GOVERNMENT OF
WESTERN AUSTRALIA

DRAFT CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: CPS 9843/1

File Number: DWERVT10764

Duration of Permit: From 06 November 2023 to 06 November 2028

PERMIT HOLDER

Western Australian Land Authority's (trading as DevelopmentWA)

LAND ON WHICH CLEARING IS TO BE DONE

Lot 5859 on Deposited Plan 191016, Wedgefield

Lot 9006 on Deposited Plan 424302, Wedgefield

AUTHORISED ACTIVITY

The permit holder must not clear more than 26.37 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

CONDITIONS

1. Period during which clearing is authorised

The permit holder must not clear any *native vegetation* after 06 November 2028.

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

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

(a) avoid the clearing of *native vegetation*;

(b) minimise the amount of *native vegetation* to be cleared; and

(c) reduce the impact of clearing on any environmental value.

3. Weed management

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

(a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;

(b) ensure that no known *weed*-affected soil, *mulch*, *fill*, or other material is brought into the area to be cleared; and

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

4. Fauna management:

The permit holder must:

(a) conduct clearing activities in a slow, progressive manner towards adjacent *native vegetation* to allow fauna to move into adjacent *native vegetation* ahead of the clearing activity;

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

(c) restrict clearing activities to day-light hours to avoid the possibility of injury to fauna.

5. Wind erosion management

The permit holder must commence construction activities no later than three (3) months after undertaking the authorised clearing activities to reduce the potential for wind erosion.

6. Fauna management – Pre-clearance survey

(a) within seven (7) days prior to undertaking any clearing authorised under this permit, the permit holder shall engage a *fauna specialist* to undertake clearance surveys within the area cross-hatched yellow on Figure 1 of Schedule 1 for Mulgara (*Dasycercus cristicauda* or *Dasycercus blythi*) as per the methods outlined in the *Survey and clearance method statement for Mulgara* (GHD, 2022), including the identification and inspection of burrows, and determination of whether burrows are *active/ potentially active*.

(b) where evidence of an *active/potentially active Mulgara burrow* is identified under condition 6(a) of this permit, the permit holder shall;

  (i) engage a fauna specialist to flag the location of the *active/potentially active burrow*/s;

  (ii) not clear within ten metres of the flagged burrow/s;

  (iii) engage a *fauna specialist* to monitor with cameras, the flagged burrow/s for a maximum of five days, or until such time that Mulgara have been observed to independently move on from the burrow/s; and

  (iv) prior to clearing, engage a *fauna specialist* to re-inspect any flagged burrow/s for the presence of Mulgara.

(c) post ground disturbance clearing, each *active/potentially active burrow* identified under condition 6(a) must be inspected by a *fauna specialist* for signs of recent use by Mulgara.

(d) where a burrow identified under condition 6(a) is identified not to be *active/potentially active* in accordance with condition 6(c), that burrow must only be cleared after careful excavation of the burrow using handheld tools.

(e) where a Mulgara burrow identified under condition 6(a) is identified to be *active/potentially active* in accordance with condition 6(c), the burrow shall only be cleared immediately after relocation of the Mulgara individual(s) by a *fauna specialist* to an area of suitable habitat, in accordance with a section 40 authorisation under the *Biodiversity Conservation Act 2016*.

(f) where *active/potentially active Mulgara burrow(s)* are identified under condition 6(a) of this permit, and/or Mulgara are relocated under condition 6(e) of this permit the permit holder shall include the following in a report submitted to the *CEO* within two months of undertaking any clearing authorised under this permit:

(i) the location of the Mulgara burrow(s) identified, using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings or decimal degrees;

(ii) a description of the camera monitoring measures undertaken under condition 6(b)(iii) of this Permit;

(iii) the date and time the Mulgara are recorded as independently moving from a flagged burrow;

(iv) the location of any Mulgara, as referred to under condition 6(a) of this Permit, captured using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings or decimal degrees;

(v) the date, time, vegetation type and weather conditions at each location where Mulgara are captured under condition 6(f)(iv) of this permit;

(vi) the location of any Mulgara, identified in accordance with condition 6(a) of this permit, relocated using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings or decimal degrees;

(vii) the date, time, vegetation type and weather conditions at each location where Mulgara are relocated under condition 6(e) of this permit;

(viii) the name of the fauna specialist that relocated fauna under condition 6(e) of this permit; and

(ix) a copy of the fauna licence authorising the relocation of fauna under condition 6(e) of this permit.

7. Flora management – pre-clearance survey

(a) prior to undertaking any clearing authorised under this permit within the area cross-hatched red in Figure 2 of Schedule 1, the permit holder must engage a *botanist* to conduct a *targeted flora survey* of the permit area to identify possible occurrences of following *priority flora* species: *Tephrosia rosea* var. Port Hedland

(A.S. George 1114) (P1)*; Euploca mutica* (P3); *Eragrostis crateriformis* (P3); and *Rothia indica* subsp. *australis* (P3).

(b) where *priority flora* are identified in relation to condition 7(a) of this permit, the permit holder shall ensure that:

(i) no clearing occurs within 50 metres of identified priority 1 flora, unless approved by the *CEO* in writing;

(ii) no clearing occurs within 20 metres of identified priority 2, 3 and 4 flora, unless approved by the *CEO* in writing; and

(iii) no clearing of identified *priority flora* occurs unless approved by the *CEO* in writing.

(c) prior to undertaking any clearing authorised under this permit within the area cross-hatched red in Figure 2 of Schedule 1, the permit holder must provide the results of the *targeted flora survey* in a report to the *CEO*.

(d) if any of the abovementioned *priority flora* are identified within the area cross-hatched red in Figure 2 of Schedule 1, the *targeted flora survey* report must include the following:

(i) the location of each *priority flora*, identified under condition 7(a), either as the location of individual plants, or where this is not practical, the areal extent of the population and an estimate of the number of plants, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings or decimal degrees;

(ii) the species name of each *priority flora* species identified under condition 7(a); and

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

8. Records that must be kept

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

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	(a) the species composition, structure, and density of the cleared area; (b) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to 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);

No.	Relevant matter	Specifications
		(e) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 2; (f) actions taken to minimise the risk of the introduction and spread of *weeds* in accordance with condition 3; (g) actions taken in accordance with condition 4, and (h) actions taken in accordance with condition 5.
2.	In relation to fauna management pursuant to condition 6.	(a) results of the pre-clearance surveys undertaken in accordance with condition 6 of this permit; and (b) a copy of the *fauna specialist's* report.
3.	In relation to flora management pursuant to condition 7.	(a) results of the pre-clearance surveys undertaken in accordance with condition 7 of this permit; and (b) a copy of the *botanist's* report.

9. Reporting

The permit holder must provide to the *CEO* the records required under condition 8 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
active/potentially active Mulgara burrow	An active or potentially active Mulgara burrow is defined by GHD (GHD, 2022) as one that has no spider webs across the entrance, any loose vegetation in the entrance or there is at least some evidence of ground disturbance at the entrance to indicate that an animal has moved out of one of the entrances recently. If there are multiple burrow entrances in a small area, then this will be deemed to be a single burrow complex and recorded once.
botanist	means a person who holds a tertiary qualification specialising in environmental science or equivalent, and has a minimum of two (2) years work experience in Western Australian flora identification and undertaking flora surveys native to the bioregion being inspected or surveyed, or who is approved by the *CEO* as a suitable environmental specialist for the bioregion, and who holds a valid flora licence issued under the *Biodiversity Conservation Act 2016*.
CEO	Chief Executive Officer of the department responsible for the

Term	Definition
	administration of the clearing provisions under the *Environmental Protection Act 1986*.
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
department	means the department established under section 35 of the *Public Sector Management Act 1994* (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
EP Act	*Environmental Protection Act 1986* (WA)
fauna specialist	means a person who holds a tertiary qualification specialising in environmental science or equivalent, and has a minimum of 2 years work experience in fauna identification and surveys of fauna native to the region being inspected or surveyed, or who is approved by the *CEO* as a suitable fauna specialist for the bioregion, and who holds a valid fauna licence issued under the *Biodiversity Conservation Act 2016*.
fill	means material used to increase the ground level, or to fill a depression.
mulch	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.
priority flora	means those fauna taxa describes as priority fauna, classes 1, 2, 3, 4 or 5 in the Department of Biodiversity, Conservation and Attractions Threatened and Priority Fauna List for Western Australia (as amended);
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
targeted flora survey	means a field-based investigation, including a review of established literature, of the biodiversity of flora and vegetation of the permit area, focusing on habitat suitable for flora species that are being targeted and carried out during the optimal time to identify those species as described in the Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016).
weeds	means any plant – (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

