deposits and some sedimentary and volcanic rocks of the Pilbara Craton (Tille 2006).</p> <p>Six land systems intersect the proposed clearing footprint, the land systems are Granitic, Littoral, Cheerawarra, Horseflat, Calcrete, Ruth.</p> <p>The climate of the application area is semi-arid with warm to hot temperatures all year and low rainfall. Most of the rain falls in the late summer months. The mean maximum temperature ranges from 36.3 °C in March, to 26.4 °C in July. The mean minimum temperature ranges from 26.9 °C in January to 13.8 °C in July. The mean annual rainfall for all years is 292.4 mm. 2019 was a dry year, receiving only 110.4 mm (BoM 2020).</p>
Soil description	<p>Soils in the local area include tidal soils with some calcareous loamy earths, salt lake soils and red/brown noncracking clays (Tille 2006).</p>
Land degradation risk	<p>The risks of land degradation in the local area include that of associated with acid sulphate soils (ASS). Risk mapping indicates the soils of the survey area have a 'High to moderate' and 'Moderate to low' risk of ASS, causing environmental damage, if those soils are disturbed.</p> <p>The dry condition of a semi-arid climate may exacerbate the risk of wind erosion, especially over the exposed soils. Sheet flows of surface water during the larger cyclonic rainfall events can result in significant water erosion (DPIRD, 2019)</p>
Waterbodies	<p>The desktop assessment and aerial imagery indicated that the application area intersects several watercourses, mostly mapped as non-perennial. Surface water in the broader area, including in the perennial watercourses, is largely reliant on weather, and surface water in waterways is generally only present or flowing for parts of the year, often in response to larger cyclonic, rainfall events.</p>
Hydrogeography	<p>The application area falls within the Pilbara Groundwater and Surface water areas, proclaimed under the RIWI Act.</p> <p>The application area does not occur within a Public Drinking Water Source Areas (DWER-034) or an area subject to the Country Areas Water Supply Act 1947. Groundwater salinity level (Total Dissolved Solids) is mapped as 1,000-3,000 milligrams per litre (fresh to brackish) (DWER-026).</p>

Characteristic	Details
Flora	The flora and vegetation survey (GHD 2020 and 2022) did not identify any Threatened flora species listed under the EPBC Act 1999 nor the <i>Biodiversity Conservation Act 2016</i> (BC Act). The survey also did not find any Priority Flora species.
Ecological communities	Four PECs have been mapped within a 20 km radius of the application area, one of which intersects it. The flora and vegetation survey identified the occurrence of the Horseflat land system of the Roebourne Plains (Priority 3) in a portion of the application area.
Fauna	Conservation significant fauna species considered likely to occur over the application area include <i>Pseudomys chapmani</i> (Western pebble-mound mouse; Priority 4), <i>Dasyurus hallucatus</i> (Northern quoll, Endangered), <i>Leggadina lakedownensis</i> (P4), <i>Notoscincus butleri</i> (line soil-crevice skink, Priority 4), and <i>Falcon peregrinus</i> (Special). Four broad fauna habitat types were identified within the proposed clearing footprint. These habitats align with the vegetation types mapped for the local area and region. No conservation significant fauna species was identified during the survey.

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
Vegetation complex					
Beard vegetation association 589 *	728,768.20	724,695.82	99.44	15,304.39	2.10
Beard vegetation association 157*	199,832.17	198,409.23	99.29	11,584.76	5.80

*Government of Western Australia (2019a)

**Government of Western Australia (2019b)

B.3. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix F.1), and biological survey information impacts to the following conservation significant flora have been considered.

