



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 10197/1
Permit Holder:	Shire of Yilgarn
Duration of Permit:	From 08 January 2024 to 08 January 2029

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 road construction and sourcing of construction materials.

2. Land on which clearing is to be done

Unallocated Crown Land (PIN 962514), Marvel Loch
Lot 425 on Deposited Plan 203933, Moorine Rock
Lot 59 on Deposited Plan 202708, Moorine Rock
Lot 248 on Plan 149903, Moorine Rock
Lot 68 on Plan 202708, Moorine Rock
Lot 69 on Plan 202708, Moorine Rock
Lot 28 on Deposited Plan 152148, Moorine Rock
Lot 209 on Deposited Plan 202691, Moorine Rock
Lot 218 on Deposited Plan 202691, Moorine Rock
Lot 61 on Deposited Plan 202708, Moorine Rock
Lot 239 on Deposited Plan 149535, Moorine Rock
Lot 72 on Deposited Plan 202713, Moorine Rock
Lot 73 on Deposited Plan 202713, Moorine Rock
Lot 361 on Deposited Plan 202440, Moorine Rock
Lot 271 on Deposited Plan 152464, Moorine Rock
Lot 272 on Deposited Plan 211229, Moorine Rock
Lot 773 on Deposited Plan 208853, Moorine Rock

Lot 915 on Deposited Plan 91951, Moorine Rock
Lot 215 on Deposited Plan 202690, Moorine Rock
Lot 216 on Deposited Plan 202690, Moorine Rock
Lot 270 on Deposited Plan 204349, Moorine Rock a
Lot 281 on Deposited Plan 204623, Moorine Rock
Reserve 29537 (R29537) (PIN 969164), Marvel Loch
Moorine Road South road reserve (PIN 1266442), Moorine Rock
Stubbs Street / Parker Range Road reserve (PIN 11454228), Moorine Rock
Edwards Find – Marvel Loch Road reserve (PIN 11680158), Marvel Loch
Cockatoo Tank Road reserve (PIN 11680162), Marvel Loch
Parker Range Road reserve (PINs 11680163, 11680164, 11680165, 11680172, 11680562, 11680563, 11681099), Marvel Loch
Patroni Road reserve (PINs 11680166, 11680167), Marvel Loch
Bennett Road reserve (PINs 11680169, 11680171), Marvel Loch
Frog Rock – Marvel Loch Road reserve (PINs 11680561, 11683291), Marvel Loch
Panizza Road reserve (PINs 11680564, 11680567), Marvel Loch
Goodhill Road reserve (PIN 11680649), Moorine Rock
Parker Range Road reserve (PINs 11680650, 11680651, 11680652, 11681102, 11681106, 11682538, 11682539, 11682540), Moorine Rock
Gobetti Road reserve (PIN 11680655), Moorine Rock
Unnamed road reserve (PIN 11680658), Moorine Rock
Southern Cross South Road reserve (PIN 11681097), Moorine Rock and Marvel Loch
Parker Range Road reserve (PIN 11681098), Moorine Rock and Marvel Loch
Amanasco Road reserve (PIN 11681104), Moorine Rock
Unnamed road reserve (PIN 11682537), Moorine Rock
Moorine South Road reserve (PIN 11682544), Moorine Rock
Nicholson Road reserve (PIN 11682592), Moorine Rock

3. Clearing authorised

The permit holder must not *clear* more than 9.9 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

4. Period during which clearing is authorised

The permit holder must not *clear* any *native vegetation* after 08 January 2029

PART II – MANAGEMENT CONDITIONS

5. 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.

6. 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*.

7. Directional clearing

The permit holder must:

- (a) conduct *clearing* activities in a slow, progressive manner towards adjacent *native vegetation*; and
- (b) allow a reasonable time for fauna present within the area being cleared to move into adjacent *native vegetation* ahead of the *clearing* activity.

8. Wind and water erosion management

To reduce the potential for wind and water erosion, the permit holder must:

- (a) commence the construction of road and associated structures, including drainage, no later than three (3) months after undertaking the authorised *clearing* activities; and
- (b) undertake *dust management* within the permit area to suppress dust impacts to the surrounding *vegetation*.

9. Priority flora management

- (a) The permit holder must ensure that:
 - (i) the boundaries of the area to be *cleared* are identified and demarcated using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA20), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
 - (ii) *recorded priority flora* are identified within the *clearing* boundary using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA20), expressing the geographical coordinates in Eastings and Northings or decimal degrees;

- (b) When undertaking any *clearing* authorised under this permit, the permit holder must not cause or allow the *clearing* of more than the *recorded priority flora* within the *clearing* boundary.

PART III - RECORD KEEPING AND REPORTING

10. 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 <i>cleared</i> area; (b) the location where the <i>clearing</i> 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 <i>cleared</i>; (d) the date construction activities commenced; (e) direction of <i>clearing</i>; (f) the size of the area <i>cleared</i> (in hectares); (g) actions taken to avoid, minimise, and reduce the impacts and extent of <i>clearing</i> in accordance with condition 5; (h) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> in accordance with condition 6; and (i) <i>dust management</i> actions in accordance with condition 8.
2.	In relation to flora management pursuant to condition 9	<ul style="list-style-type: none"> (a) the name and date <i>recorded priority flora</i> species were cleared; (b) the <i>recorded priority flora taxa</i> and number of individuals cleared; (c) the location of <i>recorded priority flora taxa</i> cleared, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (20), expressing the geographical coordinates in Eastings and Northings; and (d) actions taken to avoid the clearing of <i>recorded priority flora</i> species, where practicable.

11. Reporting

The permit holder must provide to the *CEO* the records required under condition 10 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.
dust management	the system implemented to reduce or eliminate dust emissions from the activities that generate airborne and fugitive dust and cause erosion e.g. through the application of dust suppression with water or other material.
EP Act	<i>Environmental Protection Act 1986</i> (WA)
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.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
Priority flora	means those plant taxa described as priority flora classes 1, 2, 3, or 4 in the <i>Department of Biodiversity, Conservation and Attractions Threatened and Priority Flora List for Western Australia</i> (as amended)
recorded	means individuals of those <i>priority flora</i> species found within the area cross-hatched yellow in Figure 1 of Schedule 1 during the following surveys: <ul style="list-style-type: none"> (a) <i>Interim Detailed Flora and Vegetation Assessment and Gap Analysis Moorine Rock to Mt Holland minesite. Southern Section, Parker Range to Mt Holland, Supporting Clearing Permit CPS 10049</i>. Dated June 2023. (Western Botanical, 2023) (DWER Reference DWERDT871963) (b) <i>Interim Detailed Flora and Vegetation Assessment and Gap Analysis Moorine Rock to Mt Holland minesite. Northern Section, Gt Eastern Hwy to Fence Road. Supporting Clearing Permit CPS 10197</i>. Dated June 2023. (Western Botanical, 2023). (DWER Reference: DWERDT871948) (c) <i>Interim Detailed Flora and Vegetation Assessment and Gap Analysis Moorine Rock to Mt Holland minesite. Central Section, Mt Caudan Bypass to Buffalo Bypass. Supporting Proposed Clearing Permit CPS 10265</i>. Dated July 2023. (Western Botanical, 2023). (DWER Rerence : DWERDT871965) (d) Additional survey targeting priority flora for CPS 10049, CPS 10197 and CPS 10265 whose result is summarized in data sheet

Term	Definition
	entitled “ <i>Covalent Composite Flora 20231110 CPS10197 10265 10049 Summary</i> ”. Received by the Department on 10 November 2023 (DWER Reference DWERDT868667)
weeds	means any plant – (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 invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

END OF CONDITIONS



Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION

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

6 December 2023

Schedule 1

Plan 10197/1/1

The boundary of the area authorised to be cleared is shown in the map below (Figure 1-1 to 1-16).

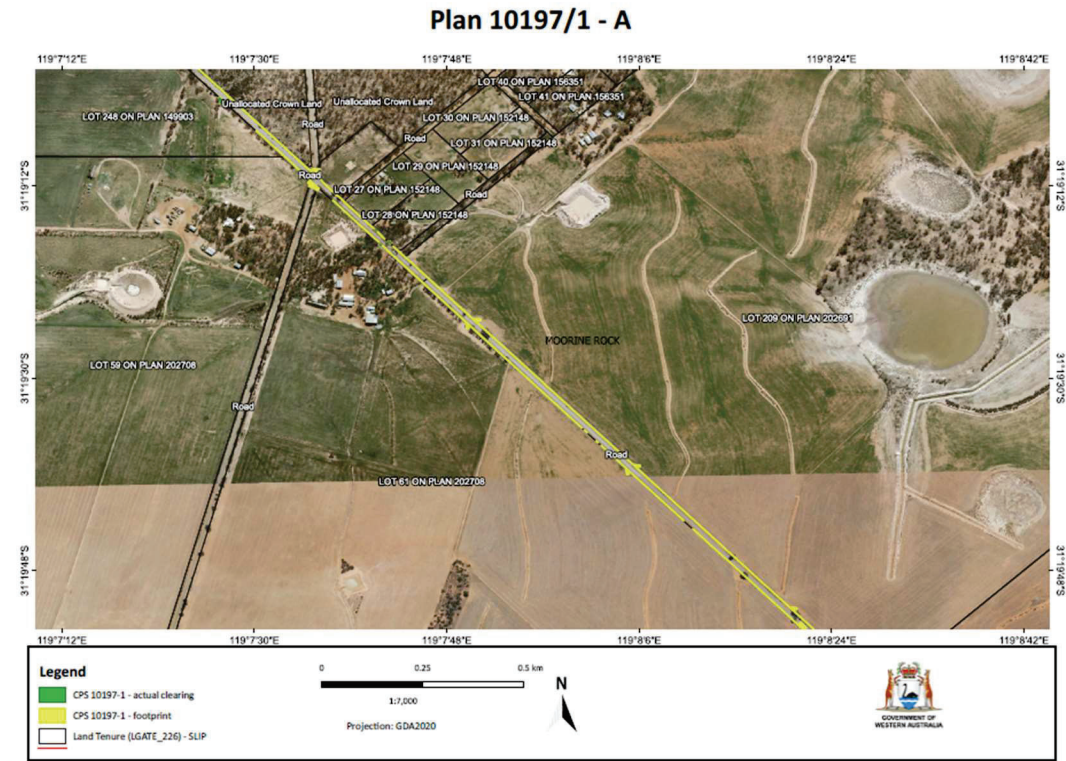


Figure 1.1 Map of the boundary of the area within which clearing may occur

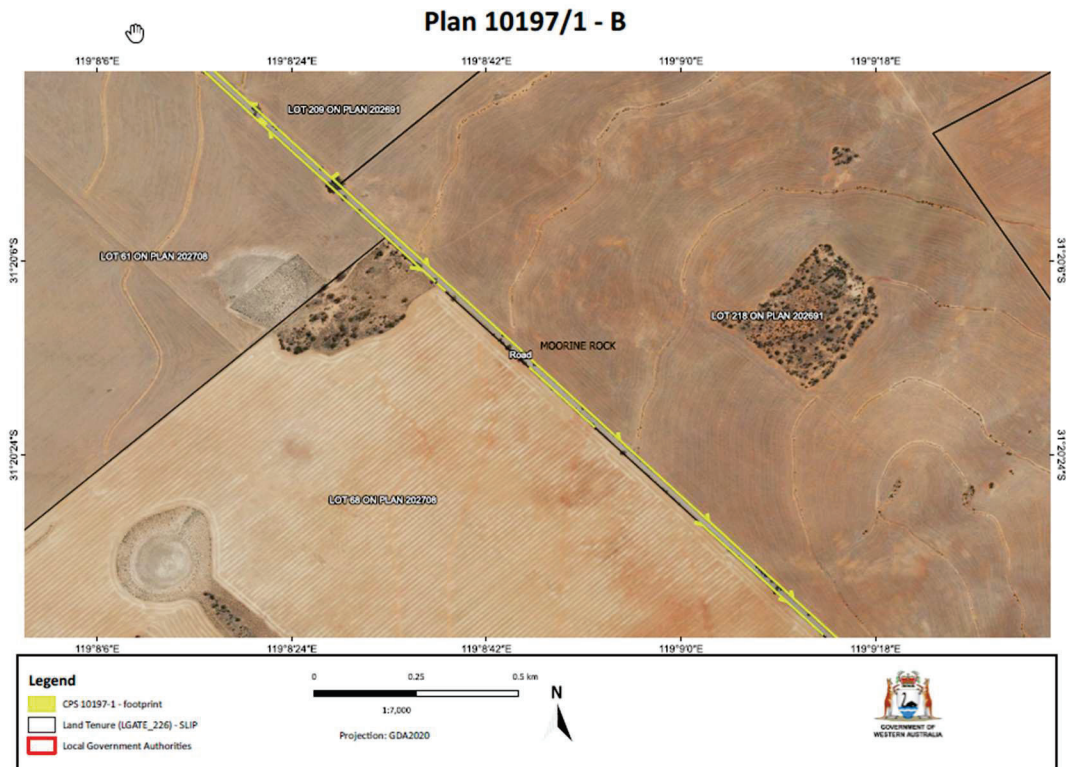
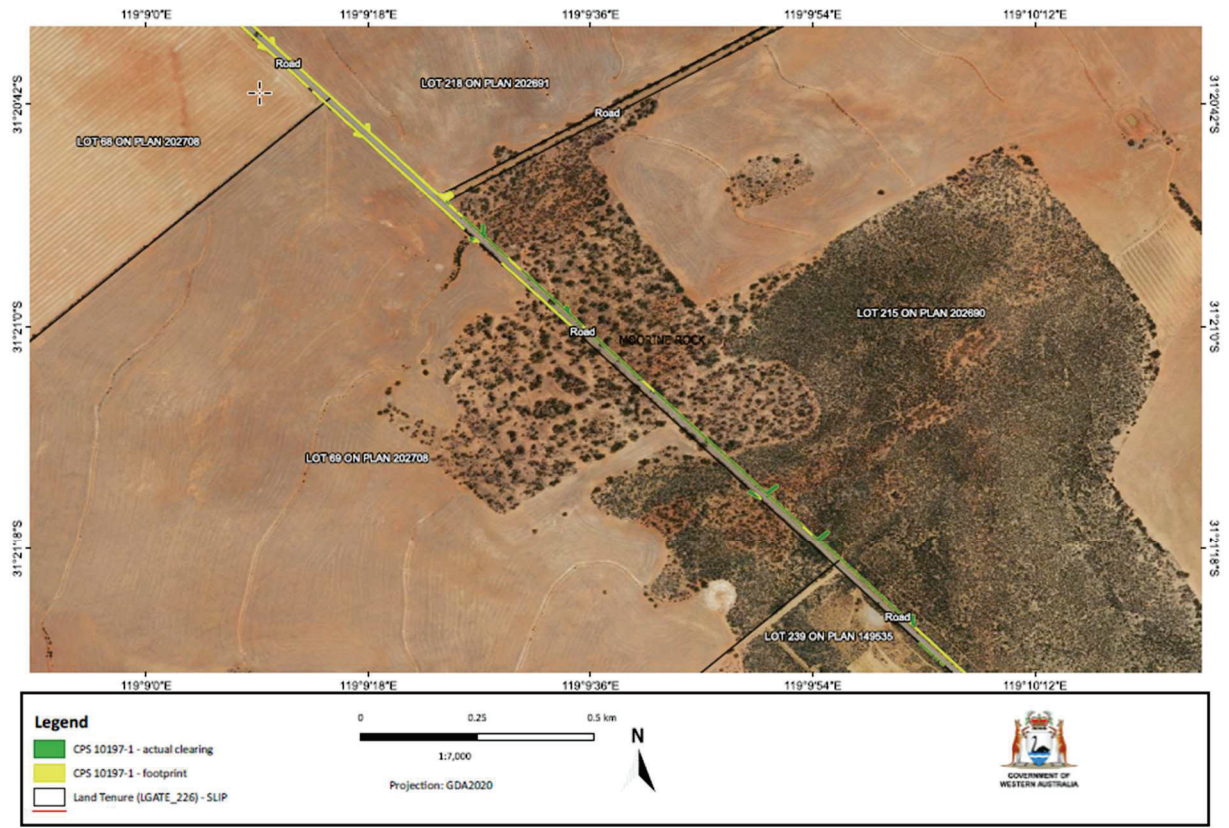