REFERENCE

GHD (2022) *Survey and clearance method statement for Mulgara.* Prepared in August 2022 for DevelopmentWA. Received by the department on 3 October 2022 (ref: DWERDT666478). Available at Index of /permit/9843 (dwer.wa.gov.au)

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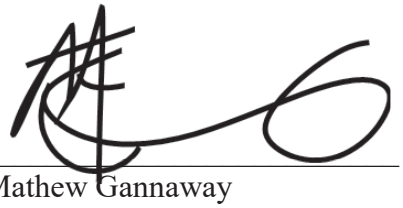
END OF CONDITIONS



Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

13 October 2023

SCHEDULE 1

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

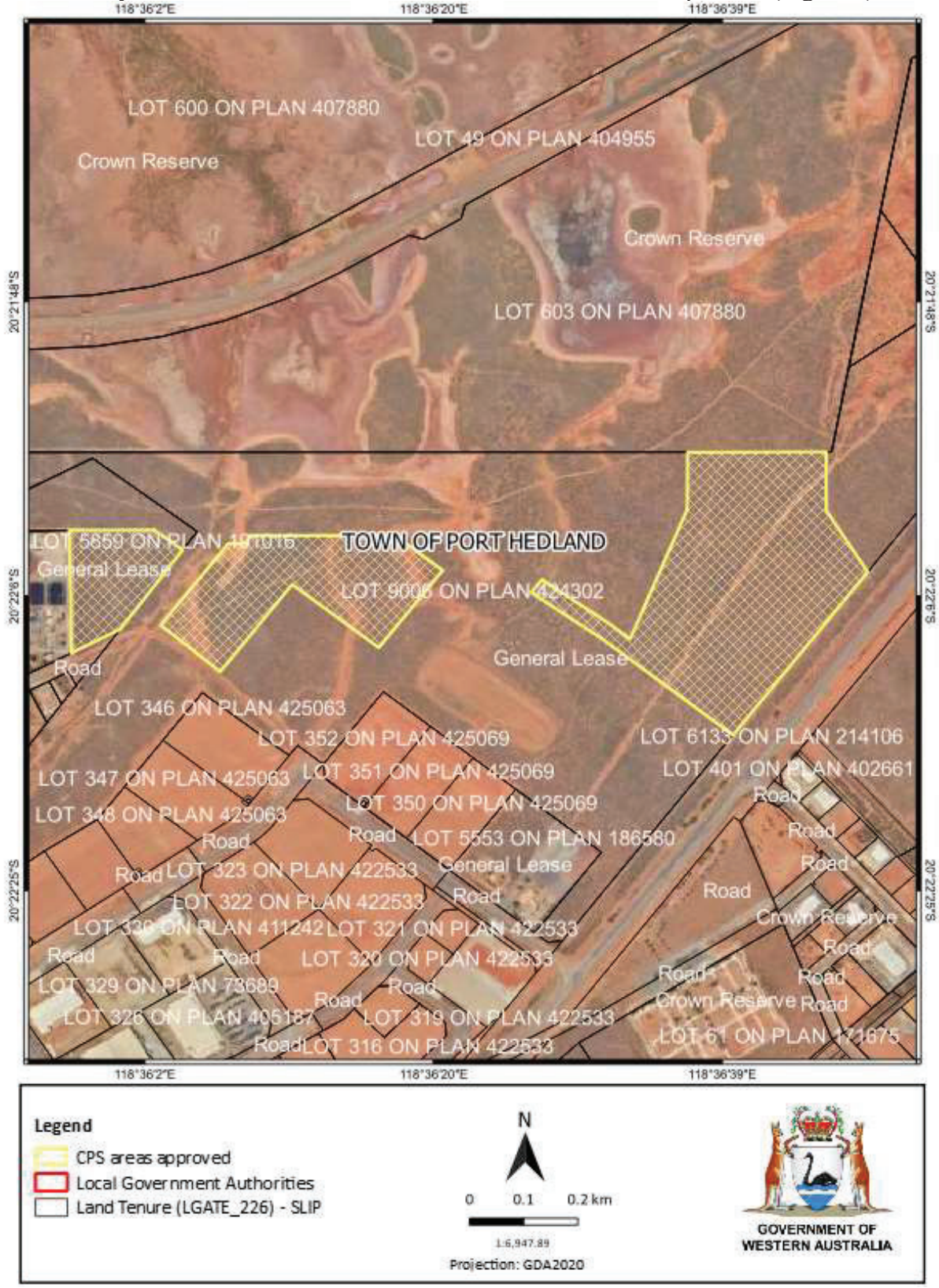


Figure 1: Map of the boundary of the area within which clearing may occur

The boundary of the areas where conditions apply is shown in the map below (Figure 2).

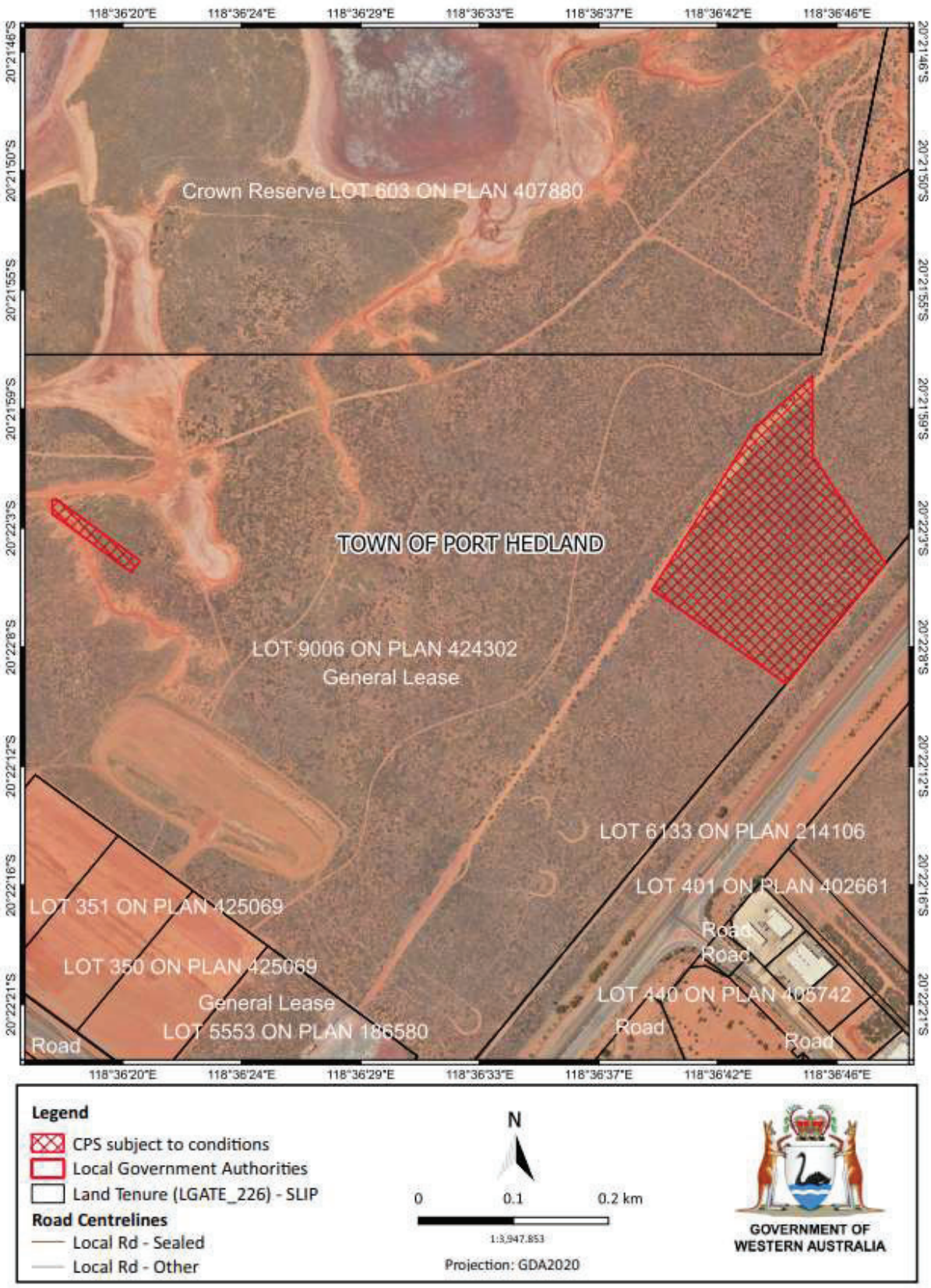


Figure 2: Map of the boundary of the area within which conditions apply

Government of Western Australia
Department of Water and Environmental Regulation

Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 9843/1
Permit type:	Area permit
Applicant name:	DevelopmentWA
Application received:	9 August 2022
Application area:	26.37 hectares of native vegetation
Purpose of clearing:	Bulk earthworks
Method of clearing:	Mechanical
Property:	Lot 5859 on Deposited Plan 191016 Lot 9006 on Deposited Plan 424302
Location (LGA area/s):	Town of Port Hedland
Localities (suburb/s):	Wedgefield