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 sp. Pritzelianum</i> (S. van Leeuwen 5095)	3	Y	Y	Y	34.54	1	Y
<i>Atriplex lindleyi subsp. conduplicata</i>	3	Y	Y	Y	13.59	1	Y
<i>Dolichocarpa sp. Hamersley Station</i> (A.A. Mitchell PRP 1479)	3	Y	Y	Y	1.04	3	Y
<i>Eragrostis lanicaulis</i>	3	Y	Y	Y	39.82	2	Y
<i>Eragrostis surreyana</i>	3	Y	Y	Y	21.58	3	Y
<i>Eriochloa fatmensis</i>	3	Y	Y	Y	35.85	1	Y
<i>Glycine falcata</i>	3	Y	Y	Y	24.93	1	Y
<i>Gomphrena cucullata</i>	3	Y	Y	Y	11.37	2	Y
<i>Gomphrena leptophylla</i>	3	Y	Y	Y	11.37	1	Y
<i>Goodenia pallida</i>	1	Y	Y	Y	18.23	1	Y
<i>Gymnanthera cunninghamii</i>	3	Y	Y	Y	23.52	5	Y
<i>Helichrysum oligochaetum</i>	1	Y	Y	Y	37.75	2	Y
<i>Nicotiana umbratica</i>	3	Y	Y	Y	19.71	1	Y
<i>Pentalepis trichodesmoides subsp. hispida</i>	2	Y	Y	Y	40.68	1	Y
<i>Rhynchosia bungarensis</i>	4	Y	Y	Y	0.84	37	Y
<i>Solanum albotellatum</i>	3	Y	Y	Y	24.93	1	Y
<i>Stackhousia clementii</i>	3	Y	Y	Y	7.06	2	Y
<i>Tephrosia rosea var. Port Hedland</i> (A.S. George 1114)	1	Y	Y	Y	30.09	11	Y
<i>Terminalia supranitifolia</i>	3	Y	Y	Y	0.84	36	Y
<i>Themeda sp. Hamersley Station</i> (M.E. Trudgen 11431)	3	Y	Y	Y	6.50	2	Y
<i>Trianthema sp. Python Pool</i> (G.R. Guerin & M.E. Trudgen GG 1023)	2	Y	Y	Y	18.79	2	Y
<i>Vigna triodiophila</i>	3	Y	Y	Y	14.51	15	Y

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

B.4. Fauna analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Did surveys identify the species
<i>Dasyurus hallucatus</i> (Northern quoll)	EN	Y	Y	0.00	493	N
<i>Falco peregrinus</i> (Peregrine falcon)	OS	Y	Y	6.73	13	N
<i>Leggadina lakedownensis</i> (Northern short-tailed mouse, Lakeland Downs mouse, kerakenga)	P4	Y	Y	3.17	18	N
<i>Notoscincus butleri</i> (Lined soil-crevice skink (Dampier))	P4	Y	Y	0.88	65	N
<i>Pseudomys chapmani</i> (Western pebble-mound mouse, ngadji)	P4	Y	Y	5.34	19	N

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

B.5. Ecological community analysis table

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]
Horseflat Land System of the Roebourne Plains	Priority 3	Y	Y	Y	1.45	45	Y
Roebourne Plains coastal grasslands with gilgai microrelief on deep cracking clays (Roebourne Plains gilgai grasslands)	Priority 1	Y	Y	Y	0.00	18	Y

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		
<p><u>Principle (a):</u> <i>“Native vegetation should not be cleared if it comprises a high level of biodiversity.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared does not contain significant flora, fauna, habitats, assemblages of plants.</p> <p>A portion of the application area is mapped as the ‘Horseflat land system of the Roebourne Plains’ (Priority 3) ecological community (PEC).</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (b):</u> <i>“Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna.”</i></p> <p><u>Assessment:</u></p> <p>Four broad fauna habitat types have been identified within the survey area. However, no significant fauna species or evidence of their presence was recorded during the surveys. Potential impact on any individual present during clearing or works can be minimised by applying a slow, directional clearing method.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.1, 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 does not contain flora species listed as threatened under the BC Act.</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>No threatened ecological community present over the application area.</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 remaining native vegetation cover is in the excess of 99% of its original cover. This is consistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area.</p>	Not likely to be at variance	No
<p><u>Principle (h):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.”</i></p> <p><u>Assessment:</u></p>	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas.		
Environmental value: land and water resources		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u></p> <p>The application area transects some non-perennial drainages. No major or perennial waterlines or wetlands are in the vicinity of the application area. Minor clearing within vegetation identified as riparian types will be required for the installation of poles.</p>	At variance	Yes <i>Refer to Section 3.2.3, above.</i>
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u></p> <p>The mapped soils may be susceptible to wind or water erosion when vegetation cover is removed. Dust can also be dispersed and deposited to nearby vegetation. The impact, however, is localised and temporary. Noting the long narrow shape of the application area and the large extent and condition of the surrounding vegetation, the proposed clearing is not likely to have an appreciable impact on land degradation. Land management and rehabilitation can mitigate this impact.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.3, above.</i>
<p><u>Principle (i):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.”</i></p> <p><u>Assessment:</u></p> <p>The activities associated with the proposed clearing will not intercept ground water nor permanent water courses, wetlands or Public Drinking Water Sources Areas. The proposed clearing is unlikely to impact surface or ground water quality.</p>	Not likely to be at variance	No
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u></p> <p>The mapped soils and topographic contours in the surrounding area do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding.</p>	Not likely to be at variance	No