Figure 1.2 Map of the boundary of the area within which clearing may occur

Plan 10197/1 - C



**Figure 1.3 Map of the boundary of the area within which clearing may occur
Plan 10197/1 - D**



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

Plan 10197/1 - E

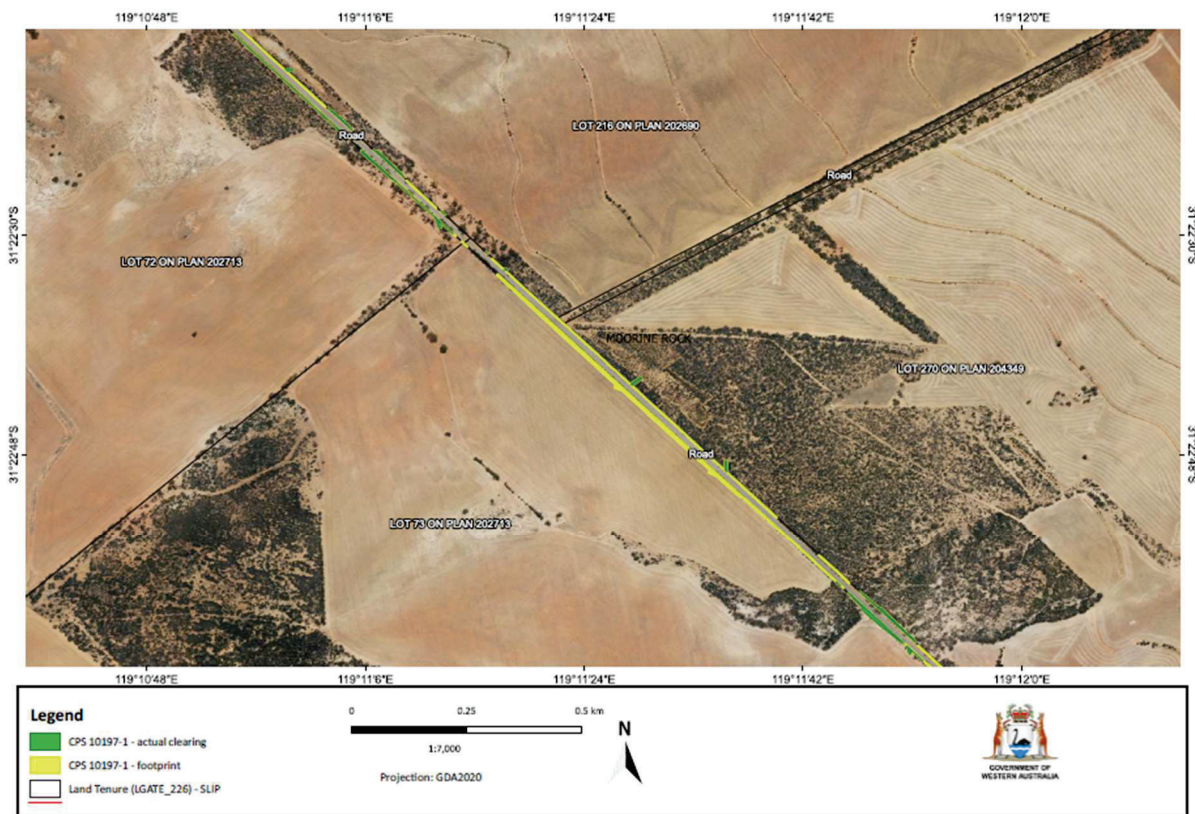


Figure 1.5 Map of the boundary of the area within which clearing may occur

Plan 10197/1 - F

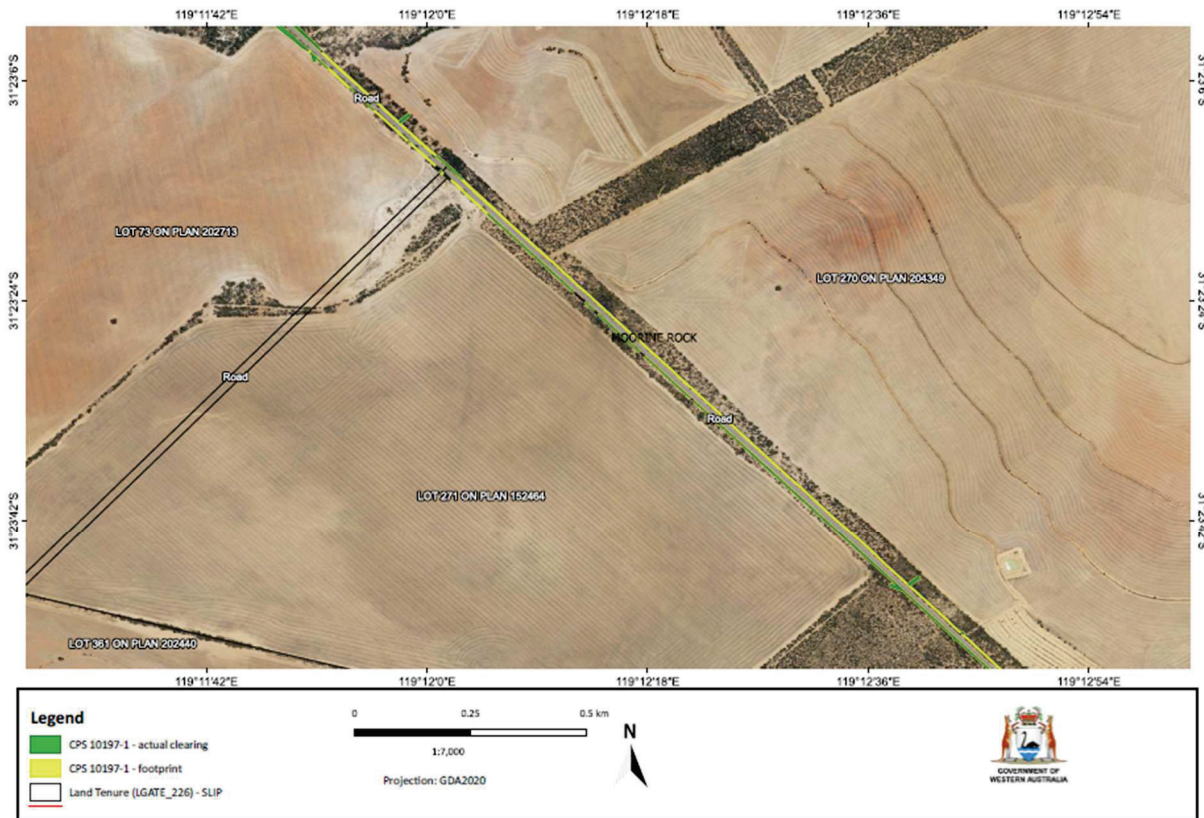


Figure 1.6 Map of the boundary of the area within which clearing may occur

Plan 10197/1 - G



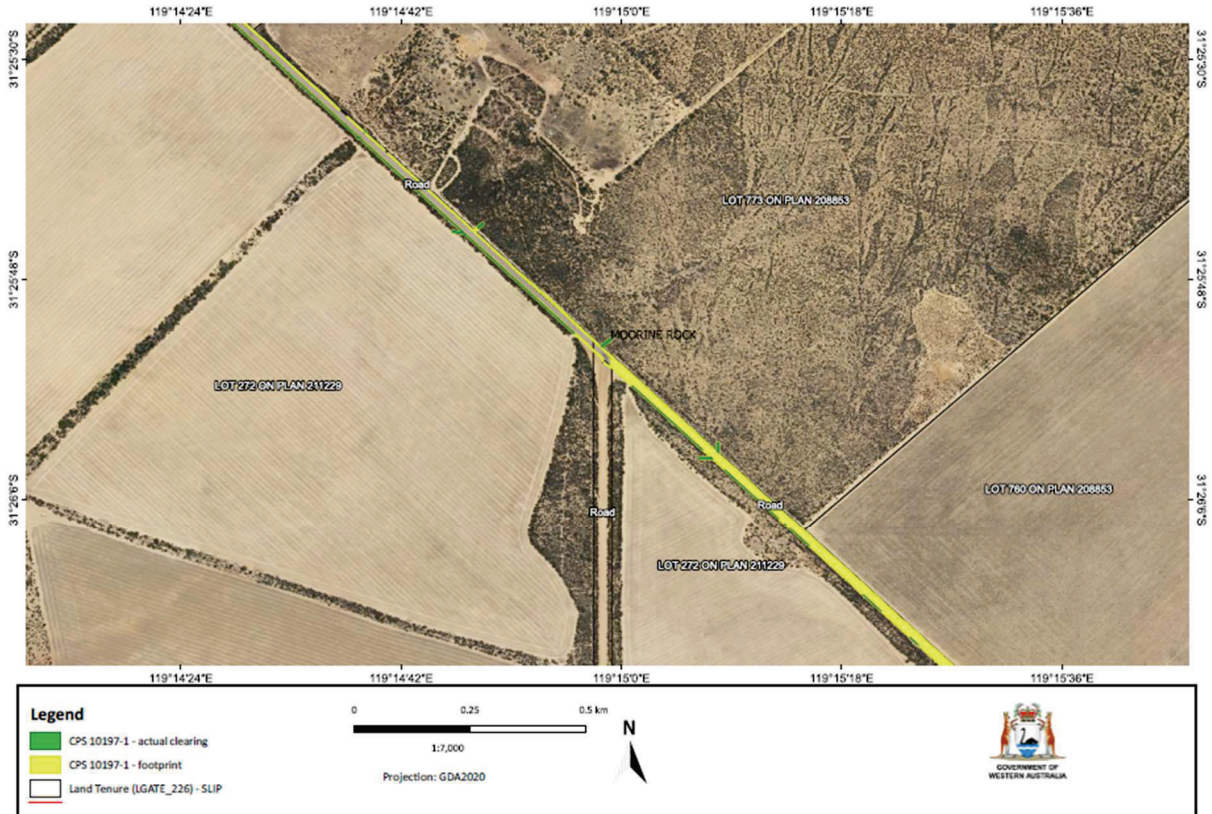
Figure 1.7 Map of the boundary of the area within which clearing may occur