1.2. Description of clearing activities

The vegetation proposed to be cleared comprises 26.37 hectares of native vegetation over three areas (see Figure 1, Section 1.5). The proposed clearing is to support the subdivision works in the Wedgefield Industrial Estate, located in Port Hedland, Western Australia. The boundary of the proposed clearing area was revised during the assessment phase due to requirements of the development approval from the Town of Port Hedland (DevelopmentWA, 2023). The total area and the land tenure of the proposed clearing remained the same (see Figure 1 below).

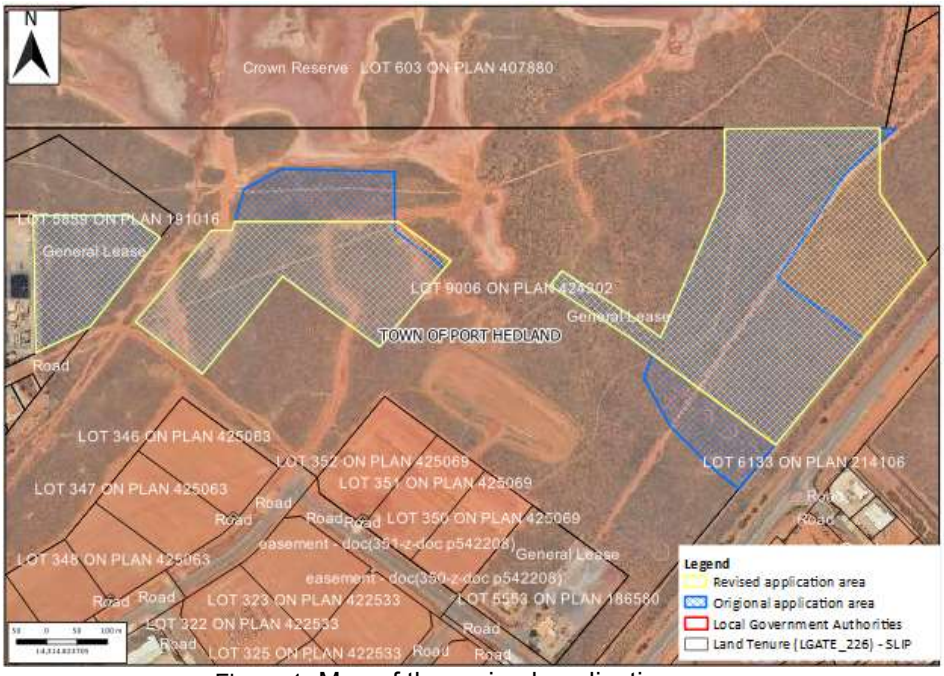


Figure 1. Map of the revised application area

1.3. Decision on application

Decision:	Granted
Decision date:	13 October 2023
Decision area:	26.37 hectares of native vegetation, as depicted in Section 1.5, below.

1.4. Reasons for decision

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

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix B), relevant datasets (see Appendix F.1), the findings of a biological 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 assessment identified that the proposed clearing will result in:

- the loss of native vegetation that is suitable habitat for conservation significant species (brush-tailed mulgara and crest-tailed mulgara);
- impacts on priority flora species that potentially occur within the application area;
- potential mortality of conservation significant fauna utilising the application area;
- the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values; and
- potential land degradation in the form of wind erosion causing excessive dust.

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 unacceptable impacts to the environmental values. Pre-clearance fauna and flora management conditions on the permit will ensure that impacts on priority flora and conservation significant fauna will not occur. Land and weed management conditions will minimise impacts to adjacent vegetation.

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

- avoid, minimise to reduce the impacts and extent of clearing;
- conduct pre-clearance survey for mulgara species and priority flora species;
- undertake clearing activities during the day only;
- undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity;
- take hygiene steps to minimise the risk of the introduction and spread of weeds.

Clearing Permit Decision Report

1.5. Site maps

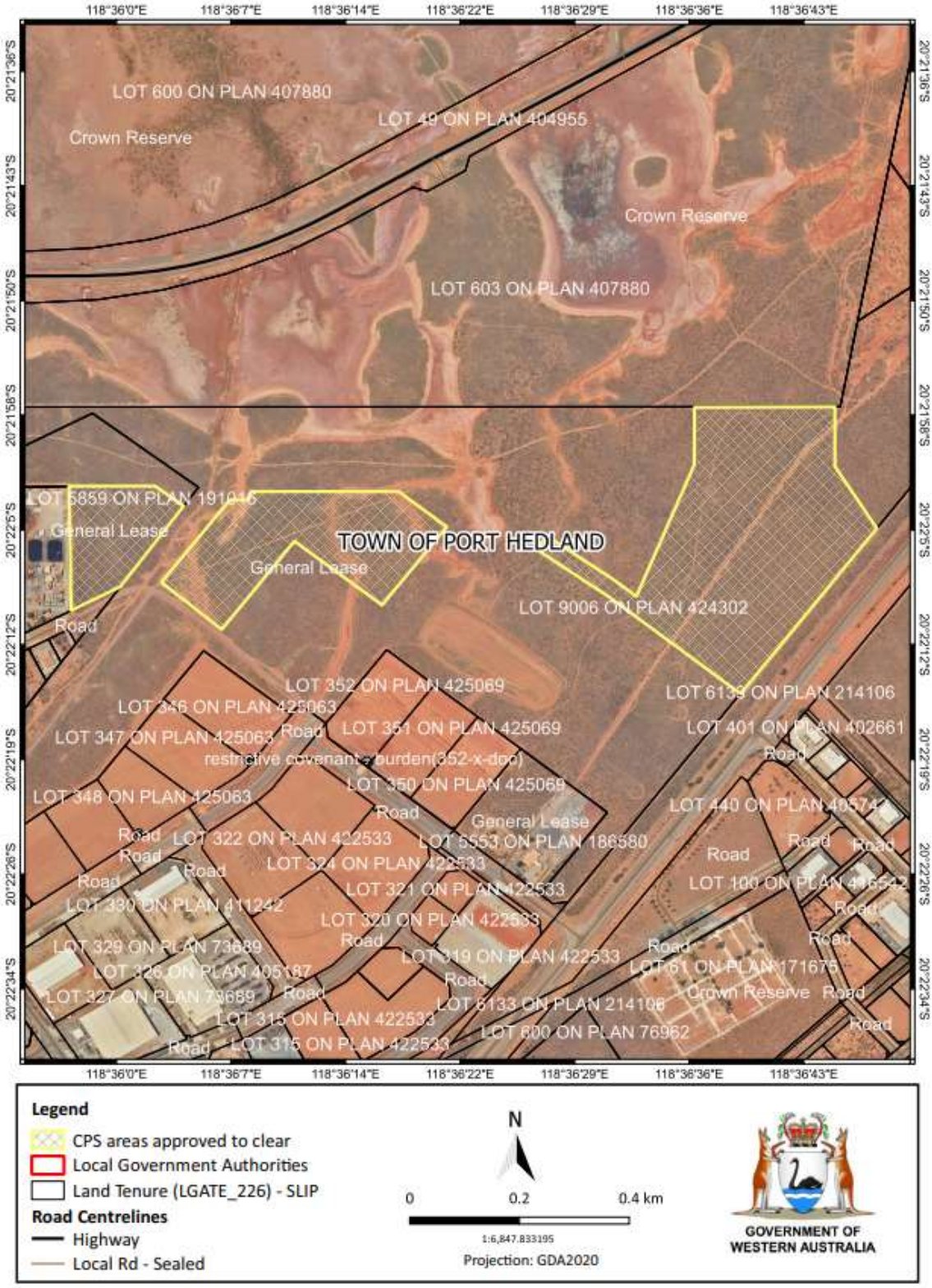


Figure 2. Map of the application area

The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit.