Appendix D. Vegetation condition rating scale

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

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

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

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

Appendix E. Excerpt of Flora and Fauna Surveys



Several Vegetation, Flora and Fauna Surveys were conducted in support of the infrastructure project in the local area, including the powerline constructions. Surveys relevant to the proposed clearing listed by the applicant are as follows (Horizon Power, 2022b):



Table 1. Surveys performed over the application area and surrounds.



Survey	Main findings	Distance to the proposed clearing area
Flora and Vegetation Survey – Woodside Solar PV, Power Plant and Transmission Corridor Vicky Long & Associates for GHD (2019)	Southern Survey Results <ul style="list-style-type: none"> No Threatened Ecological Communities (TECs) were recorded in the survey area The substrate inspected indicated that the P1 PEC is less likely to be present 106 plant species were recorded during survey No species of conservation significance were recorded Five weed species, one of which is a Declared Pest under the <i>Biosecurity and Agriculture Management Act 2007</i> and Weed of National Significance, were recorded during the survey. 	The southern part of the survey area overlaps by approximately 50 m into of the western end of the GC
Fauna Survey – Woodside Solar PV, Power Plant and Transmission Corridor (GHD, 2020a)	<ul style="list-style-type: none"> Nine main fauna habitats were recorded of moderate to high value; Two fauna habitats were recorded in the vicinity of the proposed clearing area; Tussock grasslands on cracking clays, deemed of moderate value; Minor drainage, deemed of high value; Recorded six species of conservation significance, but not in the area adjacent to the GC. 	The southern part of the survey area overlaps by approximately 50 m into of the western end of the GC
Flora and Vegetation Survey – Horizon	<ul style="list-style-type: none"> Nineteen vegetation types were identified 	The previous surveyed area is

<p>Power Burrup Expansion (GHD, 2020b)</p>	<ul style="list-style-type: none"> • No TECs were identified in the survey area • Two PECs were identified • The PEC in the vicinity of the GC is the Horseflat land system of the Roebourne Plains (P3). Approximately 173 ha of the PEC was recorded in the survey area, ranging from Degraded to Excellent condition. • No Threatened flora species were recorded within the survey area • Four Priority species were recorded: <ul style="list-style-type: none"> • <i>Rhynchosia bungarensis</i> (P4) • <i>Terminalia supranitifolia</i> (P3) • <i>Vigna Triodiophila</i> (P3) • <i>Oldenlandia</i> sp. Hamersley Station (A.A. Mitchell PRP 1479). The species has since been renamed to <i>Dolichocarpa</i> sp. Hamersley Station (A.A. Mitchell PRP 1479). • Of the four Priority species, one was recorded approximately 400 m south of the GC, <i>Oldenlandia</i> sp. Hamersley Station 	<p>approximately 400 m south of GC on the western side and follows adjacent on the eastern side.</p>
<p>Maitland to Karratha Terminal Flora and Fauna Survey (GHD, 2022a).</p>	<ul style="list-style-type: none"> • Seven vegetation types were identified • No TECs were identified • One PEC was identified: Horseflat land system of the Roebourne Plains (P3). Approximately 75.13 ha of this PEC occurs within the survey area, ranging from Very Good to Good condition. • No significant flora species were recorded within the survey area, but <i>Oldenlandia</i> sp. Hamersley Station (P3) is likely to be present within the survey area. • Four broad fauna habitat types (excluding cleared areas) have been identified. • No significant fauna species or evidence of their presence was recorded during the field assessment. 	<p>Specific to project – within clearing area</p>
<p>Burrup Expansion Project – Additional Areas Reconnaissance / Basic Survey (GHD, 2022b) Performed on 3-4 August, 2022</p>	<ul style="list-style-type: none"> • No significant flora taxa were recorded within the Maitland additional survey area during the survey. • Vegetation types and conditions are the same as GHD(2022a)'s survey. 	<p>Specific to project – within clearing area</p>