Plan 10197/1 - H



Figure 1.8 Map of the boundary of the area within which clearing may occur

Plan 10197/1 - I

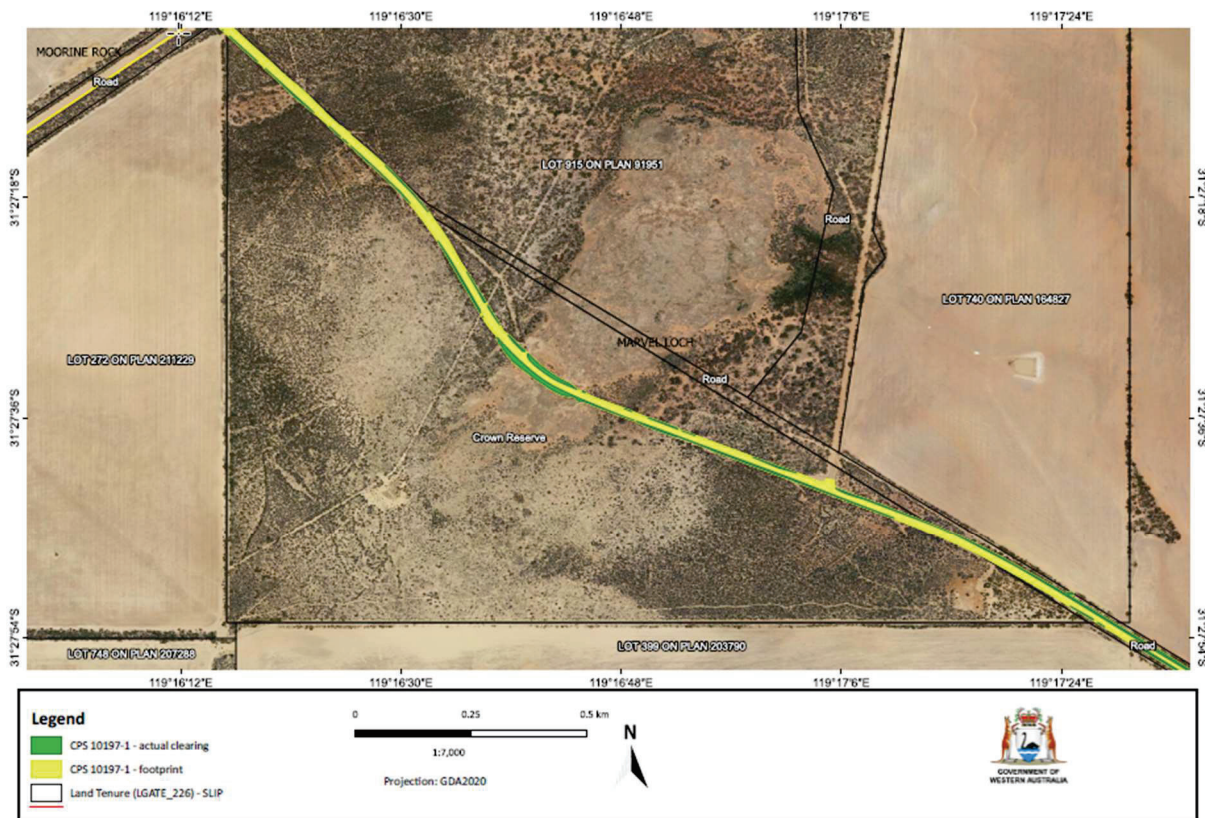


**Figure 1.9 Map of the boundary of the area within which clearing may occur
Plan 10197/1 - J**



Figure 1.10 Map of the boundary of the area within which clearing may occur

Plan 10197/1 - K



**Figure 1.11 Map of the boundary of the area within which clearing may occur
Plan 10197/1 - L**

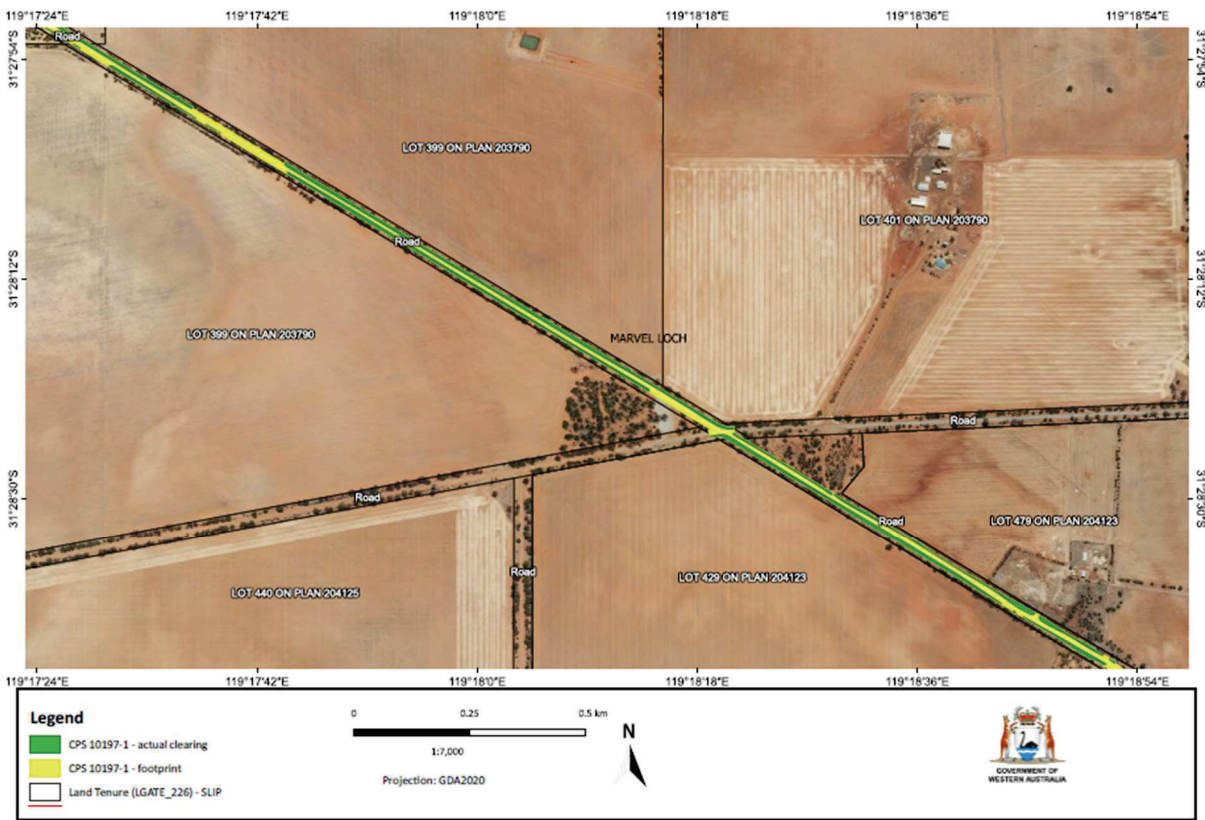


Figure 1.12 Map of the boundary of the area within which clearing may occur

Plan 10197/1 - M

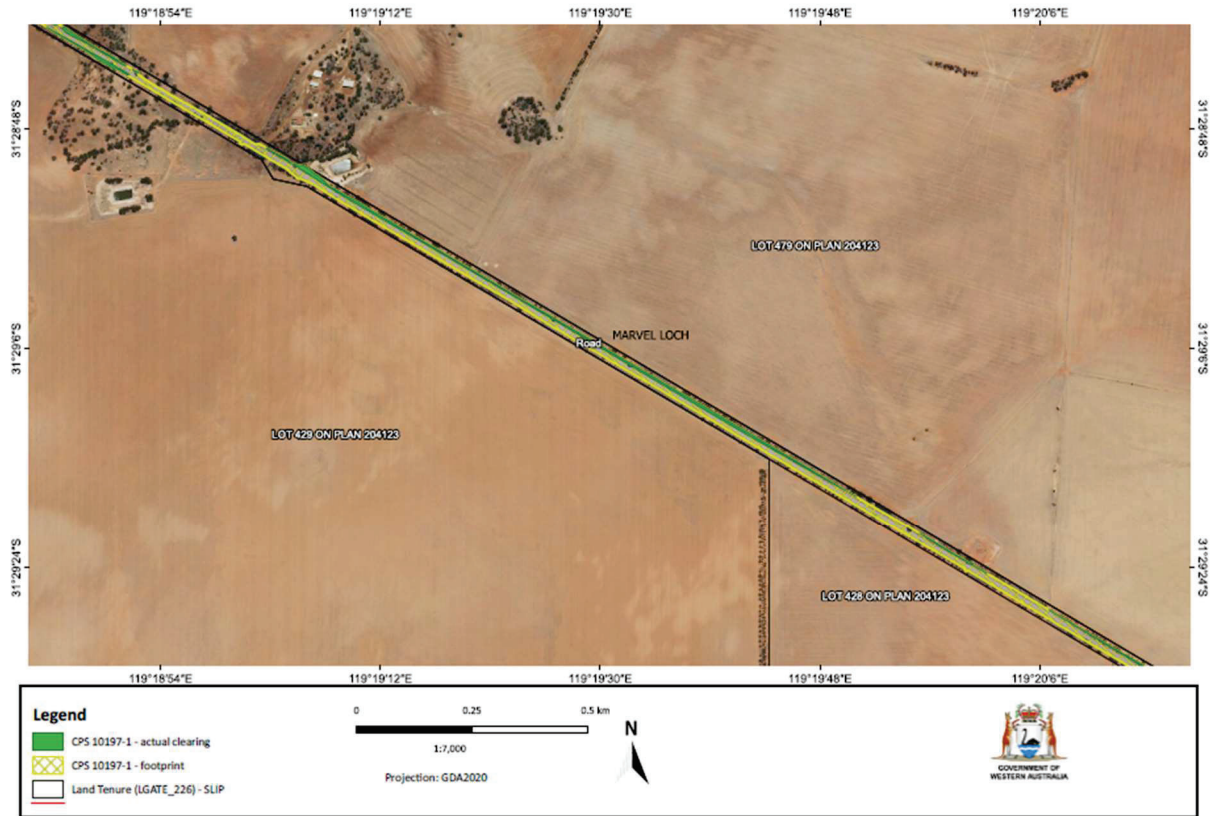


Figure 1.13 Map of the boundary of the area within which clearing may occur

Plan 10197/1 - N

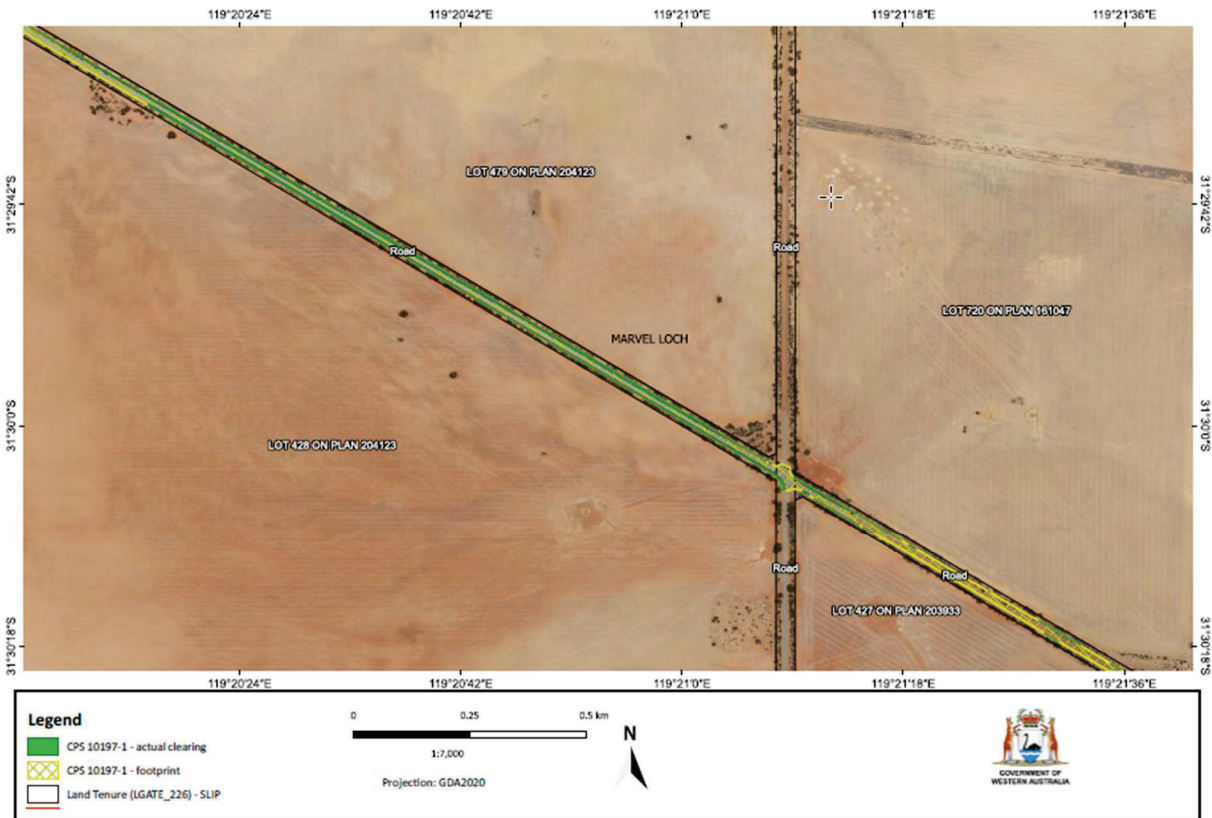


Figure 1.14 Map of the boundary of the area within which clearing may occur

Plan 10197/1 - O

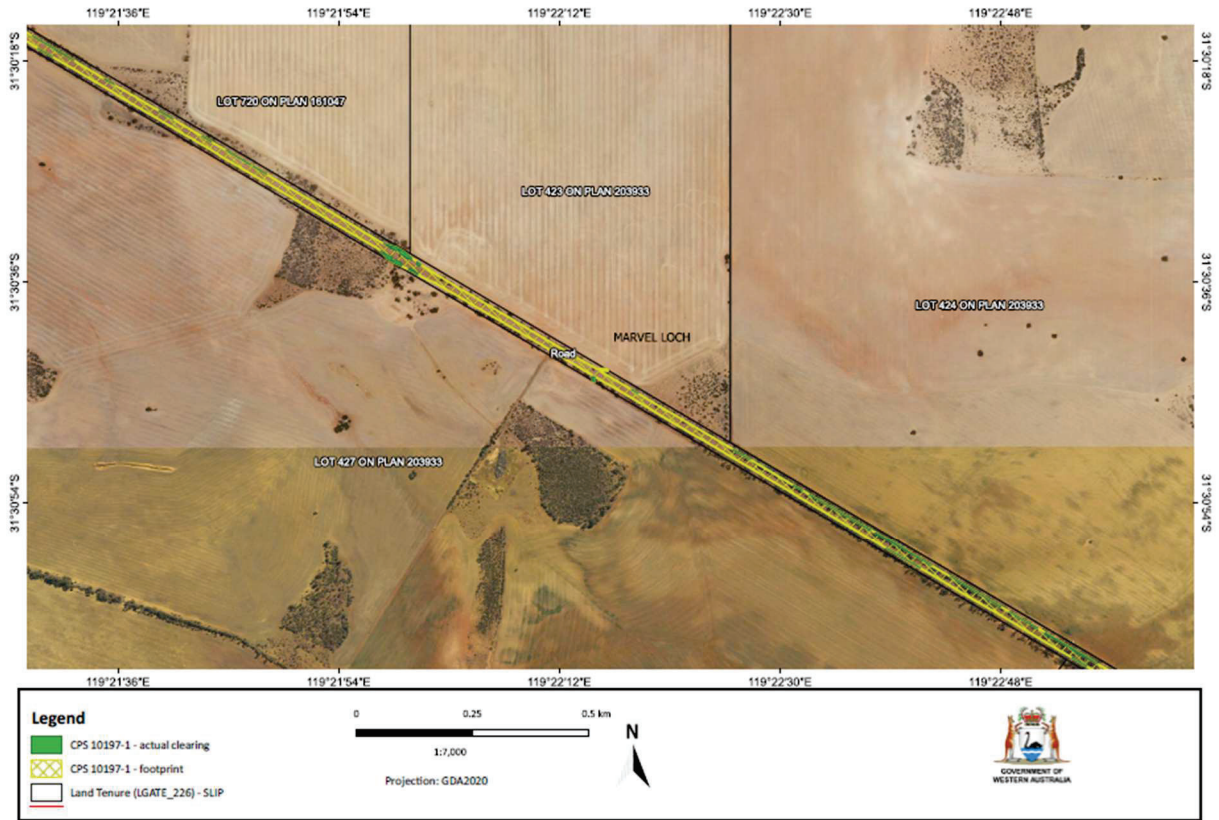


Figure 1.15 Map of the boundary of the area within which clearing may occur

Plan 10197/1 - P

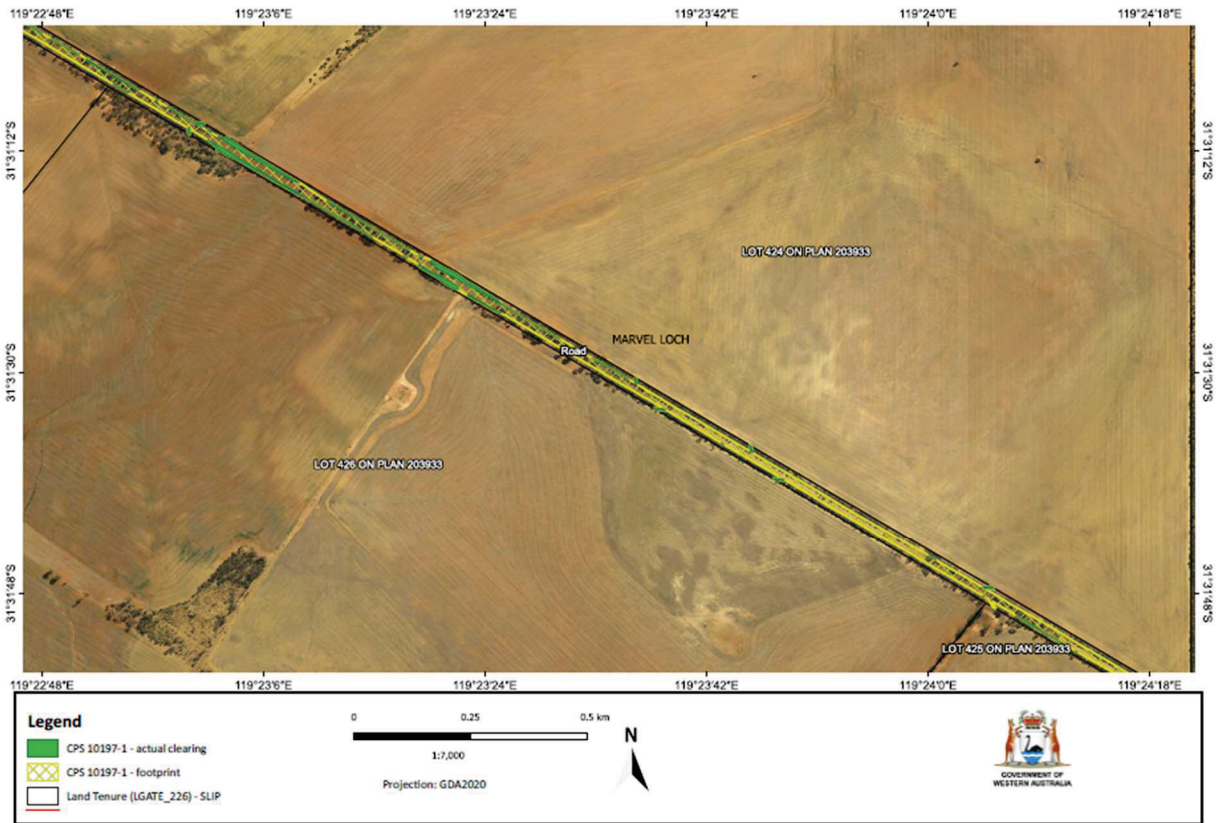
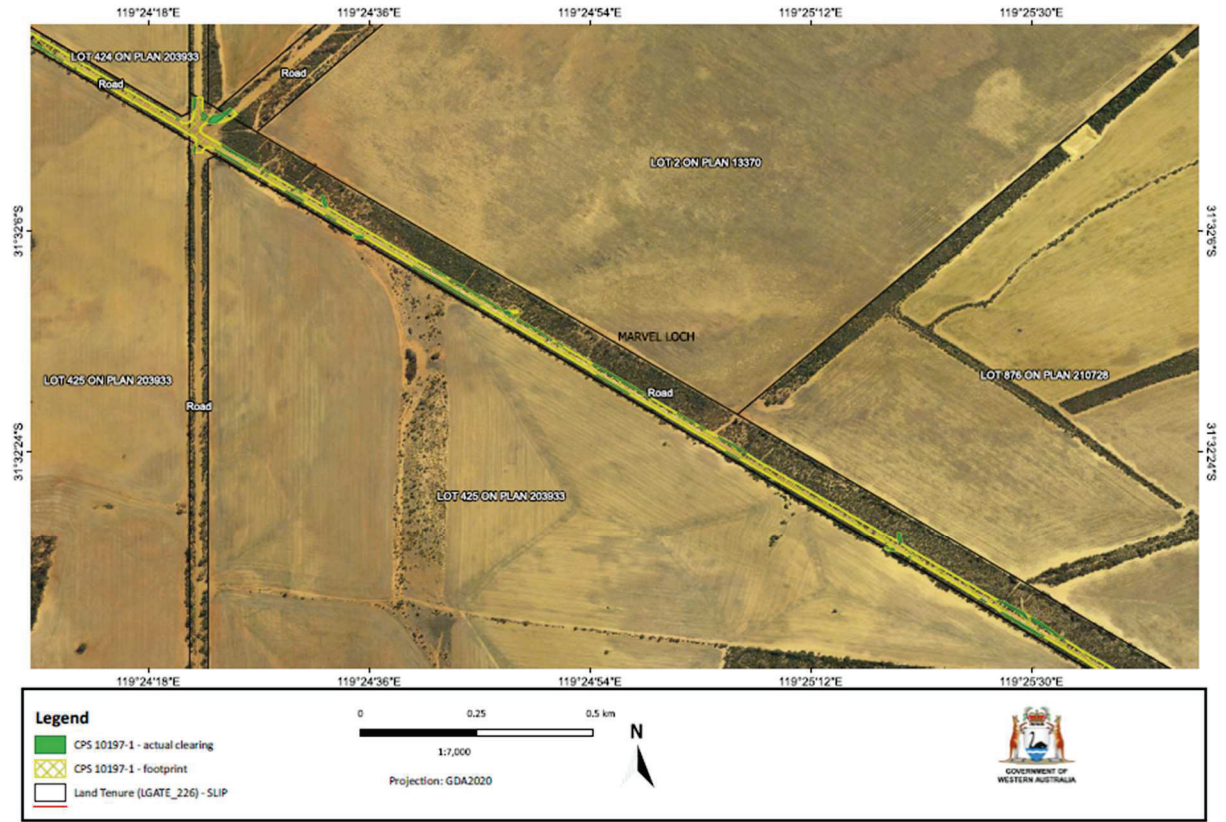