Clearing Permit Decision Report

2 Legislative context

The clearing of native vegetation in Western Australia is regulated under the EP Act and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.4), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle
- the principle of intergenerational equity
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Planning and Development Act 2005*

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)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

Evidence was submitted by DevelopmentWA to demonstrate that avoidance, and mitigation measures have been applied to the proposed clearing method, including (DevelopmentWA, 2023c):

- Erosion management measures: areas where earthworks are completed will be stabilised progressively to manage the risk of dust impacts. At the completion of earthworks activities, erosion control fencing will also be installed to limit any migration of soil during rainfall events. Stabilisation will utilise spray-on products to help bind and hold the surface soil.
- No native vegetation will be cleared for temporary works outside the Development Envelope.

Additionally, DevelopmentWA have prepared a Vegetation and Fauna Management Plan (VFMP), in consultation with the Department of Biodiversity, Conservation and Attractions (DBCA), outlining management measures, monitoring and corrective actions for the development of the Wedgefield Industrial Estate, as they relate to vegetation and fauna values, in particular mulgara species. The main objectives of the VFMP include (DevelopmentWA, 2023c):

- Measures to minimise the area of vegetation that is removed or disturbed:
    - Vegetation clearance will be restricted to that necessary for the purpose of the development
    - The limit of clearing and earthworks will be adequately flagged/signposted prior to the commencement of works, to minimise the risk of disturbance to vegetation in adjacent areas
    - Vegetation removal will be planned to ensure the area denuded of vegetation is exposed for the shortest possible time before construction or other stabilisation treatment
    - Burning of cleared vegetative materials or burning will not be permitted under any circumstances
    - Vehicle and construction equipment movement will be confined to well defined tracks within the construction area to minimise disturbance of adjacent vegetation to be retained
- Measures to minimise the potential for the spread or introduction of weeds:
    - The boundaries between areas of low and high levels of weed invasion will be clearly marked in the field prior to earthworks commencing
    - Designated weedy vegetation will be cleared separately from weed-free areas and disposed of in accordance with Shire requirements
    - Any machinery and off-road vehicles used during construction will be inspected and cleaned of all vegetative and soil matter prior to entering the construction area, if required
    - Ensure the effluent from the clean down stations is contained and not draining into weed free areas

    - The clean down station will be monitored for new weed infestations and weeds controlled as necessary
    - Provide training to all vehicle operators on site in the effective use of clean down stations
    - Keep a register of where the construction machinery came from to assess the weed contamination risk.
- Measures to minimise disturbance to any native fauna species that may use the proposed clearing area:
    - Potential impacts of habitat loss and degradation can be minimised by implementing the management measures listed for vegetation above,
    - Management measures that can minimise barriers to fauna movement include:
        - Constructing windrows with 'escape routes' or gaps that lead to safe areas
        - Trenches to be constructed with escape routes/ladders. All trenches to be inspected morning and evening for trapped fauna. Trapped fauna to be removed, taken to adjacent bushland which will not be impacted, or given and escape option
        - If trenches are left open for more than one day, vegetative material will be placed every 100m along the trench to provide shade for trapped animals
        - Speed limits to be placed on all construction roads to minimise collision with fauna
        - No construction activity to occur after dark to minimise the potential for road kill
        - Ensure fencing does not act as a barrier between the active clearing areas and the escape route to undisturbed areas
        - Keep a register of road kill
        - Develop a protocol for reporting death or injury of threatened or priority fauna on site to the DBCA Pilbara Region office
        - Undertake an investigation of threatened and priority fauna deaths or injury and provide corrective actions where possible.
    - Management measures to minimise the impact on mulgara species are:
        - Sequential clearing that allows for fauna to escape and relocate
        - Pre-clearance targeted surveys for mulgara burrows with a survey method constructed in consultation with DBCA (see details below)
        - Active mulgara burrows to be flagged and not cleared until the animals have had an opportunity to escape (24 to 48 hrs depending on the distance from the disturbance)
        - Contractors must not carry out any activities that are likely to cause harm to threatened fauna.

Pre-clearance targeted mulgara survey (GHD, 2022):

Before clearing, DevelopmentWA has committed to assess each area for presence of mulgara, with tailored clearing, monitoring and/or trapping, outlined within the *Survey and clearance method statement for mulgara* report produced by GHD (GHD, 2022). This report includes:

- Targeted survey for mulgara:
    - DevelopmentWA will engage a suitably experienced ecologist/zoologist to complete a targeted survey to assess presence of mulgara burrows within the area to be cleared,
    - Where mulgara evidence is observed, the location is to be recorded on a handheld GPS, with representative photos taken and observation notes. Where active mulgara burrows are identified, these will be flagged while in the field to assist with managing potential impacts appropriately during clearing.
- Fauna camera(s) installation:
    - Remote fauna cameras will be installed at least 48 hours prior to proposed ground disturbance clearing. Cameras will be positioned on the entrances of identified active burrows,
    - Camera images will be analysed by a suitably experienced ecologist/zoologist to determine presence of mulgara prior to ground disturbance clearing.
- Ground disturbance clearing:
    - Immediately following ground disturbance clearing, fauna cameras will be re-installed at respective burrows, if removed during clearing. This will allow detection of mulgara (if present) post ground disturbance clearing and inform whether full clearing can proceed.
    - Camera analysis for active burrows is to occur for two (or more) nights to confirm nil mulgara activity during the window of avoidance following initial ground disturbance. Camera images will be analysed by a suitably experienced ecologist/zoologist to determine presence or absence of mulgara,
    - If there is no activity recorded on the cameras, careful excavation of burrows using handheld tools following the avoidance window will support the conclusion mulgara have vacated the burrow following ground disturbance (noting burrows may have numerous entrances and some may be undetected/unmonitored). This will also provide opportunity for displacement of any mulgaras that may still be within their burrow system,

    - Once burrows are excavated, the remainder of the area will be cleared.
- Post ground disturbance clearing
    - If mulgara activity is recorded on the fauna cameras following ground disturbance clearing, the associated vegetation buffer around the active mulgara burrow will not be immediately cleared, with a mulgara trapping program implemented by a suitably experienced ecologist/zoologist,
    - Where practicable, trapping will initially involve fencing the perimeter of the vegetation buffer. The minimum trapping effort to detect and remove mulgara from an area will be for seven nights, unless there are three consecutive nights with no mulgara captured, in which case trapping can cease. A suitable number/density of traps will be set with bait to lure mulgara,
    - Remote fauna cameras will be retained to record any mulgara activity,
    - Once trapping has ceased, the burrow(s) will be careful excavated using handheld tools to ensure there are no remaining mulgara present. This will also provide opportunity for displacement of any mulgaras that may still be within their burrow system. Once burrows are excavated, the remainder of the area will be cleared.

DevelopmentWA note that the following comments from DBCA have been considered in the preparation of the above VFMP:

- If trapping and relocation of brush-tailed mulgara is required, a Fauna taking (relocation) licence will need to be obtained from DBCA's Wildlife Licensing Section.
- Where possible, trapping and relocation should be avoided during the period when there is most likely to be dependent young.

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 present a risk to biological values (fauna and adjacent 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 (fauna and flora) - Clearing Principles (a) and (b)

Assessment

The application area falls within the Roebourne subregion of the Pilbara Biogeographic region of Western Australia. The biological assessment (GHD, 2009) conducted over the application area described the vegetation as almost completely uniform across the survey area, with minor changes due to differing dominance of individual grass species and historical disturbance.

Four vegetation types were mapped across the application area (see Figure 3 below):

- low shrubland of *Acacia stellaticeps* over mixed tussock grassland of *Triodia epactia* and *T. schinzii* over very open herbs
- bare areas/tidal flats with low scattered shrubs of Chenopod spp.
- tussock grassland of *Triodia secunda*, *Triodia schinzii*, and *Sorghum timorense* over scattered herbs and Chenopod spp.
- cleared/disturbed areas.