Table 2. Vegetation types recorded within the survey area (GHD, 2020, 2022a, 2022b)

Vegetation type code	Vegetation type description	Sample locations	Total extent (ha)	GHD (2020) vegetation type	Photograph
VT01	<p>Triodia Grassland</p> <p><i>Acacia inaequilatera</i>, <i>Acacia bivenosa</i> and <i>Hakea lorea</i> subsp. <i>lorea</i> open shrubland to scattered shrubs over <i>Eremophila longifolia</i>, <i>Senna</i> spp. and <i>Solanum horridum</i> sparse shrubland over <i>Cymbopogon ambiguus</i>, <i>Themeda triandra</i> and <i>Cenchrus ciliaris</i> open tussock grassland over <i>Triodia wiseana</i> and <i>Triodia epactia</i> hummock grassland on low undulating rocky rises and slopes.</p>	HPK2 HPK16 HPK17	18.27	VT09	
VT02	<p>Eragrostis Tussock Grassland</p> <p><i>Eragrostis xerophila</i>, <i>Aristida latifolia</i> and <i>Chrysopogon fallax</i> tussock grassland over <i>Neptunia dimorphantha</i>, <i>Indigofera trita</i> subsp. <i>trita</i> and <i>Sida fibulifera</i> scattered herbs on weak gilgai cracking clay plains.</p> <p>Other common species include <i>Salsola australis</i>, <i>Cenchrus ciliaris</i>, <i>Operculina aequisejala</i>, <i>Heliotropium cunninghamii</i> and <i>Stemodia kingii</i>.</p> <p>Representative of Priority 3 PEC Horseflat land system of the Roebourne Plains.</p>	HPK1 HPK9 HPK15 HPK18	75.13	VT11	

Vegetation type code	Vegetation type description	Sample locations	Total extent (ha)	GHD (2020) vegetation type	Photograph
VT03	<p><i>Acacia xiphophylla</i> open shrubland over <i>Triodia epactia</i> and <i>T. wiseana</i> very open hummock grassland with <i>Eragrostis xerophila</i>, <i>Chrysopogon fallax</i> and <i>Themeda triandra</i> very open tussock grassland on sandy claypan with some patches of cracking clays.</p>	HPK3 HPK6 HPK8	19.07	VT15	
VT04	<p><i>Acacia bivenosa</i> open shrubland over <i>Triodia wiseana</i> open hummock grassland on sandy clay loam plain with some rocky outcropping.</p>	HPK11 HPK12 HPK13	45.04	VT09	

Vegetation type code	Vegetation type description	Sample locations	Total extent (ha)	GHD (2020) vegetation type	Photograph
VT05	<i>Acacia ancistrocarpa</i> , <i>A. bivenosa</i> and <i>A. inaequilatera</i> open shrubland over <i>Triodia wiseana</i> and <i>T. epactia</i> open hummock grassland on sandy clay loam plains.	HPK4 HPK14 HPK19	5.66	VT10	
VT06	<i>Eucalyptus victrix</i> low open forest over <i>Acacia coriacea</i> tall shrubland over <i>Carissa lanceolata</i> open shrubland over * <i>Cenchrus ciliaris</i> , <i>Chrysopogon fallax</i> and <i>Themeda triandra</i> tussock grassland along alluvial broad drainage lines.]	HPK5	0.23	VT17	