Figure 1.16 Map of the boundary of the area within which clearing may occur

Plan 10197/1 - Q



**Figure 1.17 Map of the boundary of the area within which clearing may occur
Plan 10197/1 - R**

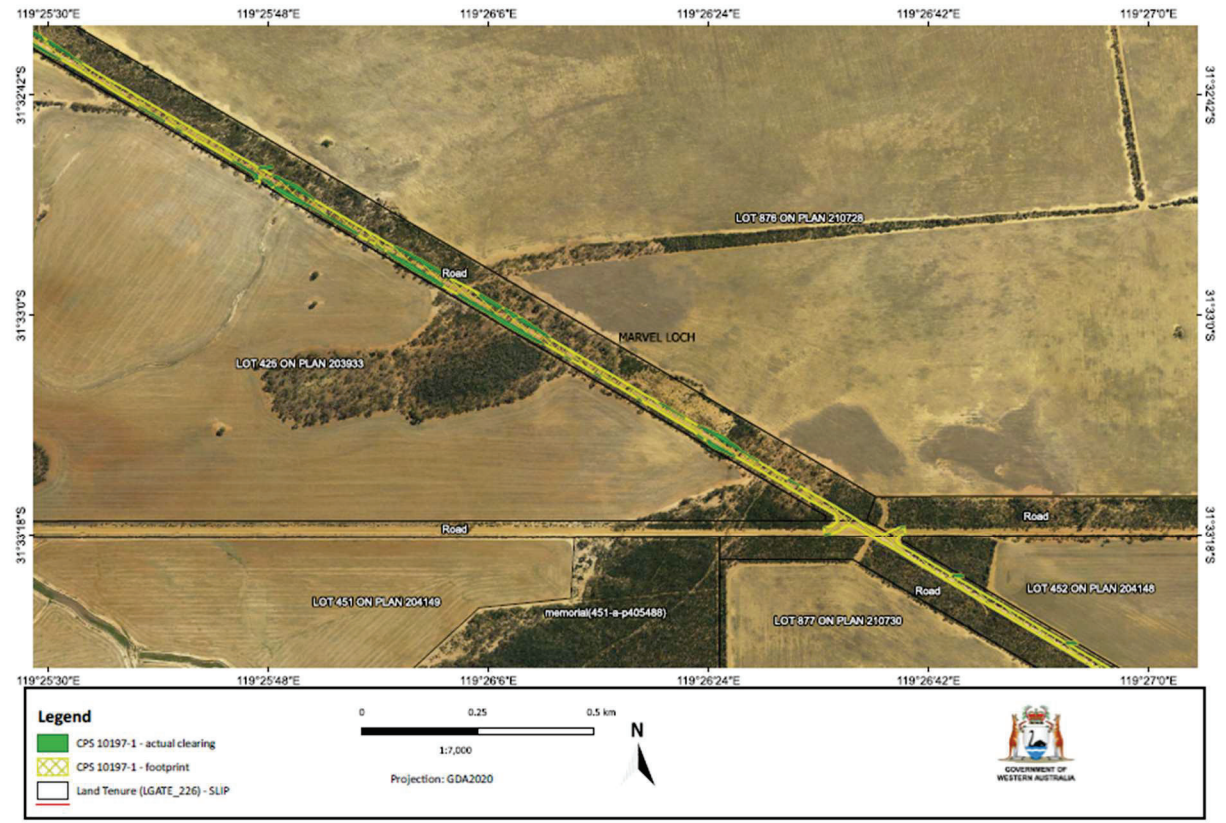


Figure 1.18 Map of the boundary of the area within which clearing may occur

Plan 10197/1 - S

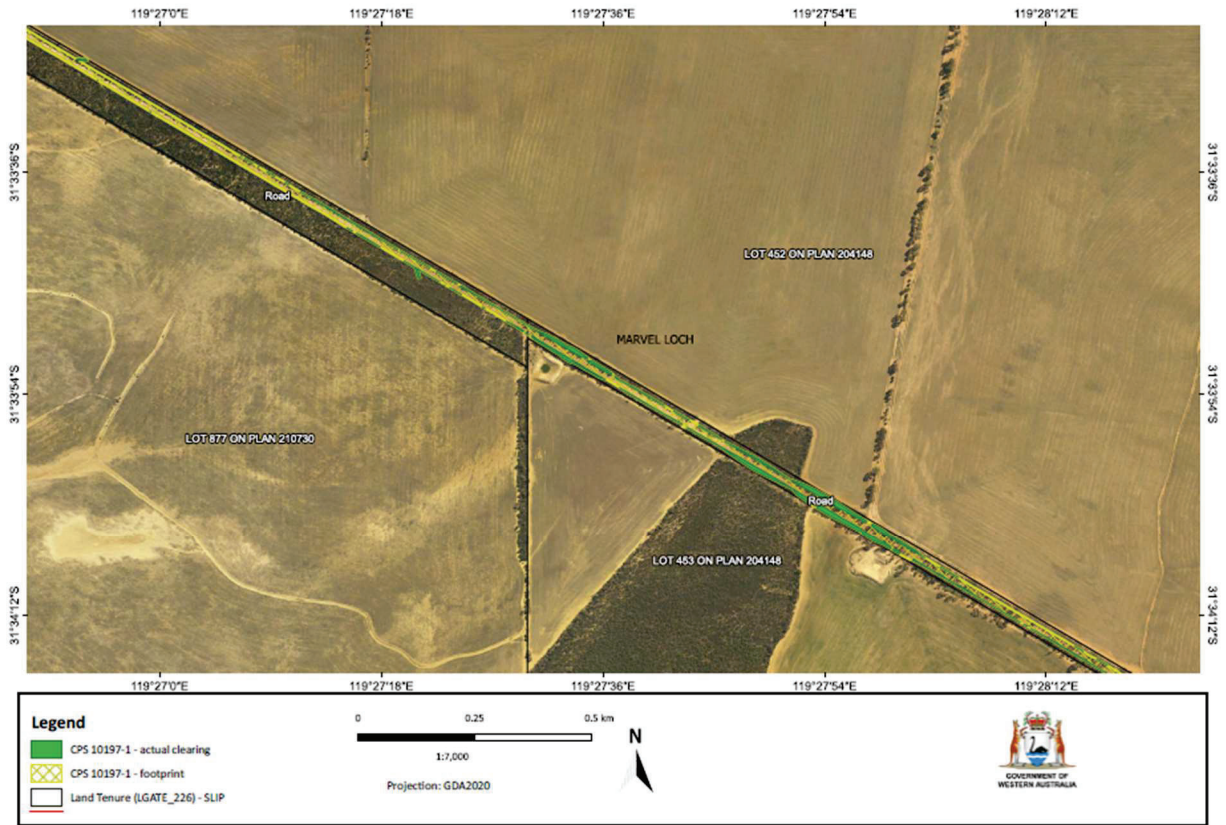


Figure 1.19 Map of the boundary of the area within which clearing may occur

Plan 10197/1 - T

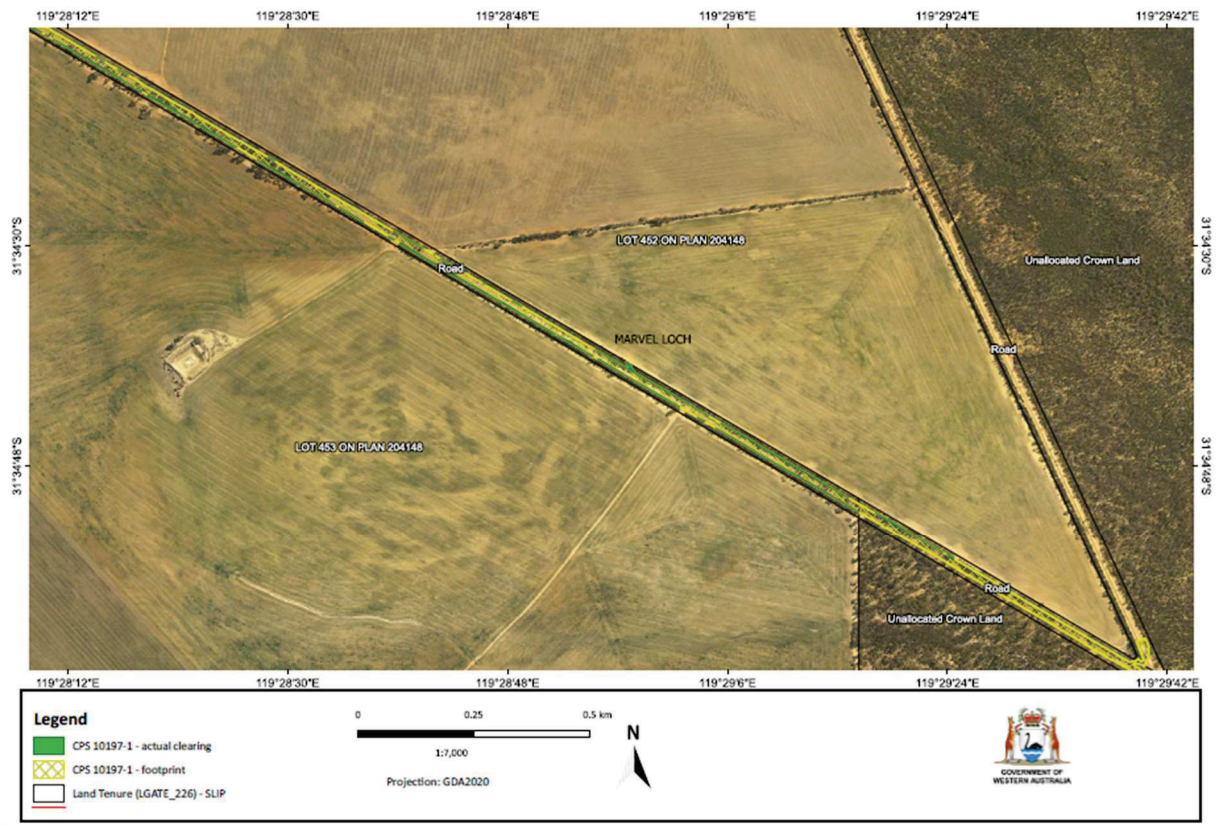
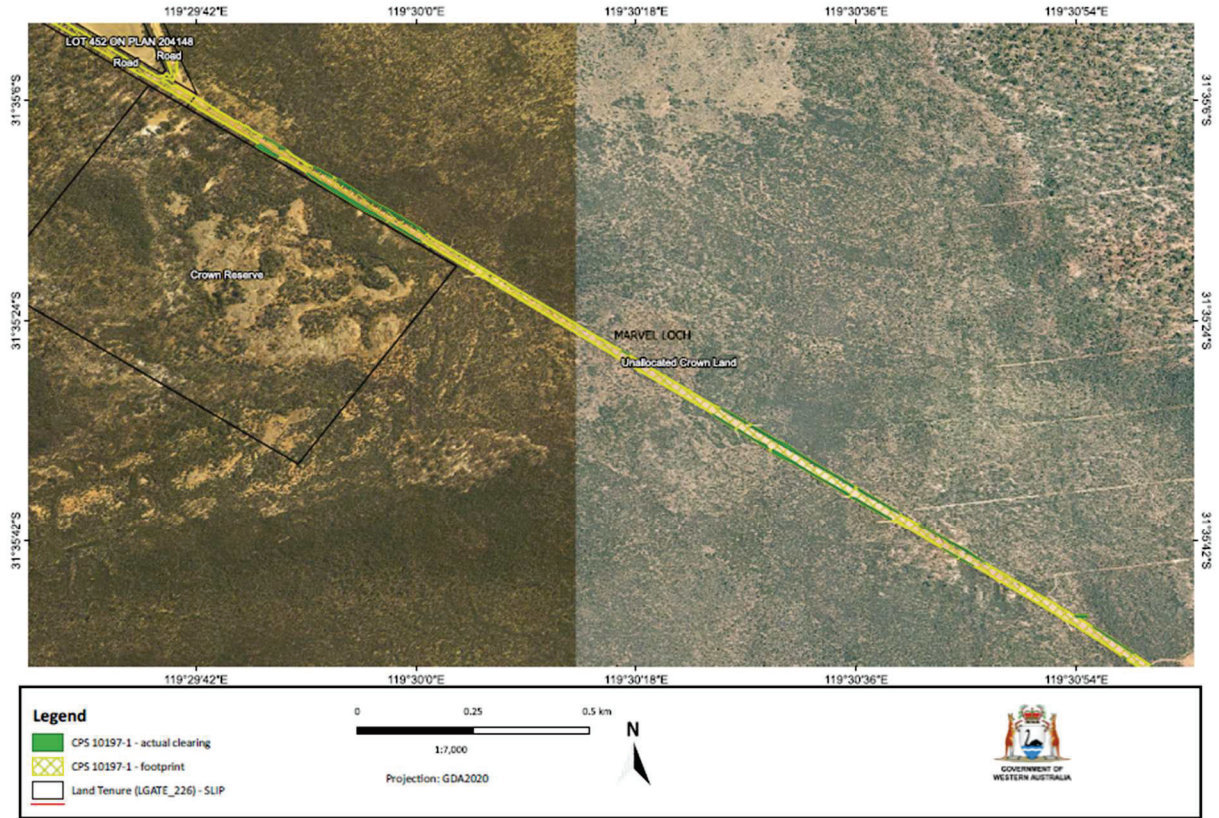


Figure 1.20 Map of the boundary of the area within which clearing may occur

Plan 10197/1 - U



**Figure 1.21 Map of the boundary of the area within which clearing may occur
Plan 10197/1 - V**

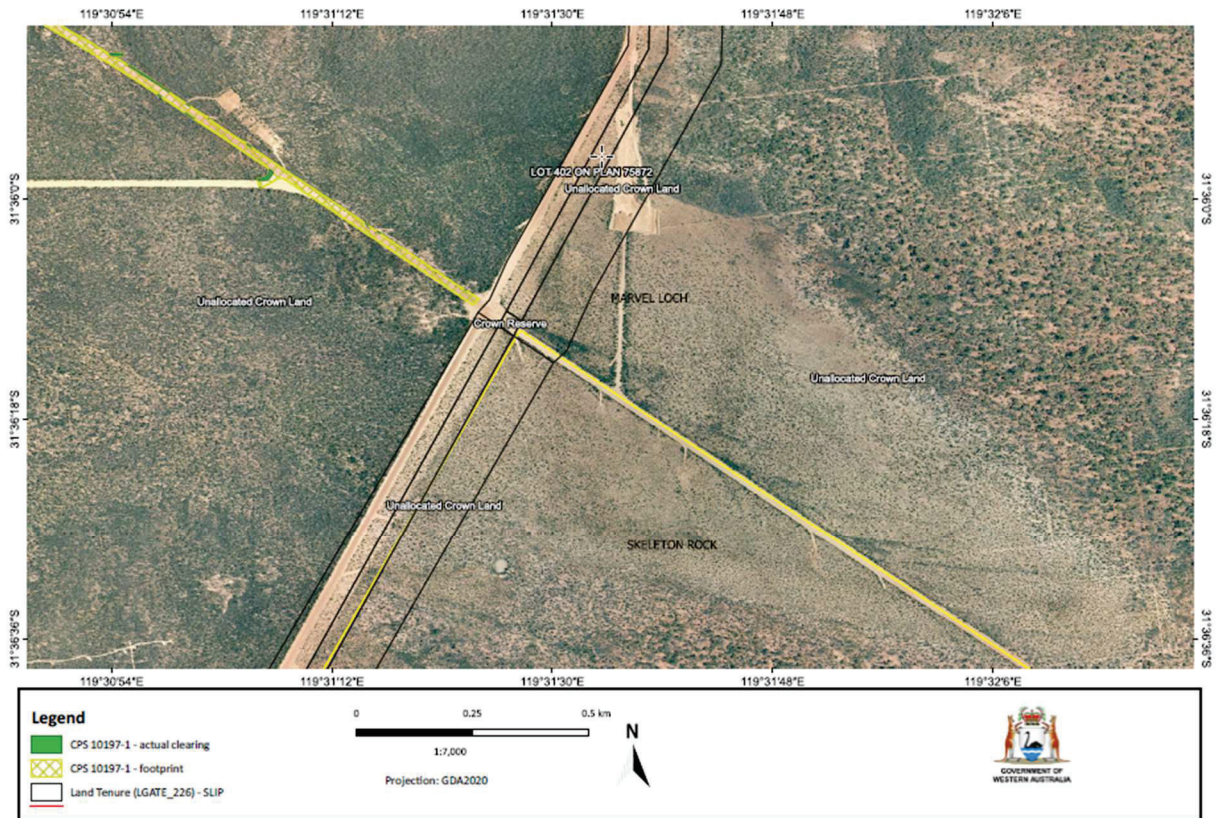


Figure 1.22 Map of the boundary of the area within which clearing may occur



Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 10197/1
Permit type:	Purpose permit
Applicant name:	Shire of Yilgarn (the Shire)
Application received:	15 May 2023
Application area:	9.9 hectares (ha) of native vegetation (revised) within a 67.09 ha clearing footprint
Purpose of clearing:	Road construction and sourcing of construction materials
Method of clearing:	Mechanical
Property:	Unallocated Crown Land (PIN 962514) Marvel Loch Lot 425 on Deposited Plan 203933, Moorine Rock Lot 59 on Deposited Plan 202708, Moorine Rock Lot 248 on Plan 149903, Moorine Rock Lot 68 on Plan 202708, Moorine Rock Lot 69 on Plan 202708, Moorine Rock Lot 28 on Deposited Plan 152148, Moorine Rock Lot 209 on Deposited Plan 202691, Moorine Rock Lot 218 on Deposited Plan 202691, Moorine Rock Lot 61 on Deposited Plan 202708, Moorine Rock Lot 239 on Deposited Plan 149535, Moorine Rock Lot 72 on Deposited Plan 202713, Moorine Rock Lot 73 on Deposited Plan 202713, Moorine Rock Lot 361 on Deposited Plan 202440, Moorine Rock Lot 271 on Deposited Plan 152464, Moorine Rock Lot 272 on Deposited Plan 211229, Moorine Rock Lot 773 on Deposited Plan 208853, Moorine Rock Lot 915 on Deposited Plan 91951, Moorine Rock Lot 215 on Deposited Plan 202690, Moorine Rock Lot 216 on Deposited Plan 202690, Moorine Rock Lot 270 on Deposited Plan 204349, Moorine Rock Lot 281 on Deposited Plan 204623, Moorine Rock Reserve 29537 (R29537) (PIN 969164), Marvel Loch Moorine Road- South road reserve (PIN 1266442), Moorine Rock Stubbs Street / Parker Range Road reserve (PIN 11454228), Moorine Rock

Edwards Find – Marvel Loch Road reserve (PIN 11680158), Marvel Loch
 Cockatoo Tank Road reserve (PIN 11680162), Marvel Loch
 Parker Range Road reserve (PIN 11680163, 11680164, 11680165, 11680172, 11680562, 11680563, 11681099), Marvel Loch
 Patroni Road reserve (PIN 11680166, 11680167), Marvel Loch
 Bennett Road reserve (PIN 11680169, 11680171), Marvel Loch
 Frog Rock – Marvel Loch Road reserve (PIN 11680561, 11683291), Marvel Loch
 Panizza Road reserve (PIN 11680564, 11680567), Marvel Loch
 Goodhill Road reserve (PIN 11680649), Moorine Rock
 Parker Range Road reserve (PIN 11680650, 11680651, 11680652, 11681102, 11681106, 11682538, 11682539, 11682540), Moorine Rock
 Gobetti Road reserve (PIN 11680655), Moorine Rock
 Unnamed road reserve (PIN 11680658), Moorine Rock
 Southern Cross South Road reserve (PIN 11681097), Moorine Rock and Marvel Loch
 Parker Range Road reserve (PIN 11681098), Moorine Rock and Marvel Loch
 Amanasco Road reserve (PIN 11681104), Moorine Rock
 Unnamed road reserve (PIN 11682537), Moorine Rock
 Moorine South Road reserve (PIN 11682544), Moorine Rock
 Nicholson Road reserve (PIN 11682592), Moorine Rock

Location (LGA area/s): Shire of Yilgarn

Localities (suburb/s): Moorine Rock and Marvel Loch

1.2. Description of clearing activities

The Shire of Yilgarn (the Shire) is undertaking an upgrade and maintenance along approximately 116 kilometres (km) of road within the Parker Range Road Reserve and Marvel Loch Forresteria Road reserve. The road will be connecting the Great Eastern Highway at Moorine Rock to the Earl Grey Lithium Project's mine site at Mount Holland. The proposed project includes realignments and sealing of Stubbs Street and Parker Range Road south of Moorine Rock and works on the newly constructed Parker Range Road diversion around the Mt Caudan minesite and a section of the Marvel Loch to Forresteria Road from the Parker Range Road intersection to the Mt Holland mine site. The realignment, widening and sealing are required due to anticipated increase in traffic because of expanded mining operations within the area. The improved road is also expected to increase tourism in the Shire (Shire of Yilgarn, 2023a).

Clearing of native vegetation distributed across either side of the road is required. The Shire applied for three Clearing Permits associated with the project. This proposal (CPS 10197/1) is to clear native vegetation on either side of a 49.8 km long road at the northern section of the 116 km long road works. The Northern Section (Section 1) is within the chainage 0.20 km to 50.0 km: from 200m south of the intersection of Great Eastern Highway and Stubbs Road, Moorine Rock, to the intersection of Parker Range Road and Fence Road. The proposal is to clear up to 9.9 ha of remnant roadside native vegetation, much of which is situated between the graded road embankment and adjacent farm fencelines in the extensively cleared agricultural land of the eastern Wheatbelt of WA. The proposed clearing area size was originally 11.13 hectares of native vegetation within a 64.64 hectare clearing footprint. During assessment, in response to The Department of Water and Environmental Regulation's (DWER) request for further information, the proposed actual clearing area was reduced to 9.9 ha to minimise impacts on environmental values. The clearing footprint, however, was increased to 67.09 ha to accommodate the adjustment.

1.3. Decision on application

Decision:	Granted
Decision date:	6 December 2023
Decision area:	9.9 hectares of native vegetation (revised) within a 67.09 hectare clearing footprint 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). DWER advertised the application for 21 days and no submissions were received. The application area was revised during the assessment stage and re-advertised for an additional seven days. No submissions were received during this time.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix B), relevant datasets (see Appendix G.1), the findings of a flora and vegetation survey (see 0), 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 that the road project for which the proposed clearing is required will improve community safety and local economy through mining and tourism. In particular, the Delegated Officers has considered the following:

- The proposed clearing will clear one Priority 1 (P1), one Priority 2, eight Priority 3, and one Priority 4 flora species. Five flora species of interest (SOI) will also be removed. The proportion of individuals to be removed to the total population known locally and regionally are considered low, that the impacts are unlikely to be significant locally or regionally. The impacts on the species conservation values are also considered insignificant. Clearing, however, may have indirect impact on conservation significant flora species and individuals within the clearing footprint or nearby. Potential impacts can be reduced and mitigated by placing a condition to the permit including the requirement to demarcate the clearing areas to avoid inadvertent clearing of native vegetation and conservation significant flora individuals nearby.
- The proposed clearing will not remove vegetation representative of the Plant Assemblages of the Parker Range Priority Ecological Community (PEC) (Priority 3). Clearing, however, may indirectly impact the condition and habitat value of the PEC nearby through the deposition of dust and spread of weeds. To mitigate indirect impacts of clearing on the PEC nearby, demarcation of the clearing areas and weed and land management conditions are imposed on the permit.
- The proposed clearing will not remove any areas mapped as the Eucalypt Woodlands of Western Australian Wheatbelt Region (Wheatbelt Woodlands) Threatened Ecological Community (TEC). Indirect impacts on the TEC nearby can be managed by the demarcation of the clearing areas and weed and land management conditions.
- The application area and surrounds contains suitable habitats for conservation significant fauna, however, they are not considered critical habitats. Potential impacts on individuals present at the time of clearing can be minimised by conducting clearing in slow and directional manner.