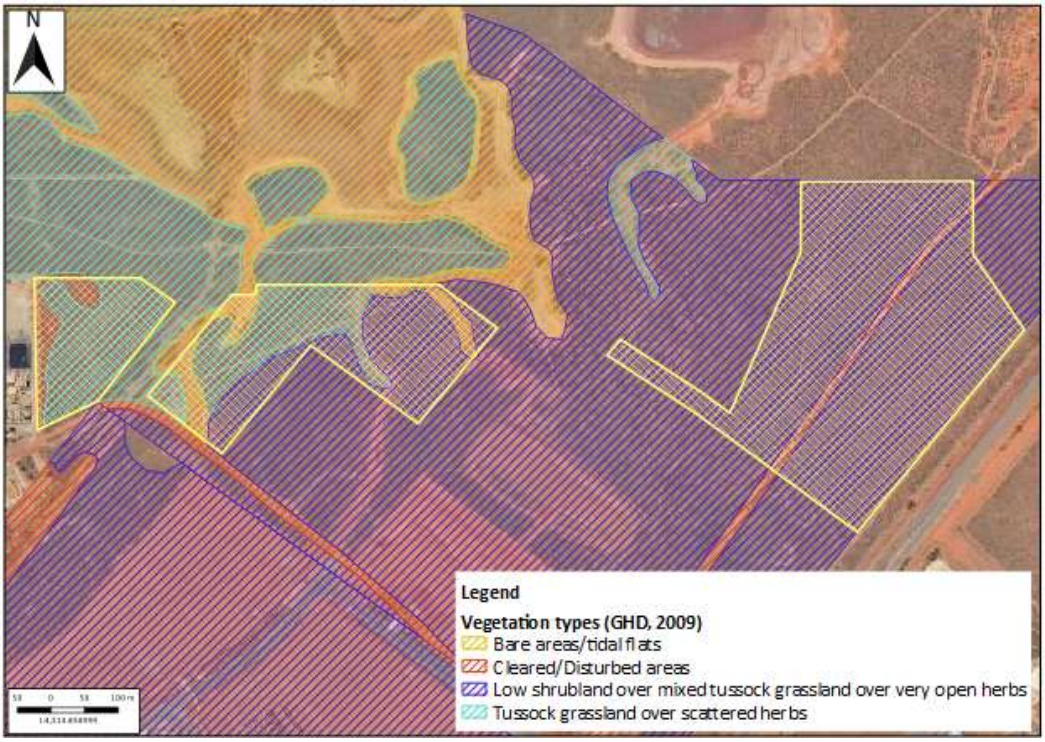


Figure 3. Map of the vegetation types recorded by GHD (2009)

The area proposed to be cleared is encompassed by existing roads, tracks and previous development and infrastructure. The vegetation was recorded in Excellent condition (83.5 percent) (Trudgen, 1991) with small areas of Good -Completely Degraded (10.5 percent) and Completely Degraded (6 percent) condition due to clearing and other disturbances (GHD, 2009).

Flora

According to available databases, 15 conservation significant flora species have been recorded within the local area (50 kilometre radius from the application area) comprising two priority 1 species, one priority 2 species, nine priority 3 species and three priority 4 species. None of these records occur within the application area. The likelihood of each taxa occurring within the application area has been assessed based on soil type, habitat preference and proximity to the application area, as summarised in Appendix B. Based on the likelihood assessment, it was considered possible for four priority species to occur within the application area: *Tephrosia* rosea var. Port Hedland (A.S. George 1114) (P1); *Euploca mutica* (P3); *Eragrostis crateriformis* (P3); and *Rothia indica* subsp. *australis* (P3).

A targeted flora survey was undertaken as part of the biological survey conducted by GHD in 2009. No conservation significant flora species were identified within the application area during this survey. Given the time since this survey was conducted (over 10 years) and that several conservation significant species were not considered during the survey, a targeted flora survey of the application area was requested by the department. In February 2023, a targeted flora survey was undertaken (GHD, 2023) in accordance with the EPA Technical Guidance (EPA 2016). Despite a thorough survey of the area, no conservation significant flora species were recorded.

During the assessment of the application, DevelopmentWA revised the application area (DevelopmentWA, 2023). While the total area proposed to be cleared was not changed, a total of 4.26 hectares of the revised clearing area occurs outside of the targeted flora survey area undertaken by GHD. Therefore, to ensure no conservation significant flora are impacted from the proposed clearing, in particular: *Tephrosia* rosea var. Port Hedland (A.S. George 1114) (P1); *Euploca mutica* (P3); *Eragrostis crateriformis* (P3); and *Rothia indica* subsp. *australis* (P3), a pre-clearance targeted survey for these species will be conditioned on the permit for the 4.26 hectare areas.

Fauna

According to available databases, 58 conservation significant fauna species have been recorded within the local area. Of these species, 39 are migratory bird species or shorebird species associated with coastal habitats not represented within the application area and an additional six species are species only found in marine environments. In determining the likelihood of conservation significant fauna occurring within the application area, considerations were given to number of records in the local area, preferred habitat types and typical home ranges, proximity of records to the application area, the type and condition of the vegetation within the application area and historical

nature of the records. A summary of fauna recorded within the local area and their potential of occurrence within the application area is presented in Appendix B.3.

The likelihood assessment considered that the application area may contain habitat for nine conservation fauna species, including four mammals and three birds:

- brush-tailed mulgara (*Dasycercus blythi*) (priority 4)
- crest-tailed mulgara (*Dasycercus cristicauda*) (priority 4)
- greater bilby (*Macrotis lagotis*) (vulnerable)
- western pebble-mound mouse (*Pseudomys chapman*) (priority 4)
- great knot (*Calidris tenuirostris*) (critically endangered)
- greater sand plover (*Charadrius leschenaultii*) (vulnerable)
- lesser sand Plover (*Charadrius mongolus*) (endangered)

A level 1 fauna survey was undertaken for the application (extending beyond the application area) by GHD in 2009 (see Appendix E Figure 4). The survey involved a visual and aural survey for any fauna species utilising the survey area. The study area was also searched for any fauna signs, such as tracks, scats, bones, diggings and feeding signs. Additionally, the survey involved systematic searching of microhabitats where reptiles are known to frequent, including turning over logs, rocks and leaf litter. The survey recorded twenty bird, four mammal and three reptile species. A number of reptile tracks and burrows were also observed. Evidence of the mulgara species, the priority 4 brush-tailed mulgara (*Dasycercus blythi*) and priority 4 crest-tailed mulgara (*Dasycercus cristicauda*), including scats, tracks and diggings were recorded during the survey.

Mulgara species

Brush-tailed mulgara are carnivorous, nocturnal marsupials sheltering in burrows during the day. The brush-tailed mulgara occurs across a range of habitat types, but primarily occurs in mature hummock grasslands of spinifex, especially associated with *Triodia basedowii* and *Triodia pungens* with overlapping home ranges of one to 14 hectares. The species occurrence may be influenced by the presence of better watered areas such as in paleo-drainage systems or drainage lines in sandplain/dune habitats (Woolley, 2016; Woinarski *et al*., 2016). This species was recorded 136 times within the local area.

The crest-tailed mulgara inhabits sand dunes with a sparse cover of vegetation or in herblands and sparse grasslands bordering salt lakes. The crest-tailed mulgara was previously listed in the Vulnerable category (in 2006) but has since been delisted (in 2019) (Commonwealth of Australia, 2019). This species was recorded three times within the local area.

Additional targeted mulgara assessments were completed within areas adjacent to the application area (GHD, 2022) (see Appendix E Figure 4). The assessment identified seven active burrows, indicating the presence of mulgara within the application area and surrounding area.

Two broad fauna habitat types were identified within the application area, based on the dominant landforms, soil and vegetation structure in the area, and the targeted fauna surveys undertaken by GHD (GHD, 2022). These fauna habitats include:

- Marginal Grasslands: Paucity of Triodia and substrate heavier clay soil supporting tussock grasses. The habitat type forms marginal shelter habitat and provides habitat for dispersal and movement
- Mulgara Habitat: It is characterized as Abydos Plains Grass-steppe *Triodia hummock* grasslands and includes areas with additional sparse emergent Mallee, Acacia and Grevillea shrubs over Triodia. Soils are red sandy loam and provides suitable burrowing and foraging habitat for brush-tailed mulgara.

GHD note that the mulgara habitat type is generally widespread within the local vicinity including the application area and surrounds, and also regionally extensive (GHD, 2022).