Vegetation type code	Vegetation type description	Sample locations	Total extent (ha)	GHD (2020) vegetation type	Photograph
VT07	<i>Corymbia hamersleyana</i> low open forest to scattered trees over <i>Acacia coriacea</i> tall shrubland to scattered shrubs over * <i>Vachellia farnesiana</i> and <i>Carissa lanceolata</i> low shrubs over * <i>Cenchrus ciliaris</i> and <i>Chrysopogon fallax</i> tussock grassland on brown sandy loam on minor/broad drainage lines.	HPK7 HPK10	9.36	VT14	
Cleared areas/road verge/salt pan	Cleared areas/road verge/salt pan	-	16.66	Cleared	Photo not available

Table 3. Fauna habitat identified over the application area (GHD, 2022a)

Fauna habitat	Area (ha)	Representative photograph
<p>Low undulating rocky rises and slopes.</p> <p>This habitat type is associated with stony/rocky plains and low undulating rises and consists of scattered shrubs of <i>Acacia</i>, <i>Hakea</i> and <i>Senna</i> species over a <i>Triodia</i> hummock grassland.</p> <p>The hummock grasslands provide refuge for reptiles (such as snakes, skinks, goannas and dragons), small mammals and ground dwelling birds. The open shrublands provide refuge and a food source for native birds. Rocky outcrops contain small crevices which provide refuge for reptile species and small mammals.</p> <p>This habitat type aligns with VT01.</p>	18.27	
<p>Broad drainage lines</p> <p>The minor drainage lines are dominated by open woodlands to scattered trees of <i>Corymbia hamersleyana</i>, <i>Acacia coriacea</i> and occasional <i>Eucalyptus victrix</i>. Mixed <i>Acacia</i> shrublands dominated the mid layer over an open hummock and tussock grassland of <i>Triodia epactia</i>, <i>T. wiseana</i> and <i>Cenchrus ciliaris</i>.</p> <p>Creeklines are considered to be important ecological corridors to other broader habitats within the local area and provide a source of water during periods of heavy rainfall. Trees and shrubs provide shelter and food resources to a number of native fauna species, in particular birds.</p> <p>This habitat type aligns with VT06 and VT07.</p>	9.60	
<p>Hummock grasslands on sandy clay loam plains</p> <p>This habitat type occurs on the plains. The vegetation is dominated by open shrublands of <i>Acacia</i> species (<i>Acacia bivenosa</i>, <i>A. ancistrocarpa</i>, <i>A. inaequilatera</i>, <i>A. pyrifolia</i>) over an open hummock and tussock grassland of <i>Triodia epactia</i>, <i>T. wiseana</i> and <i>Cenchrus ciliaris</i>. This habitat type is generally in very good condition with vehicle tracks and weed invasion impacting some areas. The hummock grasslands provide refuge for reptiles (such as snakes, skinks, goannas and dragons), small mammals and ground dwelling birds. The <i>Acacia</i> shrublands provide refuge and a food source for native birds.</p> <p>This habitat type aligns with VT04 and VT05.</p>	50.7	
<p>Grassland Claypans</p> <p>The grassland claypans habitat type consists of a low open tussock grassland of <i>Eragrostis xerophila</i> grassland with isolated patches of <i>Acacia xiphophylla</i> shrubs and <i>Triodia epactia</i> hummock grasses on weak gilgai clay plains. The area has been subject to varying degrees of degradation from historical clearing in adjacent areas, weed invasion and cattle grazing.</p> <p>The gilgai grassland provides suitable habitat for the Short-tailed mouse (Priority 4) who favours cracking clay and adjacent habitats.</p> <p>This habitat type aligns with VT02 and VT03.</p>	94.20	

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
- Wheatbelt Wetlands Stage 1 (DBCA-021)

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
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