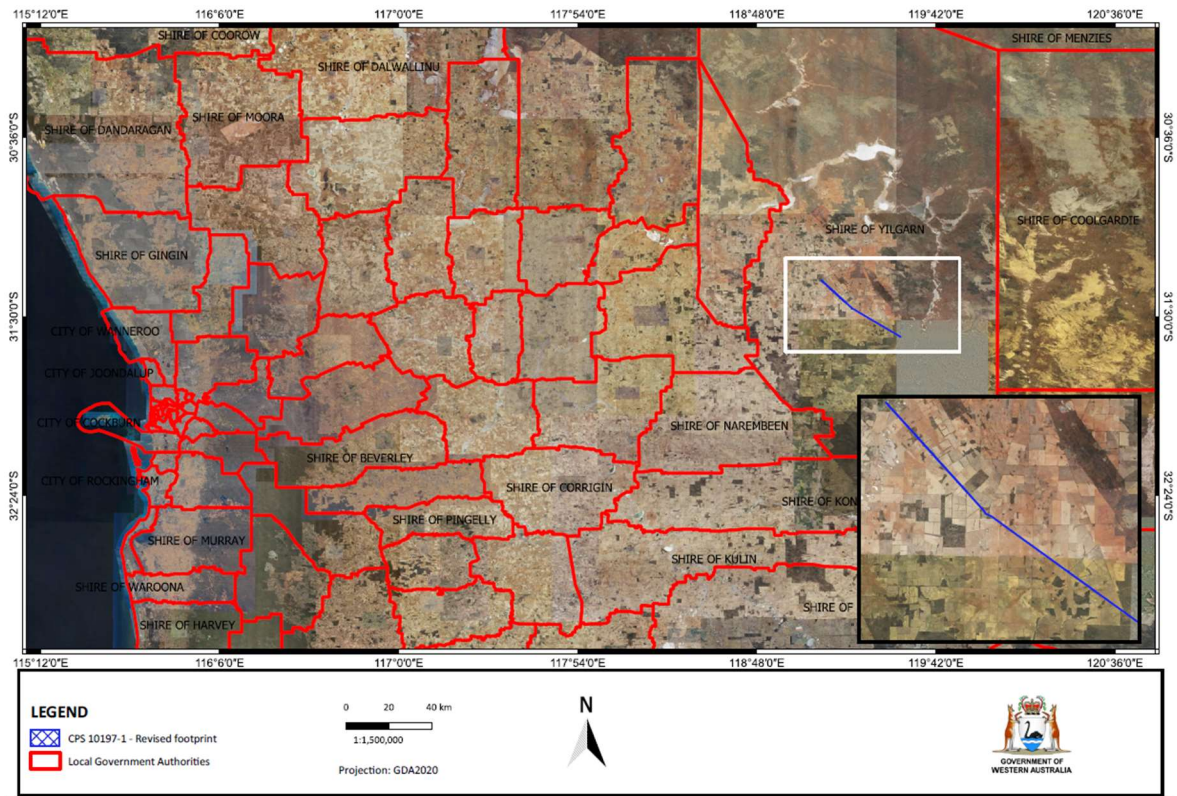
After consideration of the available information, advice from the Department of Biodiversity, Conservation and Attractions (DBCA), as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing is unlikely to lead to appreciable land degradation nor have long-term adverse impacts on the conservational value of priority flora species or the habitat values of adjacent vegetation. Potential impacts of clearing can be minimised and managed to unlikely lead to an unacceptable risk to environmental values by imposing management conditions to the Permit.

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

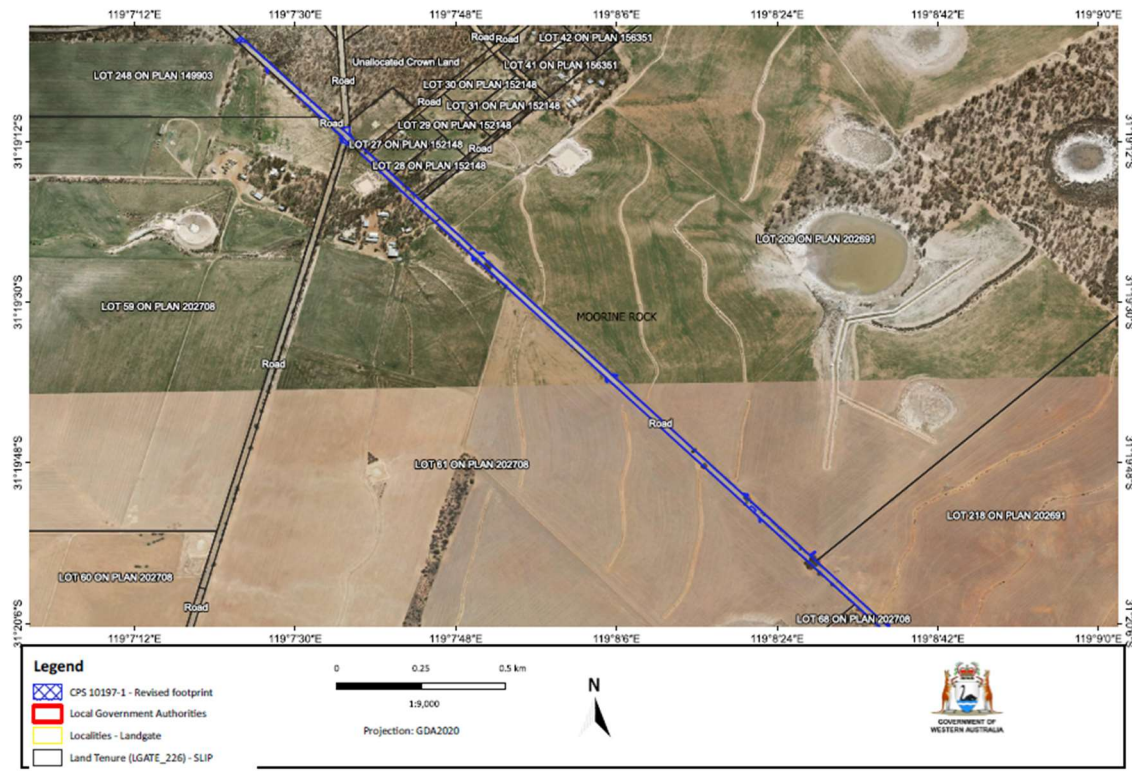
- avoid, minimise to reduce the impacts and extent of clearing
- take hygiene steps to minimise the risk of the introduction and spread of weeds
- staged clearing to minimise wind erosion
- demarcation of clearing area
- undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity
- commence construction of drainage and road works within 3 months of authorised clearing
- dust management within the application area to suppress dust.