Given the application area is considered to contain suitable habitat for priority 4 Mulga species (*Dasycercus blythi* and *Dasycercus cristicauda*) and the proposed clearing may result in injury or mortality of fauna individuals if present during the clearing activities, DevelopmentWA have prepared a VFMP, in consultation with DBCA, outlining management measures, monitoring and corrective actions for the development of the Wedgefield Industrial Estate, as they relate to vegetation and fauna values, in particular mulgara species (see Section 3.1).

Greater bilby

The greater bilby is known from 5 records within the local area and largely occupies three major vegetation types: open tussock grassland on uplands and hills, mulga woodland or shrubland growing on ridges and rises, and hummock grassland in plains and alluvial areas. The distribution of the Bilby is highly fragmented in Western Australia

(Commonwealth of Australia, 2019). Bilbies are found in a range of habitats from arid rocky soils with little ground cover to semi-arid shrublands and woodlands (DCCEEW, n.d). The closest record was identified 5.14 kilometres from the application area. Bilbies are known to emerge after dark to forage for food.

The fauna habitats described the dominant fauna habitat for the application area as *Triodia hummock* grasslands and includes areas with additional sparse emergent Mallee, Acacia and Grevillea shrubs over Triodia. Soils are red sandy loam and provides suitable burrowing and foraging habitat for brush-tailed mulgara. Hummocks and tussocks provide habitat for birds, reptiles, and mammals and the soil is suitable for burrowing. Therefore, Bilbies may utilise the application area for burrowing and it is highly likely that Bilbies may use the sandy plains habitat for foraging.

The fauna survey did not identify evidence of bilby activity (footprint, scats and digging) within the survey area (GHD, 2009). While this species was not identified within the survey area, it may transiently occur on site given the high mobility of the species and the habitat suitability of the application area.

Western pebble-mound mouse

The Western pebble-mound mouse (*Pseudomys chapmani* P4) is associated with arid hummock and tussock grassland and Acacia woodland, with eroding sands and exposed pebbles. Although the application area contains suitable habitat features for the Western pebble-mound mouse, given the number of records within the local area (eight) and the distance of the nearest record (approximately 24 kilometres away), the proposed clearing area is not considered to contain significant habitat for this species.

Great Knot, Greater sand plover and Lesser sand Plover

These species are all known from records in the local area. Suitable breeding habitat for these species does not occur within the application area, however the vegetation within the application area provides suitable foraging habitat for these species and therefore they may occur on an occasional basis.

The local area contains extensive areas of native vegetation which are likely to provide habitat of similar foraging value for these species. Nothing the lack of suitable breeding habitat within the application area for these species, and that they are highly mobile and have large home ranges, the proposed clearing is not likely to impact on significant habitat for these species.

Ecological linkage

The application area and immediate surrounds are fragmented by existing roads, tracks and previous development and infrastructure. Given this and the extent of remaining vegetation within the local area is over 75 percent of its pre-European extent, it is considered unlikely that the proposed clearing will have a significant impact to linkage and dispersal values. The proposed clearing may cause degradation of adjacent and nearby remnant native vegetation by facilitating the spread of weeds. It is considered that the impact of clearing can be mitigated through the VFMP provided by DevelopmentWA (Section 3.1)

Conclusion:

Based on the above assessment, the proposed clearing is considered unlikely to comprise habitat necessary for the maintenance of conservation significant flora and fauna due to the abundance of analogous, contiguous habitat in areas surrounding the application area. No conservation significant flora or ecological communities were recorded during the surveys (GHD, 2009; 2022), however a portion of the application area (4.6 hectares) remains unsurveyed.

The proposed clearing area is considered to contain suitable habitat for Mulgara species and may result in injury or mortality of fauna individuals if present during the clearing activities. Additionally, the proposed clearing may cause degradation of adjacent and nearby remnant native vegetation by facilitating the spread of weeds.

The Delegated Officer has determined that the proposed clearing is not likely to result in a significant residual impact on conservation significant fauna given the avoidance and mitigation measures provided by the applicant (Section 3.1) and the implementation of conditions imposed on the clearing permit.

Conditions:

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

- slow directional clearing to allow fauna to move into adjacent vegetation ahead of the clearing activity will minimise impact to individuals,
- undertake a targeted pre-clearance survey for conservation significant flora species prior to any vegetation clearing,
- undertake a targeted pre-clearance survey for mulgara prior to any vegetation clearing,

- restrict any clearing to daylight hours,
- take hygiene steps to minimise the risk of the introduction and spread of weeds.

3.3. Relevant planning instruments and other matters

DevelopmentWA is undertaking subdivision works in the Wedgefield Industrial Estate, located in Port Hedland, Western Australia. DevelopmentWA have commenced planning for Stage 4 of the Wedgefield Industrial Estate, which will be subject to a subdivision approval by Department of Planning, Lands and Heritage (DPLH).

The Project was referred to the Environmental Protection Authority in April 2010 with an outcome of "Not Assessed-Advice Given".

To support the development of Stage 4 the clearing of three areas outside of the proposed subdivision boundary will be required. DevelopmentWA received Development Approval from the Town of Port Hedland on 26 September 2023 (Town of Port Hedland, 2023), subject to conditions, including the submission and implementation of:

- a Site Rehabilitation/Revegetation Plan for areas that will not be created for subdivision lots and road construction,
- a Construction Management Plan, and
- the Wedgefield Industrial Estate Vegetation and Fauna Management Plan.

Several Aboriginal sites of significance have been mapped within the local area. It is the permit holder's responsibility to ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

End

Appendix A. Additional information provided by applicant

Summary of comments	Consideration of comment
The applicant provided the following additional information: • Submission of a revised Vegetation and Fauna Management Plan (DevelopmentWA, 2022c), • Clarification of rehabilitation requirements (DevelopmentWA, 2022c), • Submission of a targeted flora survey report (GHD, 2023), • Development approval (Town of Port Hedland, 2023)	The additional supporting information provided was considered as follows: • The revised Vegetation and Fauna Management Plan was considered in Avoidance and Mitigation measures (assessment of impacts to biological values (see Section 3.1) and the detailed assessment of impacts to biological values (see Section 3.2.1), • Clarification of rehabilitation requirements was considered in Avoidance and Mitigation measures (assessment of impacts to biological values (see Section 3.1) and the detailed assessment of impacts to biological values (see Section 3.2.1), • Flora survey results was considered in the detailed assessment of impacts to biological values (see Section 3.2.1), and • The Development Approval was considered in Relevant planning instruments and other matters (see Section 3.3).

Appendix B. Site characteristics

B.1. Site characteristics

The information provided below describes the key characteristics of the area proposed to be cleared and is based on the best information available to the department at the time of this assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix C. The 'local area' is considered a 50 kilometre radius of the application area.

Characteristic	Details
Local context	The area proposed to be cleared occurs over three areas of native vegetation within the extensive land use zone of Western Australia. It is adjacent to remnant native vegetation and urban development. Spatial data indicates the local area (50-kilometre radius from the centre of the area proposed to be cleared) retains approximately 75 per cent of the original native vegetation cover.
Ecological linkage	The application area is not within any mapped linkages and is unlikely to be part of any local ecological linkage.
Conservation areas	The application area is not within a conservation area. In addition, there are no conversation areas adjacent to the application area and no conservation areas within the local area.
Vegetation description	A biological survey (GHD, 2009) conducted for the application area indicates the vegetation within the proposed clearing area consists of four vegetation types: • Low shrubland of *Acacia stellaticeps* over mixed tussock grassland of *Triodia epactia* and *T. schinzii* over very open herbs • Bare areas/tidal flats with low scattered shrubs of Chenopod spp. • Tussock grassland of *Triodia secunda*, *Triodia schinzii*, and *Sorghum timorense* over scattered herbs and Chenopod spp. • Cleared/disturbed areas. Representative photos, descriptions and maps are available in Appendix E. This is consistent with the mapped vegetation type:

Characteristic	Details
	• Beard Abydos plain_ 647, which is described as: Hummock grassland with scattered shrubs or mallee *Triodia* spp. *Acacia* spp., *Grevillea* spp. *Eucalyptus* spp. (Shepherd et al, 2001). The mapped vegetation type retains approximately 97.81 per cent of the original extent (Government of Western Australia, 2019
Vegetation condition	A biological survey (GHD, 2009) conducted across the application area indicates the vegetation within the proposed clearing area is in Excellent to completely degraded condition (Trudgen, 1991). The full Trudgen (1991) condition rating scale is provided in Appendix D. Representative photos, survey descriptions and mapping are available in Appendix E.
Climate and landform	The application area is within a flat landscape with Australian Hight Datum mapped at 10 meters. The annual average rainfall is 317.7 millimetres (taken from Port Hedland Airport) (BOM, 2023).
Soil description	The soil is mapped as the Uaroo System, which is described as broad sandy plains, pebbly plains and drainage tracts supporting hard and soft spinifex hummock grasslands with scattered acacia shrubs.
Land degradation risk	The mapped soil type has a low risk of the various forms of land degradation risks.
Waterbodies	Aerial imagery indicated that a mapped perennial wetland is located 0.13 kilometres north of the application area and a perennial river, South Creek, is located 0.66 kilometres north or the application area.
Hydrogeography	The application area is within the Pilbara Groundwater area and the Pilbara Surface Water area as proclaimed under the RIWI Act 1914. The mapped groundwater salinity is 1000-3000 milligrams per litre total dissolved solids which is described as brackish to saline.
Flora	According to available databases, there are seven conservation significant flora records within local area. The nearest record is the priority 1 species; *Tephrosia rosea* var. Port Hedland (A.S. George 1114), recorded within 0.9 kilometres from the application area. A targeted flora survey conducted by GHD, recorded no conservation significant flora species within the survey area (GHD, 2023).
Ecological communities	The application area is not within any mapped conservation significant ecological communities. There are no mapped conservation significant ecological communities within the local area.
Fauna	According to available databases, 58 species of conservation significant fauna species have been recorded within the local area. The species recorded include several migratory bird species. Within the local area, there are 45 records of the brush-tailed mulgara (priority 4). Evidence of the mulgara species, the brush-tailed mulgara (*Dasycercus blythi,* P4) and crest-tailed mulgara (*Dasycercus cristicauda,* P4), including scats, tracks and diggings were recorded during the survey (GHD, 2022).

B.2. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix F.1), and biological survey information (GHD, 2009; 2023), impacts to the following conservation significant flora required further consideration.

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Gymnanthera cunninghamii	P3	N	Y	Y	0.74	7	Y
Tephrosia rosea var. Port Hedland (A.S. George 1114)	P1	Y	Y	Y	0.89	14	Y
Bulbostylis burbidgeae	P4	N	N	Y	2.97	4	Y
Gomphrena pusilla	P2	N	Y	N	5.53	4	Y
Euploca mutica	P3	N	Y	Y	5.60	1	Y
Goodenia nuda	P4	N	Y	Y	7.97	5	Y
Rothia indica subsp. *australis*	P3	Y	Y	Y	9.10	12	Y
Eragrostis crateriformis	P3	N	Y	Y	9.67	1	Y
Gomphrena leptophylla	P3	N	Y	Y	10.78	28	Y
Abutilon sp. Pritzelianum (S. van Leeuwen 5095)	P3	N	Y	Y	14.67	1	Y
Ptilotus mollis	P4	N	N	Y	31.34	5	Y
Triodia chichesterensis	P3	N	N	Y	35.87	2	Y

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

B.3. Fauna analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix F.1), and biological survey information (GHD, 2009; 2022), impacts to the following conservation significant fauna required further consideration.

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]
MAMMAL						
Brush-tailed mulgara (*Dasycercus blythi*)	P4	Y	Y	0.99	136	Y
Northern quoll (*Dasyurus hallucatus*)	EN	N	N	1.90	27	Y
Crest-tailed mulgara (*Dasycercus cristicauda*)	P4	Y	Y	3.02	3	Y
Bilby (*Macrotis lagotis*)	VU	Y	Y	5.14	22	Y
North-western free-tailed bat (*Mormopterus cobourgianus*)	P1	N	N	5.62	5	Y
Pilbara leaf-nosed bat (*Rhinonicteris aurantia*)	VU	N	N	23.35	8	Y
Ghost bat (*Macroderma gigas*)	VU	N	N	23.49	45	Y
Western pebble-mound mouse (*Pseudomys chapmani*)	P4	Y	Y	23.65	8	Y
REPTILE						
Airlie Island Ctenotus (*Ctenotus angusticeps*)	P3	N	Y	0.52	12	Y
BIRD						
Great knot (*Calidris tenuirostris*)	CR	Y	Y	6.05	19	Y

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]
Red knot (*Calidris canutus*)	EN	Y	Y	6.48	7	Y
Grey falcon (*Falco hypoleucos*)	VU	N	N	7.57	3	Y
Curlew sandpiper (*Calidris ferruginea*)	CR	Y	Y	5.54	8	Y
Greater sand plover (*Charadrius leschenaultii*)	VU	Y	Y	5.78	27	Y
Lesser Sand Plover (*Charadrius mongolus*)	EN	Y	Y	5.78	13	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		
Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."* Assessment: The area proposed to be cleared is considered to contain suitable habitat for the crest-tailed mulgara (*Dasycercus cristicauda,* P4) and brush-tailed mulgara (*Dasycercus blythi*, P4). No conservation significant flora species were recorded within the survey area (GHD 2009; 2023). However, a portion of the application area (revised during the assessment) remains unsurveyed. A pre-clearance targeted flora survey will be conditioned on the permit for these portions. Given the abundance of analogous, contiguous habitat in areas surrounding the application area the area proposed to be cleared is considered unlikely to contain regionally significant flora, fauna, habitats, assemblages of plants.	May be at variance	Yes *Refer to Section 3.2.1, above.*
Principle (b): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna."* Assessment: The area proposed to be cleared is considered to contain suitable habitat for the crest-tailed mulgara (*Dasycercus cristicauda,* P4) and brush-tailed mulgara (*Dasycercus blythi*, P4). A pre-clearance targeted fauna survey will be conditioned on the permit. The vegetation within the application area is considered unlikely to comprise habitat necessary for the maintenance of conservation significant fauna due to the abundance of analogous, contiguous habitat in areas surrounding the application area.	May be at variance	Yes *Refer to Section 3.2.1, above.*
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: According to available databases, no Threatened flora occur within 50 kilometres of the proposed clearing area. The area proposed to be cleared is therefore considered unlikely to contain habitat for threatened flora species. Targeted surveys conducted recorded no conservation significant flora species within the proposed clearing area (GHD, 2023).	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
However, a portion of the application area (revised during the assessment) remains unsurveyed. A pre-clearance targeted flora survey will be conditioned on the permit for these portions.		
Principle (d): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community."* Assessment: The area proposed to be cleared does not contain species that can indicate a threatened ecological community (TEC) (GHD, 2009). No TECs are mapped across the application area or within the local area.	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
Principle (e): *"Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."* Assessment: The extent of the mapped vegetation type and native vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area.	Not likely to be at variance	No
Principle (h): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area."* Assessment: Given there are no conservation areas within 50 kilometres of the application area, the proposed clearing is not likely to have an impact on the environmental values of any nearby conservation areas.	Not at variance	No
Environmental value: land and water resources		
Principle (f): *"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."* Assessment: There are no watercourses or wetlands mapped within the application area. However, the biological survey identified small areas of riparian vegetation along the fringes of the tidal flats/drainage areas (GHD, 2009). The proposed clearing is not likely to significantly impact on the riparian vegetation within the local area. This is noting the vegetation types within the survey area extend outside of the application area and are not restricted to the proposed clearing area.	At variance	No
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: The mapped soils are not susceptible to land degradation resulting from wind or water erosion, nutrient export, salinity, flooding, or waterlogging. Noting the extent of the application area, the proposed clearing may cause excessive dust and may impact the surrounding vegetation. However, given DevelopmentWA's mitigation measures for erosion control (see section 3.1) these impacts are expected to be minimal.	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
Principle (i): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water."* Assessment: The application area is located within the Pilbara Groundwater and Surface Water Area (Proclaimed under the RIWI Act). The proposed clearing area does not intersect any watercourses or wetlands, nor does the project intend to construct a bore or take surface or groundwater. Given this, the proposed clearing is unlikely to impact surface or ground water quality.	Not likely to be at variance	No
Principle (j): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."* Assessment: 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. The clearing may cause or exacerbate the incidence or intensity of short term flooding due to increased runoff in localised areas. As a condition of the clearing permit, the applicant will be required to undertake construction activities within three months of clearing to limit the exposure of bare sandy soils. The applicant also advised that it intends to minimise erosion by installing erosion control fencing to limit the migration of soil during rain fall events at the completion of earthworks activities (see section 3.1).	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.

Condition	Description
Very poor	Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species present including very aggressive species.
Completely degraded	Areas that are completely or almost completely without native species in the structure of their vegetation; i.e. areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs.