1.5. Site map

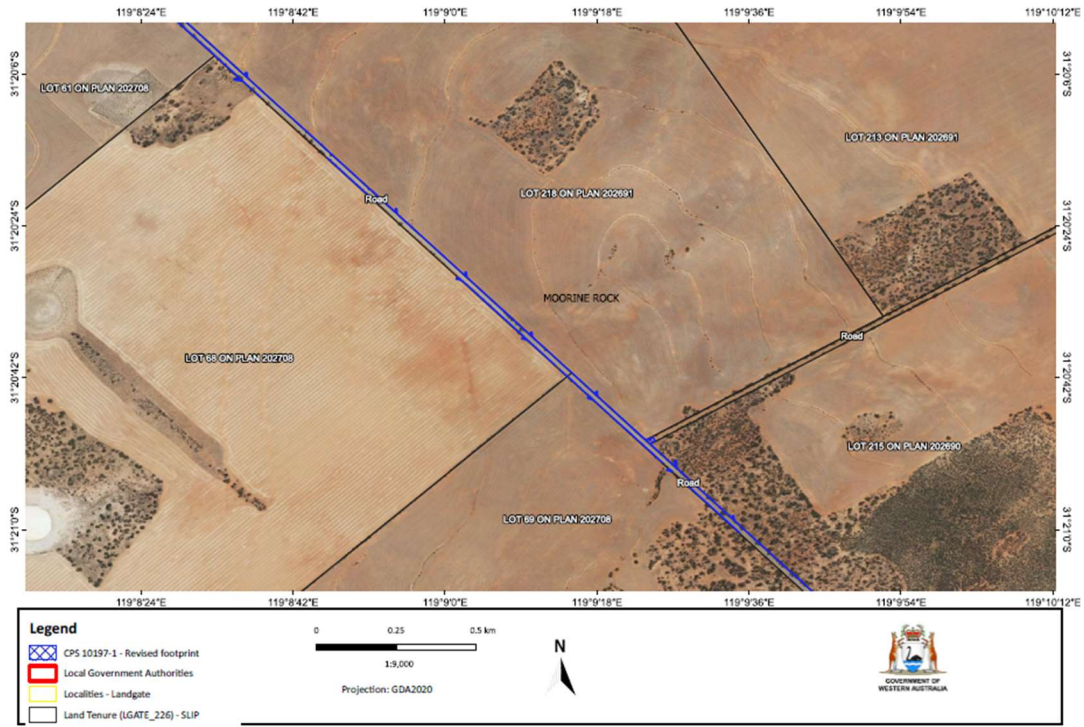
CPS10197/1 - Context Map



CPS 10197/1 - Revised - Map A



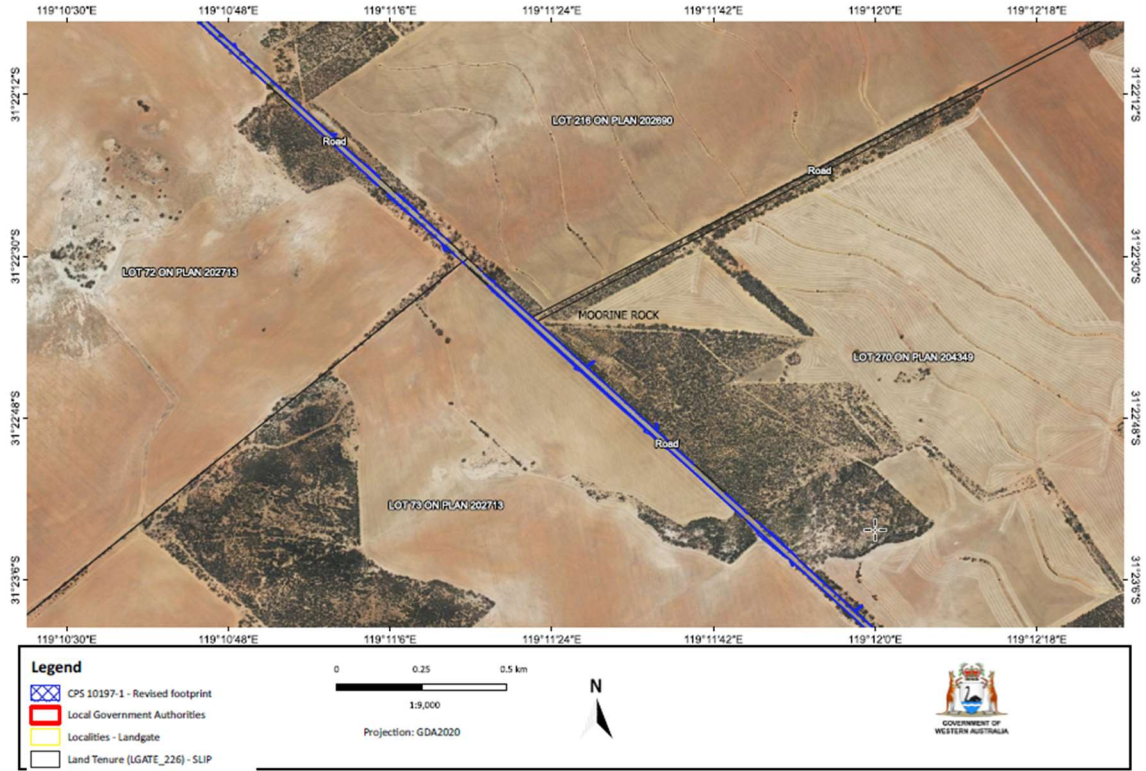
CPS 10197/1 - Revised - Map B



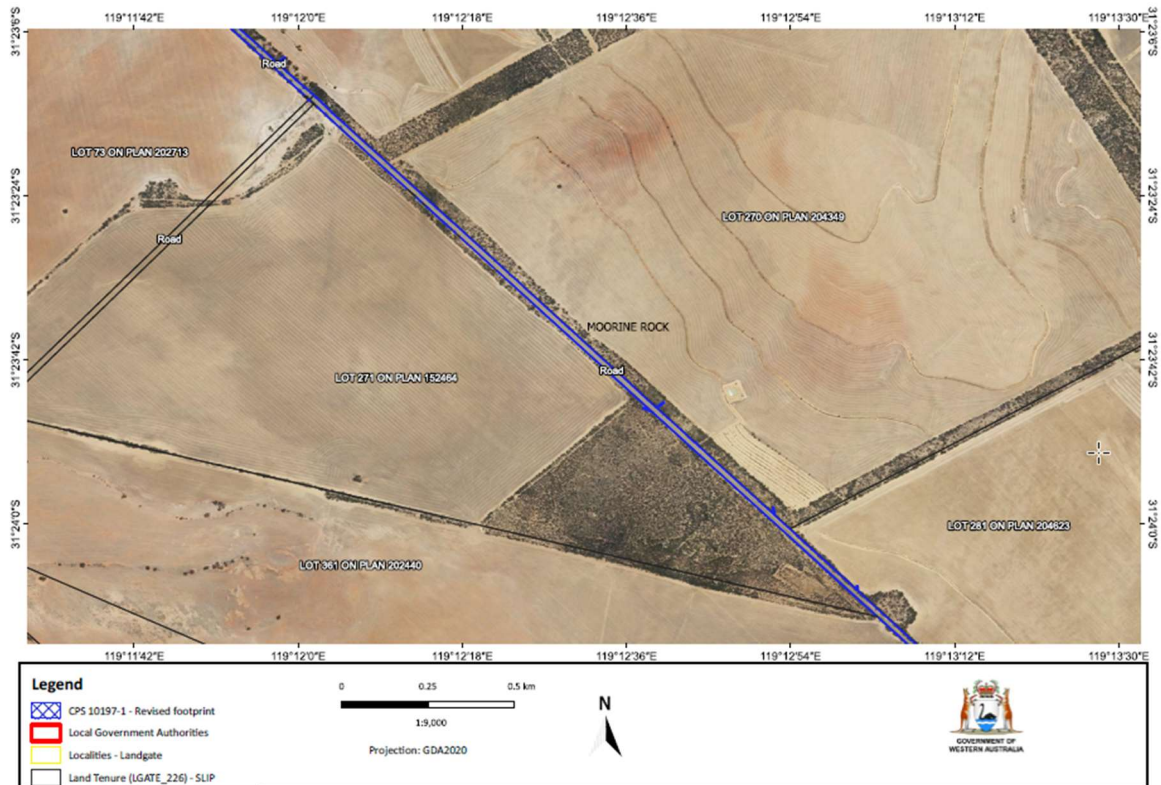
CPS 10197/1 - Revised - Map C



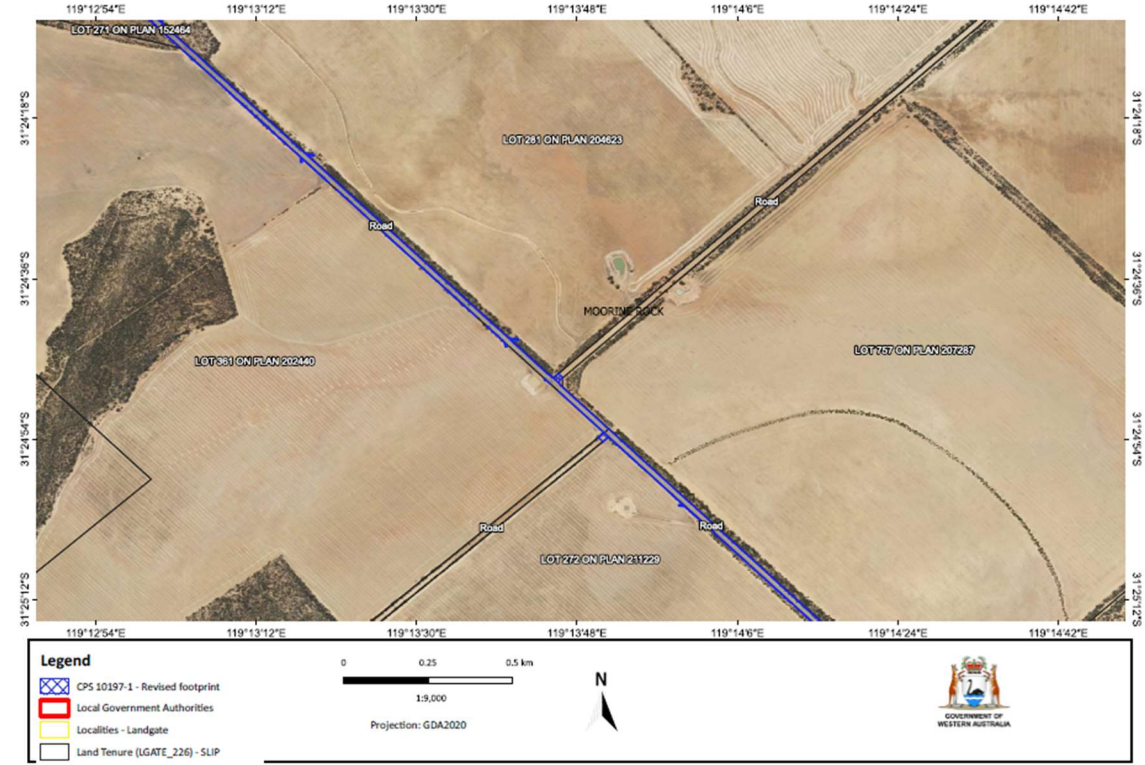
CPS 10197/1 - Revised - Map D



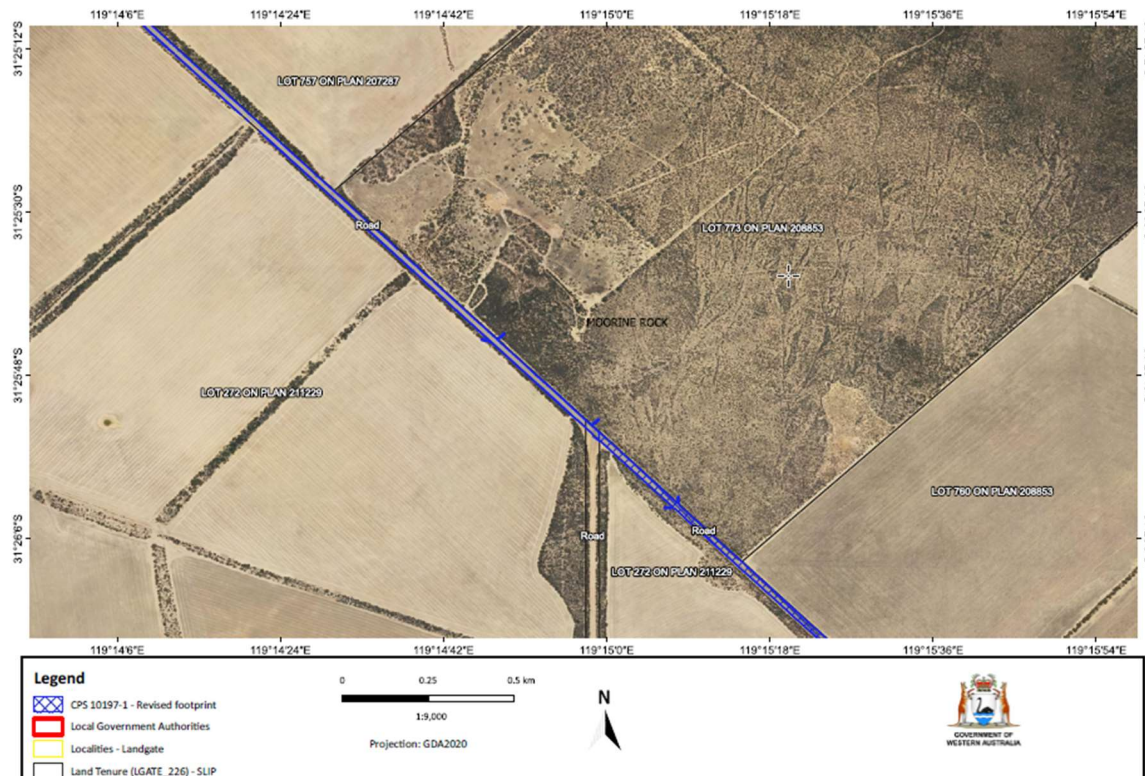
CPS 10197/1 - Revised - Map E



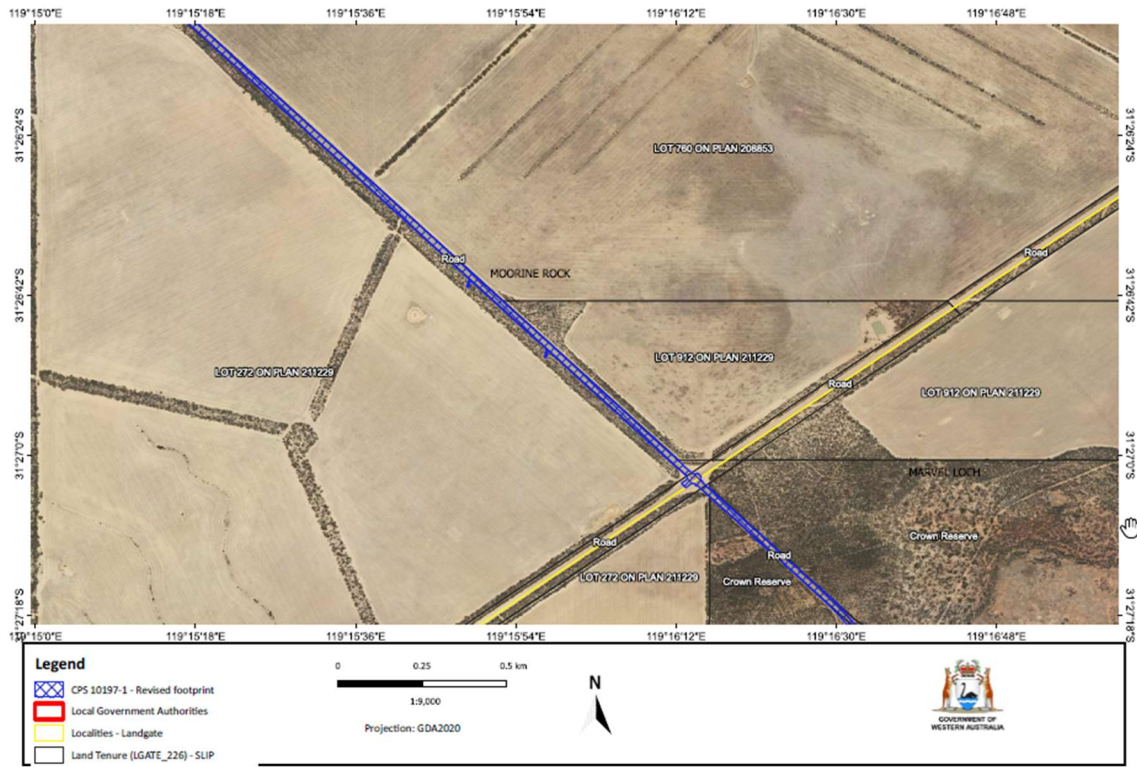
CPS 10197/1 - Revised - Map F



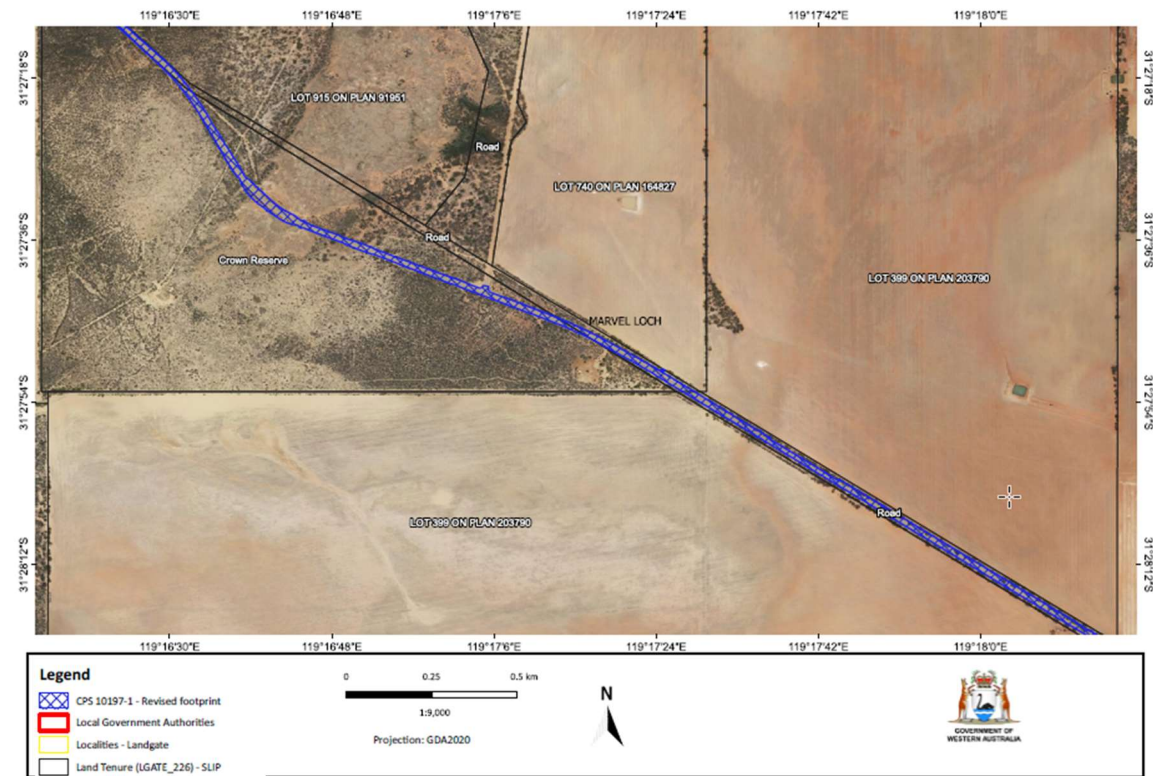
CPS 10197/1 - Revised - Map G



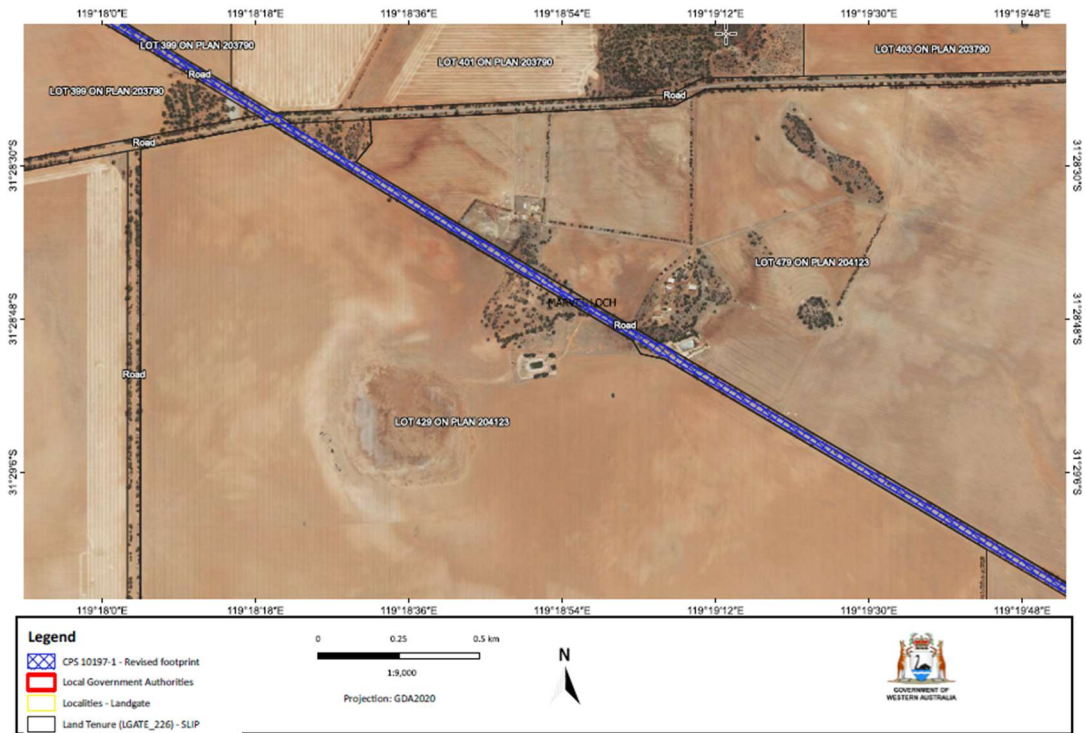
CPS 10197/1 - Revised - Map H



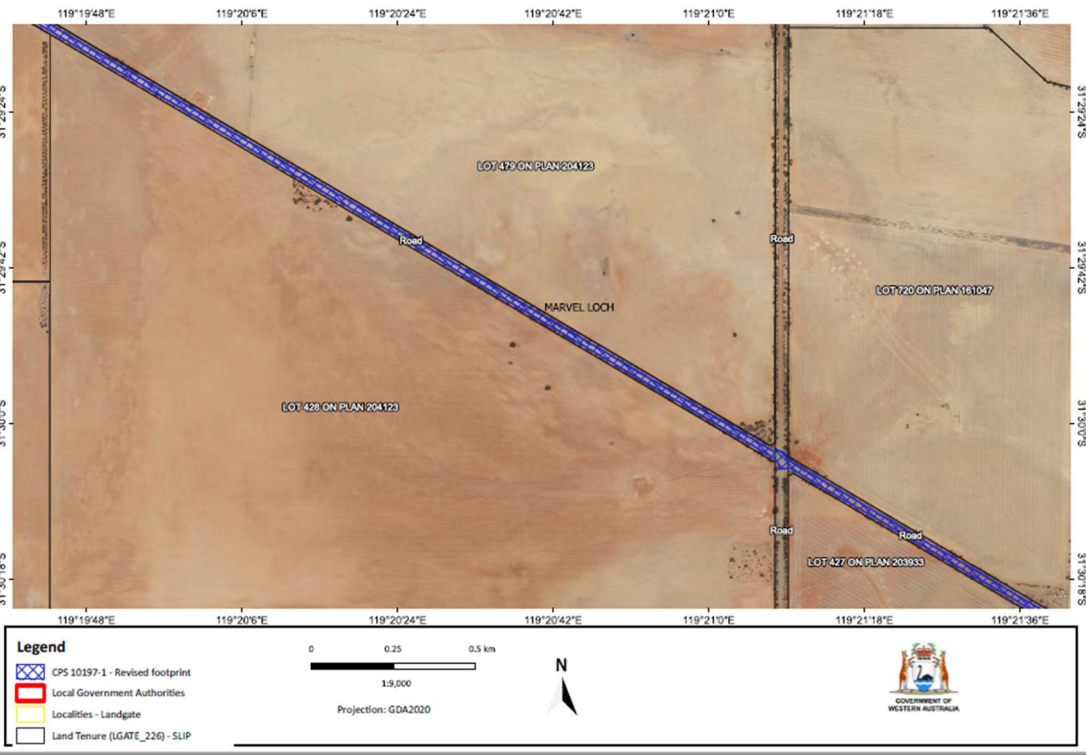
CPS 10197/1 - Revised - Map I



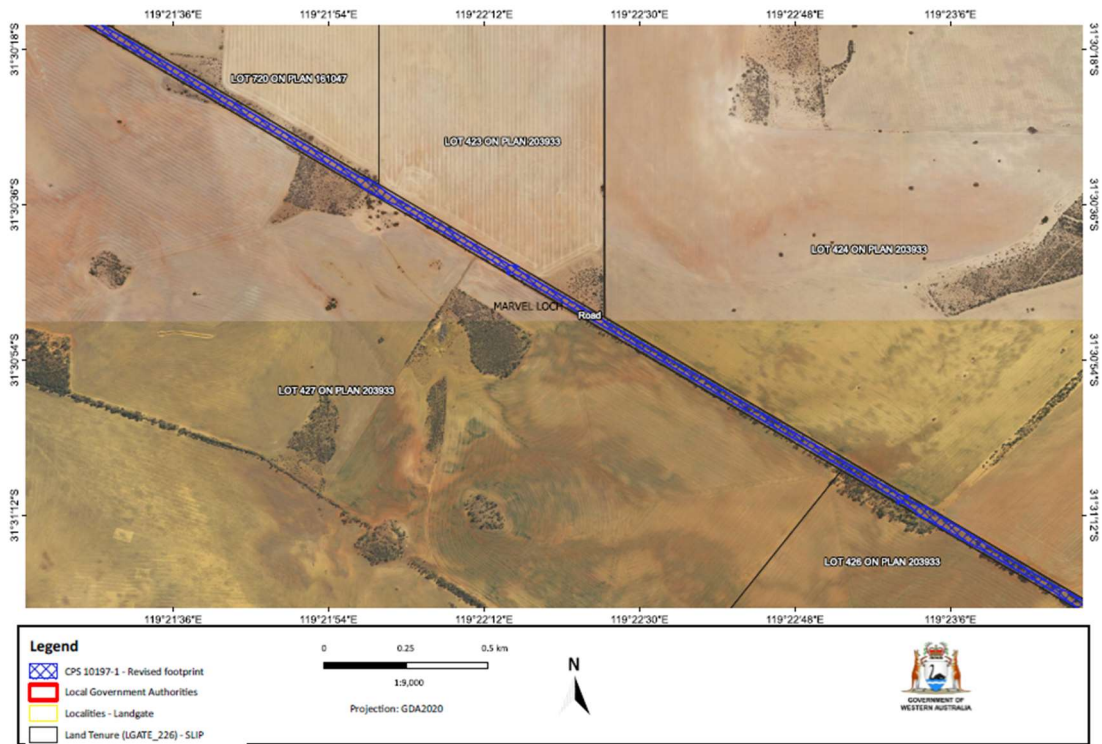
CPS 10197/1 - Revised - Map J



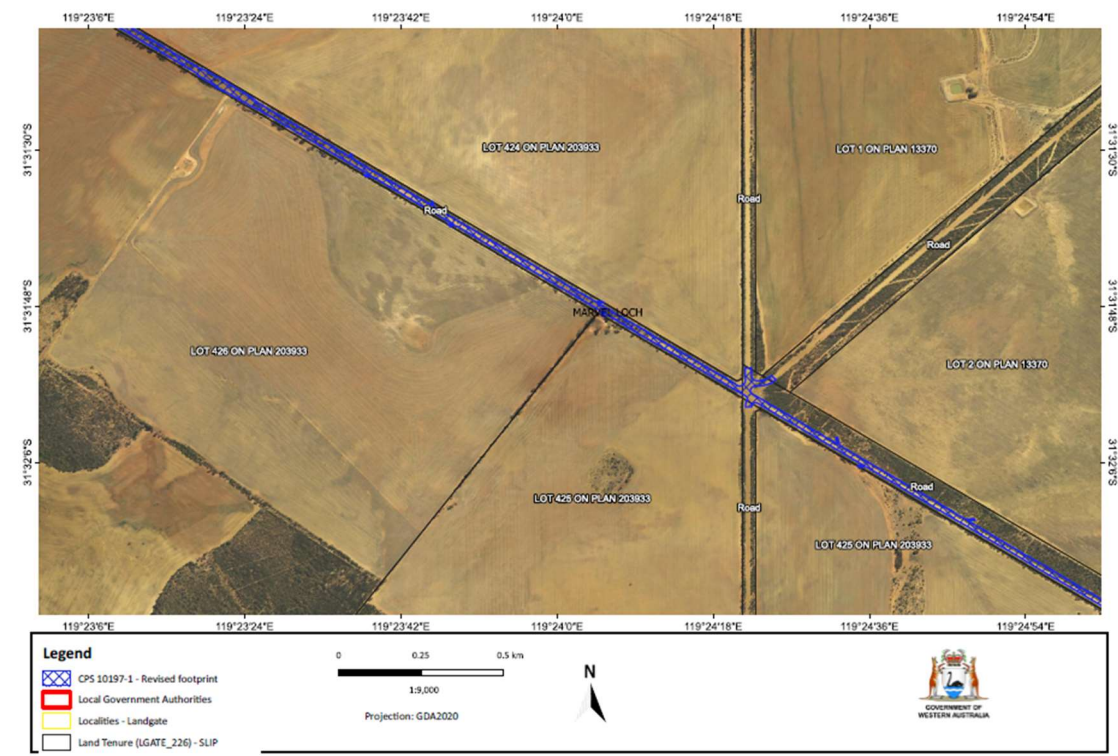
CPS 10197/1 - Revised - Map K



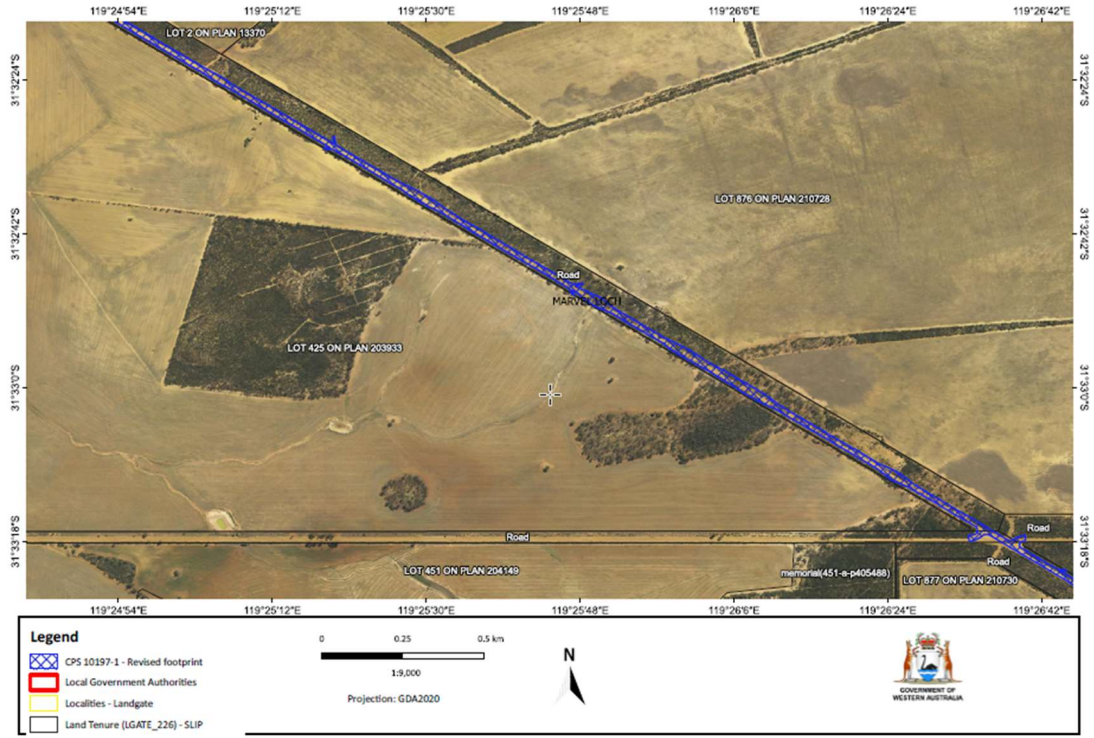
CPS 10197/1 - Revised - Map L



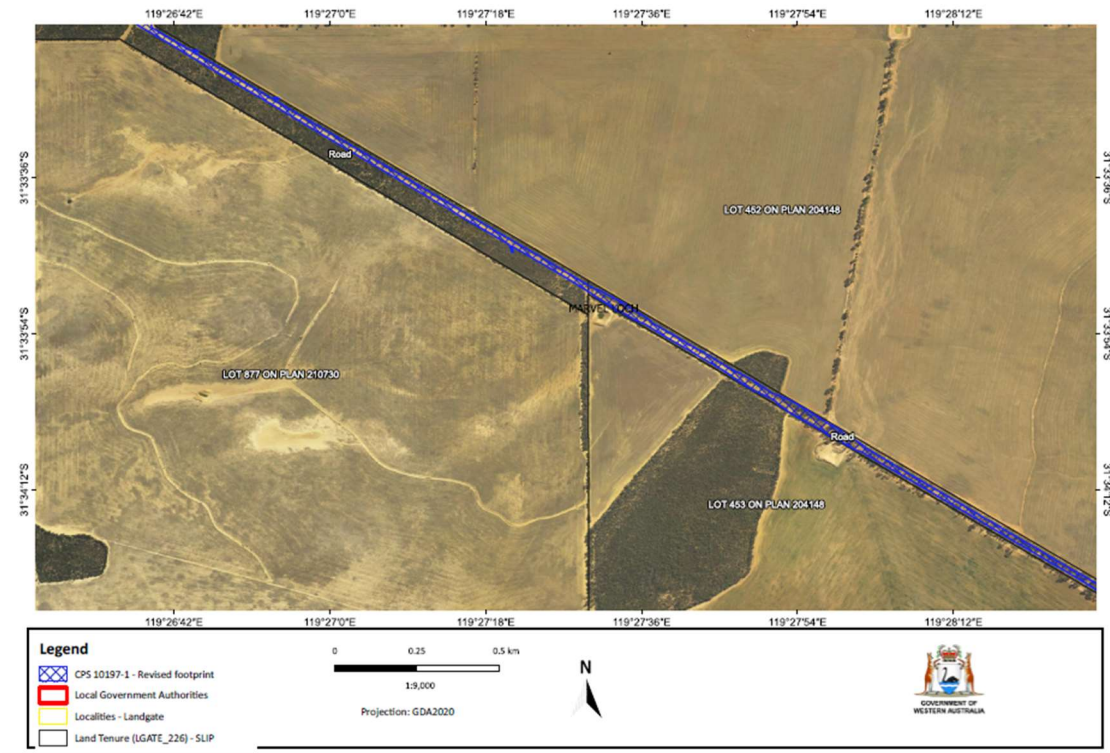
CPS 10197/1 - Revised - Map M



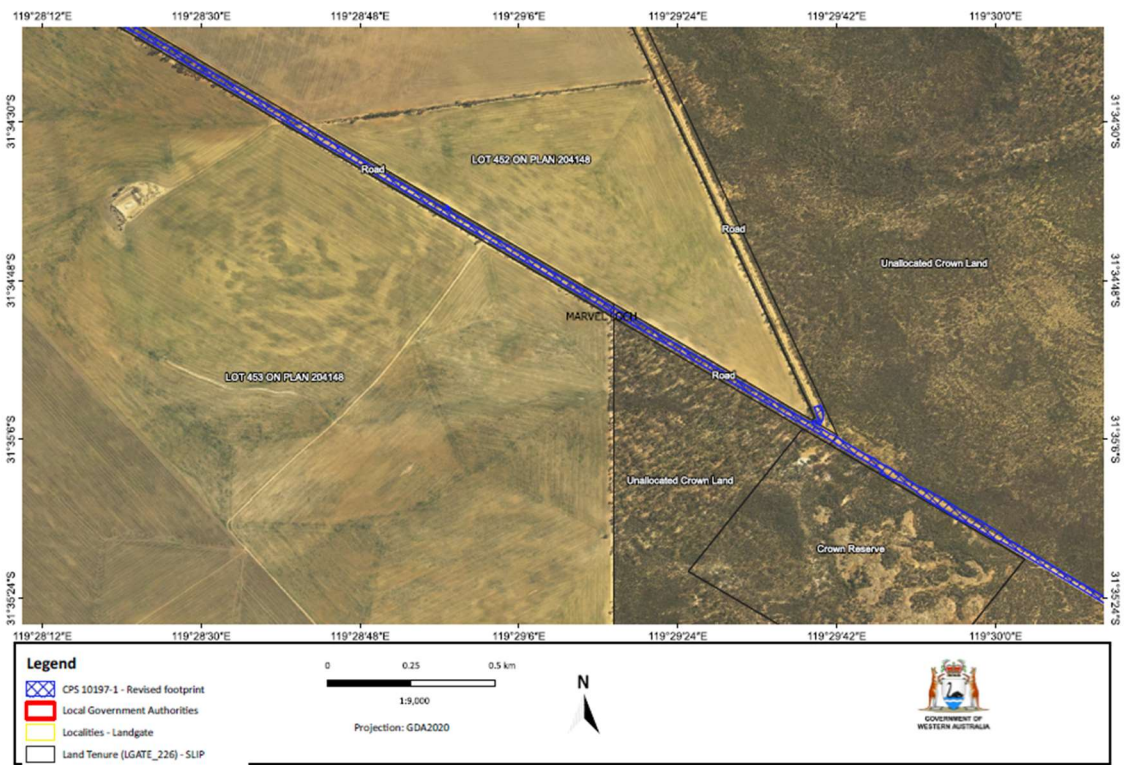
CPS 10197/1 - Revised - Map N



CPS 10197/1 - Revised - Map O



CPS 10197/1 - Revised - Map P



CPS 10197/1 - Revised - Map Q

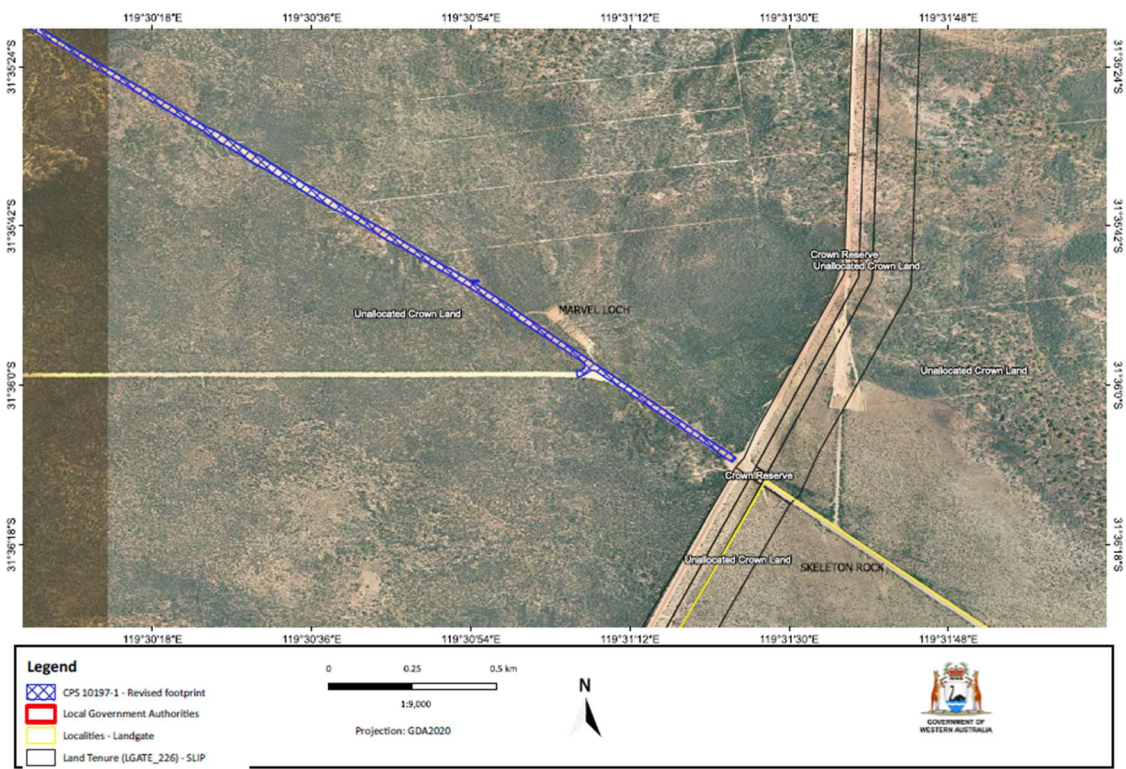


Figure 1 Maps of the application area

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)
- *Rights in Water and Irrigation Act 1914* (RIWI Act)

The key guidance documents which inform this assessment are:

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

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

The applicant advised that the road alignment was designed to avoid and minimise clearing and impact on environmental values. The original application was for the clearing of 11.13 hectares of native vegetation within a 64.64 hectare clearing footprint. During assessment, upon advice from DWER, the applicant reduced the extent of the proposed clearing and clearing footprint to avoid and minimise impacts on environmental values (Covalent Lithium, 2023a;2023c). With the current road alignment and proposed actual clearing area as reflected in the Permit, the applicant has avoided clearing of several priority flora species and individuals. The applicant advised that further reduction in the clearing area is not advisable as it may result in the failure to meet the standards required by the Shire, Main Roads and Austroads (Covalent Lithium, 2023a).

The Delegated Officer acknowledges that in addition to the search for and identification of priority and threatened flora species over the application area, the applicant has surveyed for and provided information on flora SOI. The applicant is committed to demarcate the clearing area to avoid inadvertent clearing of native vegetation and conservation significant flora species, including flora SOI nearby (Covalent Lithium, 2023a; 2023b; 2023c, 2023d).

To address the potential dust disposition during clearing, the applicant has committed to apply mitigation measures including watering of the area during high dust loads and limiting vehicles speed (Covalent Lithium, 2023d).

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. In assessing the impacts of this clearing on environmental values, particularly priority flora, vegetation and biodiversity, DWER considered not only the impacts from this clearing application but also cumulatively in conjunction with the other clearing permit applications (CPS 10049/1 and CPS 10265/1) proposed for the project.

The assessment against the clearing principles (Appendix C) identified that the impacts of the proposed clearing present a risk to priority flora and flora species of interests, biodiversity, priority ecological community, fauna and land 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. Biological values – Biodiversity, Flora, Significant remnant vegetation association, and Priority Ecological communities – Clearing Principles (a), (c) and (e)

Assessment

Surveys over the application area and surrounds identified that the vegetation in the area comprises of several eucalypt -dominated vegetation associations and shrublands vegetation associations (Western Botanical, 2023a, 2023b). Twelve structural groups of vegetation associations were recognised within the Study Area. These can be grouped into three super-groups: those dominated by tall eucalypts in the upper stratum (Tall eucalypt Woodlands), those dominated by mallees in the upper stratum (Mallee Shrublands); and those dominated by a wide range of other tall to low shrubs excluding eucalypts (Shrublands).

The majority of vegetation within the CPS 10197/1 application area is in Good to Excellent condition (Keighery, 1994), with small, isolated and disjunct portions being subject to historical or current mining or borrow pit operations. The types of vegetation and associated excellent condition is typical of the local area and region. The vegetation supports a vast array of conservation significant flora species and ecological communities. Surveys over the application area footprint identified the occurrence of one (1) Priority1, one (1) Priority2, eight (8) Priority 3, and one (1) Priority 4 flora species. Additionally, the survey also identified seven (7) flora SOI from the application area. Many of the SOIs still require further analysis to fully identify their taxonomic identities. Of the flora identified in the footprint, one (1) Priority 1, one (1) Priority 2, eight (8) Priority 3, one (1) Priority 4 flora species and five SOI flora species are identified within the area proposed to be cleared. These conservation significant flora species are also identified outside of the clearing footprint proposed for this permit and others proposed in conjunction with the proposed road works. The complete record of these flora is provided in Appendix B3. Threatened flora species were also identified during the survey, although none occurs within this proposed clearing footprint and areas of actual clearing.

The application area and surrounds also support TECs and PECs, although the proposed clearing area does not contain vegetation that meets the characteristics and threshold criteria for a TEC (discussed in Section 3.2.2) or PEC. The application area and surrounds has been identified as containing vegetation types that would provide suitable habitats for conservation significant species (discussed in Section 3.2.3).

Given the above, the application area and surrounds is considered to have a high level of biodiversity. Clearing associated with this application and cumulatively in conjunction with the other two clearing applications for the road project may reduce the biodiversity and impact on it. The level of impacts of clearing on biodiversity will depend on the level of impact on each species, community and habitat that comprise the biodiversity, as discussed below.

The assessment of impacts of the proposed removal of the flora species is based on the significance of the removal within the local, regional and species conservation contexts. To completely assess the impact of removal of the conservation significant flora species, the Department sought advice from DBCA (2023a; 2023b). While acknowledging that several conservation significant flora species will be removed with the proposed clearing, assessment is emphasised on species that would comprise larger impacts to the population, and species that are considered less known. The extent of impact as percentage of the removed individuals to the known population for each flora species is provided in Appendix B3.

Chamelaucium sp. Parker Range (B.H. Smith 1255) (P1) – is a conspicuous shrub with a restricted distribution in three general areas spread across approximately 200 km north south to 250 km east west in the Coolgardie, Kondinin and Yilgarn local government areas. Considering the proposed clearing will only directly impact two out of three individuals within the footprint (0.008 % of the recorded population), and that 36,911 individuals have been recorded outside of the application area, it is unlikely the proposed clearing will have a significant impact on the local or conservation status of this species. It is noted that the road works covered under all three clearing permit applications (CPS 10049/1, CPS 10197/1 and CPS 10265/1) will cumulatively remove 569 individuals or 1.54% of the total known population, however the cumulative impact remains low. Further impact of clearing on individuals nearby can be prevented and mitigated by demarcating the clearing area.

Melaleuca grieviana (P1) is a compact shrub, generally found on the edge of crop paddocks. It extends over a range of 110 km north to south and 130 km east to west from 11 WA herbarium records (DBCA, 2023a). *M. grieviana* is not identified within the proposed actual clearing areas nor the clearing footprint. It will not be directly impacted by the proposed clearing. Many of the 2,613 individuals identified in the local area during the survey (Western Botanical, 2023b; Covalent 2023d) are in proximity with the proposed clearing. The proposed clearing may result in secondary impacts to this species. Management measures can minimise the potential impacts on individuals nearby.

Eutaxia lasiocalyx (P2) is a low, spreading, multi-stemmed shrub, occurring in red sandy loam, laterite and quartz gravel on gentle lower slopes. It is restricted to the Marvel Loch/Forrestania areas in a narrow range of 90 km north

south and 35 km east west (approximately three locations). The application area contains four individuals which will be removed by the proposed clearing. Another individual will also be removed under CPS 10049/1. Noting that a total of 185,163 have been identified within the local area, the removal of a total of 5 individuals (0.002% of total known population) is not considered significant locally and regionally. Secondary impact of clearing, however, may affect the many individuals occurring in proximity with the clearing areas. The application area is at the northern extent for this species so the loss of individuals will reduce this species' currently known extent of occurrence. Demarcation of the clearing areas and dust control measures can minimise the indirect impacts on the population nearby.

Eucalyptus exigua (P3) is a mallee which has been recorded over a range of 155 km north south and 150 km east west from approximately 14 locations (Yilgarn, Southern Cross and Norseman areas). The clearing footprint recorded 12 individuals, four of which occur within the actual clearing area and will be removed. A total of 263 individuals are identified in the local area during the Western Botanical survey (2023b). The impact of the removal of four individuals (1.52% of total known population) is not considered high at the local level, especially considering *E. exigua* is known to occur across a large range. The works are unlikely to significantly impact the conservation status of the species (DBCA, 2023a).

Hakea pendens (P3) is a shrub which occurs on stony loam and ironstone ridges, extending over approximately eight locations in the Yilgarn and Norseman areas, 100 km north south and 100 km east west. As the application area is located at the western extent of the species distribution, this population is considered important to the species range. A total of 10,801 individuals have been recorded in the region. The application area contains 22 individuals, all of which will be removed by the clearing. Additionally, 200 individuals will be removed under CPS 10049/1 and CPS 10265. The removal of individuals from the proposed clearing area and cumulatively comprise of 0.20% and 1.96% of the total population respectively, which are considered low. DBCA (2023a) advised that this species should persist in the area and may regenerate well in disturbed areas. The proposed clearing is unlikely to be significant at the species level.

Rinzia triplex (P3) is a shrub which occurs on gravelly or lateritic soils, extending from the Die Hardy Range area, north of Koolyanobbing, south to the Southern Cross (160 km east west and 300 km north south, approximately eight locations). The application area contains 60 *R. triplex* individuals, 54 of which lie within the actual clearing area and will be removed. An additional 37 individuals will be removed under CPS 10265/1. A total of 15,224 individuals have been identified within the region. The removal of individuals from the application area and cumulatively from the entire roadworks comprise of 0.35 % and 0.60% of the total known population respectively. The proposed clearing is considered unlikely to have a significant impact on the species at a local level or on the conservation status of the species.

The remainder of the priority flora species recorded within the broader clearing footprint are not proposed to be impacted by the actual clearing area. Impacts are expected to be minimal and not significant (Appendix B3).

Many of the SOI identified by Western Botanical are considered to be well represented within the WAHERB collection but have not yet been recognised taxonomically to date (Western Botanical 2023a; 2023b; 2023c; Covalent, 2023d). Many of the SOI specimens identified to date have been observed outside of the proposed clearing area in adjacent similar vegetation types and is not likely to be significantly impacted (Appendix B3).