Appendix E. Biological survey information excerpts

Figure 4. GHD survey areas (2009, 2021 and 2022) (DevelopmentWA, 2022)

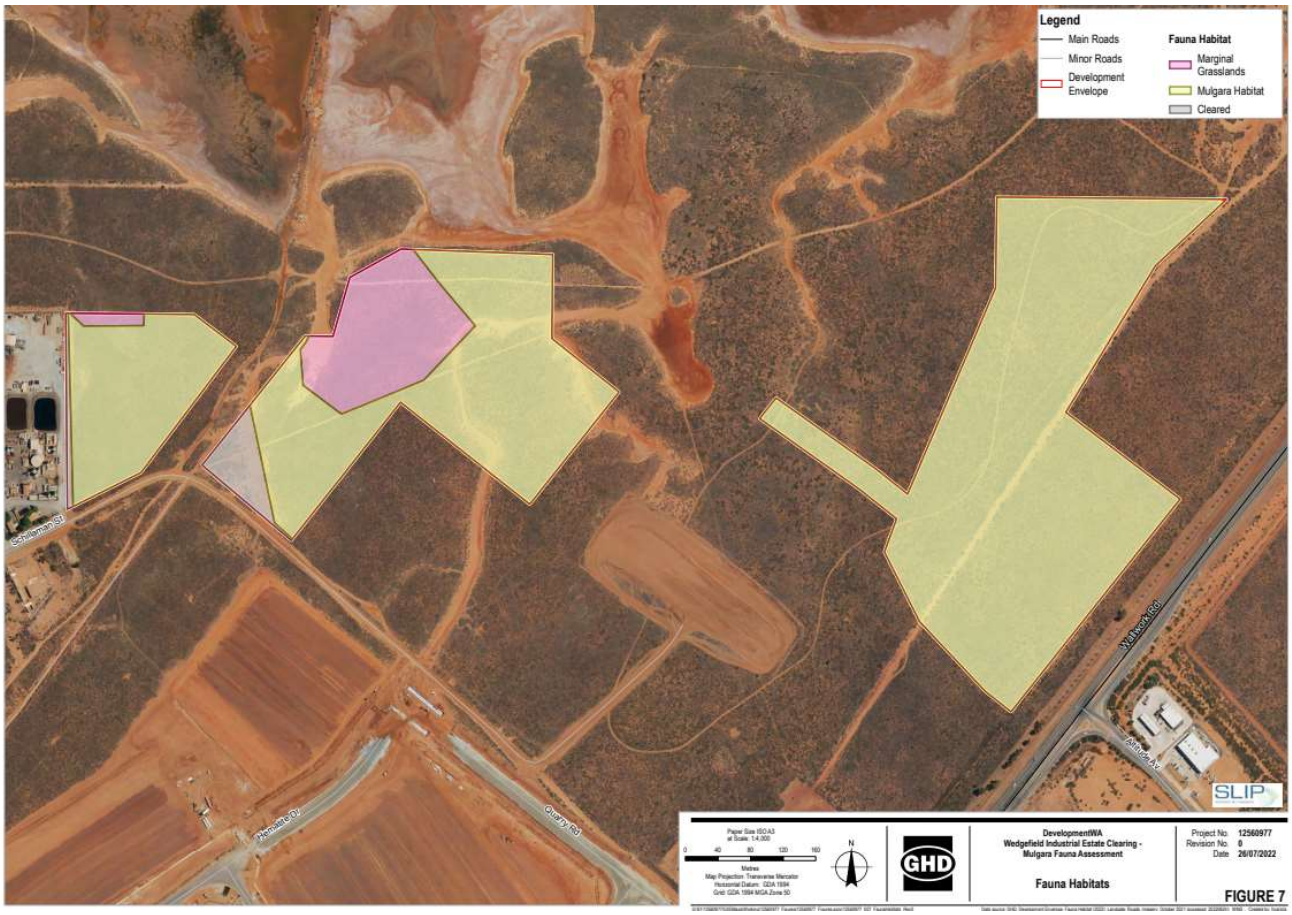


Figure 5. Fauna habitat (GHD, 2009)

Plate 3 Burrow, LIA 5 (2008)

Plate 2 Burrow, LIA 3 (2008)

Figure 6. Fauna burrows observed during the fauna survey (GHD, 2009)

Plate 1 Santalum lanceolatum over Triodia epactia

Plate 2 Triodia epactia

Plate 3 Triodia epactia and Triodia schinzii

Figure 7. Vegetation types recorded across the application area (GHD, 2023)

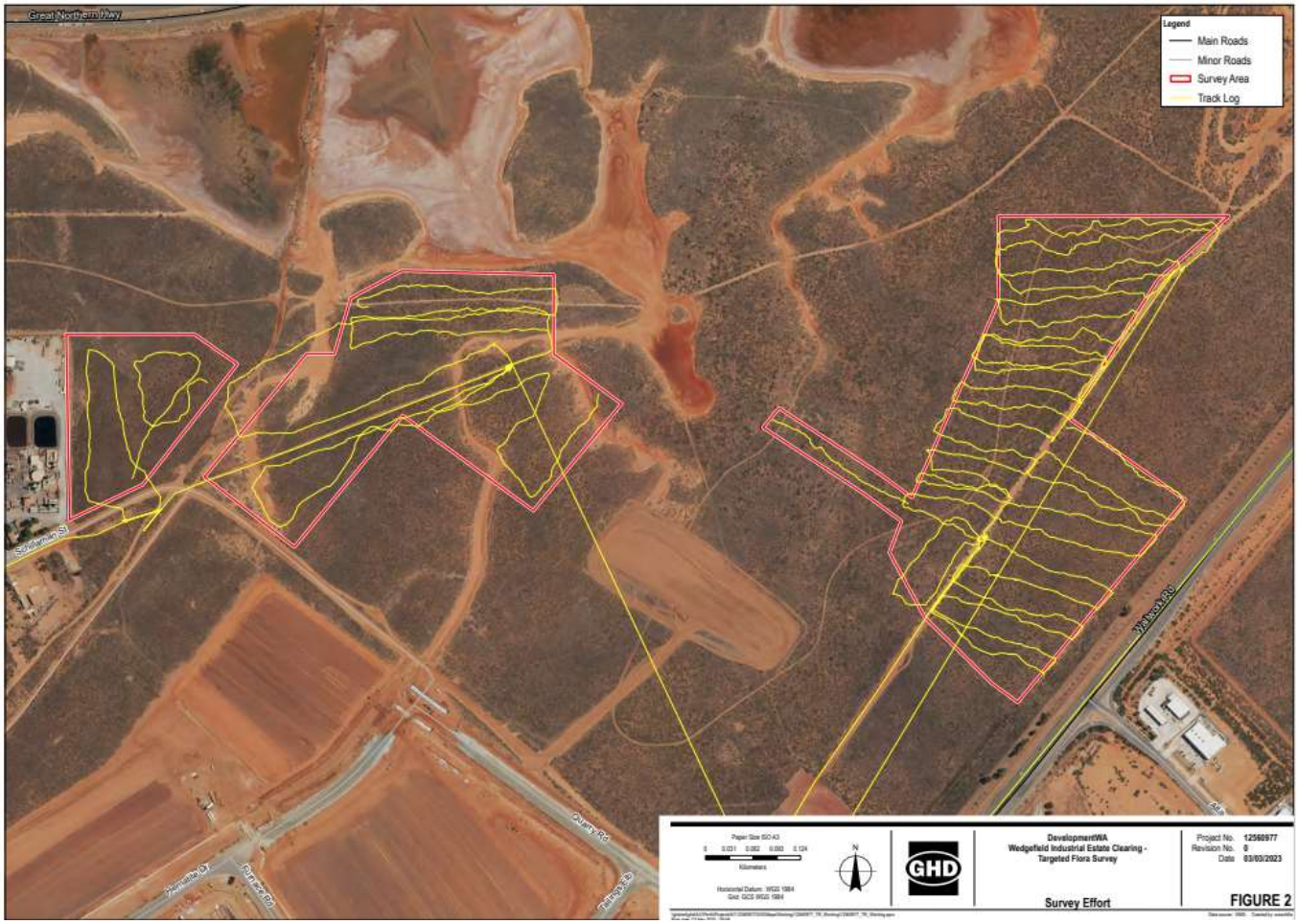


Figure 8. Targeted flora survey tracks (GHD, 2023)

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
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

F.2. References

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