Plant Assemblages of the Parker Range PEC

The southern part of the application area lies within the buffer of the Plant Assemblages of the Parker Range System Priority 3 PEC. The vegetation of the Parker Range system, as originally described in Beard (1979), includes all the vegetation units of the range including: *Eucalyptus sheathiana* with *E. transcontinentalis* and/or *E. eremophila* woodland on sandy soils at the base of ridges and low rises; *E. longicornis* with *E. corrugata* and *E. salubris* or *E. myriadena* woodland on broad flats; *E. salmonophloia* and *E. salubris* woodland on broad flats; *Allocasuarina acutivalvis* and *A. corniculata* on deeper sandy soils of lateritic ridges; *E. capillosa* subsp. *polyclada* and/or *E. loxophleba* over *Hakea pendens* thicket on skeletal soils on ridges (laterites, breakaways and massive gossanous caps); and *Callitris columellaris* low open woodland on massive greenstone ridges (vegetation units as described in Gibson and Lyons 1998). Survey over the application area and other proposed clearing areas has identified the occurrence of 48.90 ha of the PEC in the study area, including within the proposed clearing areas under CPS 10049/1 and CPS 10265/1. The PEC, however, does not occur within the proposed clearing area and footprint of CPS 10197/1 (Western Botanical, 2023a; 2023b; 2023c, Covalent, 2023b, 2023c). The proposed clearing, therefore, will not directly impact the PEC. Indirect impact of clearing, however, may affect the PEC nearby. This can be managed by the implementation of weed and land management measures.

The vegetation in the area is mapped at the association level. Three vegetation associations (VA) are mapped over the application area, which includes VA 8 whose current extent of cover is below the National Target of a minimum

30 per cent. Being described only at the association level, the mapping of VA 8 is described broadly as vegetation that is occurring in the Wheatbelt region and comprising mostly of York gum and salmon gum etc. (*Eucalyptus loxophleba*, *E. salmonophloia*). Some of the tall eucalypt woodland vegetation type described by the survey is likely to comprise the mapped VA 8 vegetation. It can also be inferred that the Wheatbelt Woodlands TEC mapped in the area would coincide with the VA 8 vegetation type. Given that no Wheatbelt Woodlands TEC will be affected by the clearing (discussed in Section 3.2.3), impact on the vegetation association VA 8 is unlikely to be significant. Clearing is unlikely to significantly reduce the extent of the vegetation association.

Conclusion:

Given the above, the proposed clearing is unlikely to significantly impact on the conservation values of conservation significant flora species and the PECs occurring within the local area. Clearing is unlikely to reduce the biodiversity of the local area or significantly impact the region. The potential impacts on the values can be mitigated by implementing management conditions to the Permit.

Conditions:

To address the potential impacts on the values identified above, the following conditions are imposed on the permit:

- Demarcation of clearing area to avoid inadvertent clearing of nearby native vegetation, conservation significant flora and PEC
- Implementation of weed management
- Implementation of land management including dust control

3.2.2. Biological value – Fauna – Clearing Principle (b)

Assessment

Nine conservation significant fauna species have been recorded from the local area, three of which are considered unlikely to occur over the application area for unavailability of suitable habitat or for being historical records. The records are summarised in Appendix B4. The most frequent and recent records are of Chuditch (*Dasyurus geoffroii*) and *Leipoa ocellata* (malleefowl) which occur mostly within the Eucalypt Woodlands identified as the TEC and PEC south of the application area (Figure 3).

A basic and targeted terrestrial fauna survey along the proposed road works was conducted in March and April 2022 in support of the application (Ecoscape, 2022). The survey was to delineate fauna habitats, obtain knowledge on the likely fauna assemblage and focus on identifying the presence/absence and suitable habitat of conservation significant listed species identified during the desktop assessment. The survey identified four broad vertebrate fauna habitat types: Eucalypt Woodland, Shrubland, Regrowth and Seasonal Marsh/Wetland. Both the Eucalypt Woodland (367.77 ha) and the Shrubland (1312.62 ha) provide habitat for most species in the area and made up the largest part of the survey area, with the Regrowth (5.76 ha) and Seasonal Marsh/Wetland (0.43 ha) being less common. These habitat types recorded during the survey are considered to be well represented outside the survey areas.

The habitat types available were identified as having the potential to support Chuditch (*Dasyurus geoffroii*), Inland Western Rosella (*Platycercus icterotis xanthogenys*), Central Long-eared Bat (*Nyctophilus major tor*), Rainbow Bee-eater (*Merops ornatus*), Western Brush Wallaby (*Notamacropus irma*) and Lake Cronin Snake (*Paroplocephalus atriceps*). Where the woodland is interspersed with Mallee, *Allocasuarina* and *Acacia* species, it may also support Malleefowl (*Leipoa ocellata*). Eucalypt woodland also provides nesting habitat for small birds where the understorey is dense. In this habitat, the reptile assemblage is likely to vary depending upon the substrate type (e.g. clay, sand etc) and the litter cover.

Based on the likelihood of occurrence and the availability of habitats (Ecoscape, 2022), the assessment of potential impacts of clearing on conservation significant fauna is focused on the following fauna species.

Chuditch (*Dasyurus geoffroii*)

Chuditch require adequate numbers of suitable den and refuge sites (hollow logs or earth burrows) and sufficient prey biomass (large invertebrates, reptiles, and small mammals) to survive. They can travel long distances and have large home ranges (15 km² for males and 3-4 km² for females), and even at their most abundant, Chuditch are generally solitary animals for most of their life (DEC, Chuditch Recovery Plan, 2012). For this reason, they require habitats that are of a suitable size and not excessively fragmented (Ecoscape, 2022). The vegetation on either side of the road at the northern portion of the application area is mostly narrow and in degraded condition that is unlikely to provide habitat for chuditch. The vegetation at the southern part of the application area, however, may provide suitable habitat for chuditch. Despite the availability of suitable habitat, chuditch was not identified during the survey. The fauna species, however, had been identified in the same area in previous surveys by Ecoscape including in 2016 and 2017 (Ecoscape, 2022) that despite its current absence, it is determined to be known in the area.

While it is possible for chuditch to inhabit the tall eucalypt woodlands on either side of the road, particularly in the southern part, the road alignment is unlikely to comprise significant habitat for the species. The minimal clearing of vegetation along the road is unlikely to impact on the maintenance and conservation of Chuditch.

Leipoa ocellata (malleefowl)

Malleefowl has been recorded in the local area in abundance. At least 78 records of malleefowl are known from within a 20 km radius of the application area, most of which are concentrated in the reserve south of the proposed road alignment (Figure 2). The National Malleefowl Recovery Plan states that this fauna species is found principally in the semi-arid to arid zone in shrublands and low woodlands dominated by mallee (Frith 1962a) and associated habitats (Malleefowl Recovery Plan, 2015) such as Broombush (*Melaleuca uncinata*) (Woinarski 1989a; Woinarski 1989b) and Scrub Pine (*Callitris verrucosa*). In Western Australia they are also found in some shrublands dominated by acacia, and occasionally in woodlands dominated by eucalypts such as Wandoo (*E. wandoo*), Marri (*Corymbia calophylla*) and Mallet (*E. astringens*) (Benshemesh, 2007). The *National Recovery Plan for Malleefowl Leipoa ocellata* notes that habitat loss has been and continues to be the major factor in the decline of malleefowl in southern Australia. Habitat fragmentation and isolation and predation are also listed as major threats to malleefowl.

The Eucalypt woodlands within the application area represent the typical habitat of the fauna species. Suitable Malleefowl habitat was found throughout the survey area, and it is highly likely that this species is widely distributed through this habitat (Ecoscape, 2022). Two malleefowl mounds were identified approximately 2.6 km south east of the footprint perimeters in the most recent survey (Ecoscape, 2022). One of the mounds showed recent activity, and the other was old. The mound with recent activity was located directly adjacent to a recently cleared track.

This indicates that malleefowl may use the area for breeding (indicated by the presence of mounds) and for foraging and that malleefowl can inhabit disturbed land. The high number of malleefowl records in the local area and the relatively even distribution of the records across the landscape indicate that the population is not presently restricted to certain areas. Given that suitable habitat for malleefowl is available in abundance in the area and the absence of mounds along the road reserve, the road alignment where the clearing is proposed for is unlikely to comprise critical habitat for malleefowl. However, clearing may still impact on the fauna if any individuals are present at clearing. Slow and directional clearing can mitigate the potential impact on malleefowl individuals present at the time of clearing.

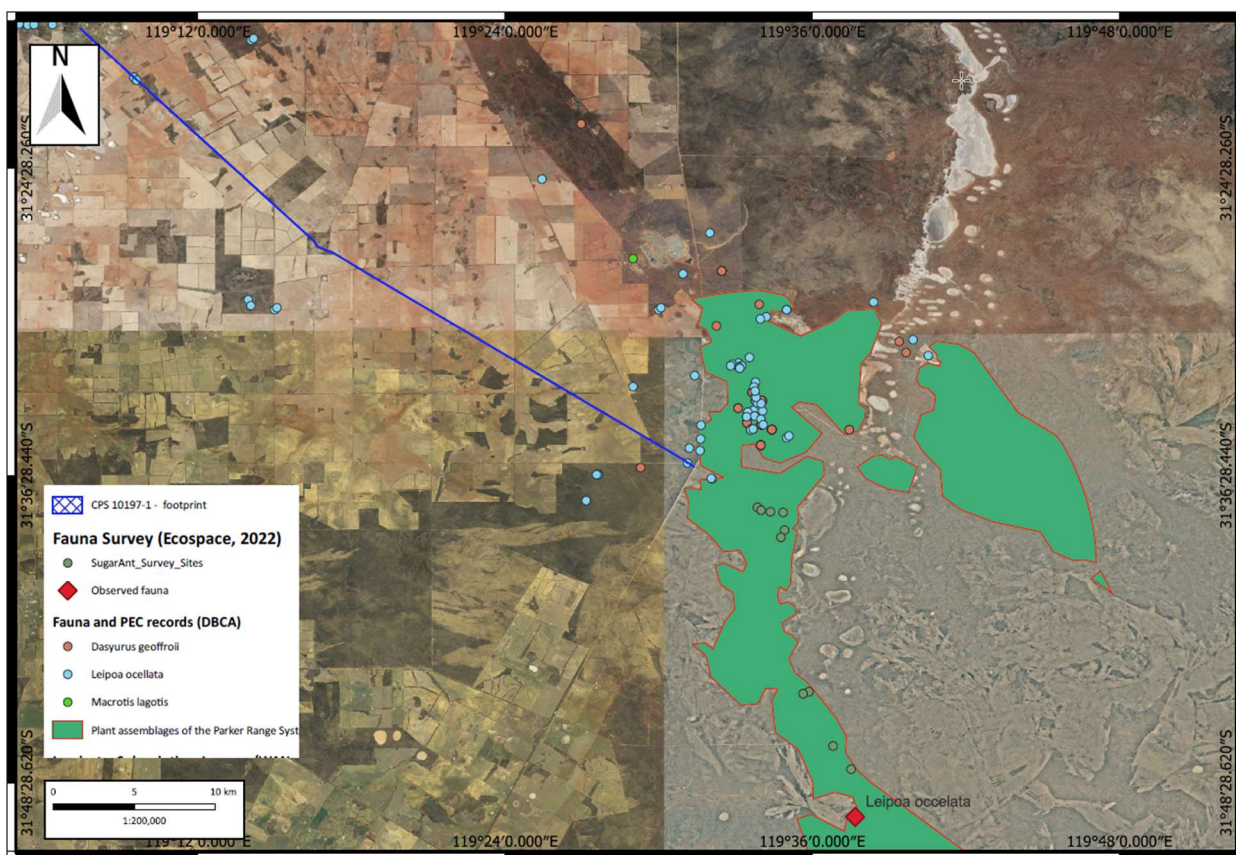


Figure 2. Records of conservation significant fauna species in the local area (DBCA, 2023) and the location of observed fauna (Ecoscape, 2022).

Western Brush Wallaby (*Notamacropus irma*)

Available database shows four (4) records of Western Brush Wallaby's (P4) in the local area. The optimum habitat for the fauna is open forest or woodland, particularly favouring open, seasonally wet flats with low grasses and open scrubby thickets. It is also found in some areas of mallee and heathland and is uncommon in karri forest (Van Dyck & Strahan 2008). Suitable habitat for Western Brush Wallaby is found throughout Ecoscape's (2022) survey area (1680.39 ha). One Western Brush Wallaby was recorded on a camera trap and multiple scats were found during the field survey. This, in addition to an estimated home range of 32.5 to 69.2 ha (Bamford, Inglis & Watson 2009), indicates that the local area likely supports a resident population of an unknown number of individuals. The roadworks alignment, however, is unlikely to comprise critical habitat for the fauna species. Clearing of limited patches of vegetation along the road is unlikely to have significant impacts on the viability and conservation of the fauna species. Impacts on any individual present at clearing can be avoided by conducting clearing in slow and directional manner to allow for any individual present to move to adjacent vegetation ahead of clearing.

Arid Bronze Azure Butterfly (ABAB) (*Ogyris subterrestris petrina*)

A targeted fauna survey was conducted to identify ABAB (Critically Endangered) and the associated sugar (*Camponotus*) ants within the application area and surrounds (Ecoscape, 2022). The sugar ant is the host species of ABAB. In order to maintain this association, the ABAB requires large colonies of the sugar ants. The preferred habitat for the ants and ABAB includes smooth-barked eucalypts, which are present in the Eucalypt woodlands surrounding the application area.

Despite being widespread, the sugar ant is uncommon and (as of 2020) only three large colonies and several small colonies are known to occur, with the ABAB occurring at two of the large colonies, which are over 50 km from the survey area. The habitat at these two large colonies is mature mixed Gimlet *Eucalypt salubris* and Salmon Gum *Eucalypt salmonophloia* woodland on red-brown loam soils, with an open understorey. The fauna survey (Ecoscape, 2022) detected the ants at two single trees out of the 100 trees sampled along the road alignment, suggesting a low density of colonies, and that it is unlikely for ABAB to occur in the application area. Given the above, the proposed clearing of roadside vegetation is unlikely to impact on the fauna species.

Central Long-eared Bat (*Nyctophilus major tor*) – P4

Central Long-eared Bat is widespread across the arid south of Australia, and although thought to have a population of substantially more than 10,000 individuals, the reliability of this estimate is low (Woinarski, Burbidge & Harrison 2014). Although only known from 15 localities in Western Australia, it is considered locally common in the Coolgardie Bioregion. It occurs in eucalypt woodlands with a tall shrub understorey and around granite outcrops, roosting beneath bark, in tree crevices or in the foliage of trees (DEWHA 2010; Van Dyck & Strahan 2008). The eucalypt woodlands surrounding the application area may comprise such habitat. The Central Long-eared Bat has been previously recorded in the Jilbadji Nature Reserve, which the proposed clearing footprint transects. The fauna survey (Ecoscape, 2022), however, did not identify the fauna species within the survey area despite Ecoscape's assessment that approximately 367 ha of suitable habitat for the bat occurs within the survey area. Given the vastly available suitable habitat surrounding the application area, the vegetation on the road side proposed to be cleared is unlikely to comprise critical habitat for the bats. Avoidance of clearing of hollowed eucalypt trees may further mitigate any potential impact on the fauna species.

Western Rosella (Inland) (*Platycercus icterotis xanthogenys*)

As its name suggests, the Inland Western Rosella (*Platycercus icterotis xanthogenys*) is an inland subspecies of the nominate Western Rosella (*Platycercus icterotis icterotis*). The nominate *icterotis* is found in high rainfall areas in the south west, whereas the inland subspecies (*xanthogenys*), listed as a Priority 4 species by the DBCA, occurs in the drier wheatbelt eucalypt and sheoak woodlands and shrubland, especially those containing Wandoo (*E. wandoo*), Salmon Gum (*E. salmonophloia*), tall mallee and Rock Sheoak (*Allocasuarina huegeliana*) (Higgins, 1999). Western Rosellas nest in a hollow limb or tree trunk, usually one metre or more deep, and breed from August to December. The Eucalypt woodlands surrounding the application area may contain suitable habitat for the bird. The targeted fauna survey over the application area, however, did not identify the presence of Western Rosella at the time of the survey. The vegetation proposed to be cleared along the application area may contain suitable habitat for Inland Rosella, however, within the context of the large woodlands surrounding it, and the widespread distribution of the bird, it is unlikely to constitute critical habitat for the bird (Ecoscape, 2022). Clearing is unlikely to impact on the habitat values of surrounding vegetation and the conservation of the Inland Western Rosella.

Conclusion:

The vegetation within the application area and surrounds may contain suitable habitat for conservation significant fauna. However, the application area does not comprise significant or critical habitat for the fauna species recorded within the local area. Clearing of patches of vegetation scattered over the large linear footprint of more than 50 km is

unlikely to impact on the survival, maintenance, and conservation of the fauna species. Potential impact on any fauna individuals that may be present during clearing can be mitigated by conducting clearing in slow and directional manner to allow any fauna individual present to move to adjacent vegetation ahead of clearing. This is placed as a management condition to the Permit.

Condition:

To address the potential impacts on fauna, the following condition is imposed on the permit:

- Slow clearing in the direction of adjacent vegetation to allow fauna to escape into adjacent native vegetation ahead of the clearing activity.

3.2.3. Biological value – Threatened Ecological Community – Principle (d)

Assessment

The application area is surrounded by vegetation mapped as the Wheatbelt Woodlands TEC.

The Approved Conservation Advice for the Wheatbelt Woodlands TEC described the TEC as vegetation dominated by a complex mosaic of eucalypt species with a tree or mallee form over an understorey that is highly variable in structure and composition. The trees typically are spaced, and the canopy is relatively open. There can be localised variation in vegetation structure as a consequence of disturbance, for instance fire, or change in site characteristics that allows for gaps in tree canopy cover, a higher density of trees e.g. dense sapling regrowth, or change in the nature of the understorey. (Department of the Environment, 2015)

The Wheatbelt Woodlands TEC is endemic to south-western WA. It occupies a transitional zone between the wetter forests associated with the Darling Range and the southwest coast, and the low woodlands, mallee and shrublands of the semi-arid to arid interior. The understorey beneath the woodland tree canopy is highly variable in both structure and composition across the wheatbelt. The highly biodiverse nature of the wheatbelt landscape, where the composition of plant species can vary markedly from patch to patch, means it is difficult to prepare a comprehensive list of plant species for the Wheatbelt Woodlands TEC. The key diagnostic characteristics for the Wheatbelt Woodlands TEC include the following:

- The distribution of the ecological community is limited to these IBRA bioregions and subregions:
 - Avon Wheatbelt - subregions AVW01 Merredin and AVW02 Katanning;
 - Mallee - MAL02 Western Mallee only; and
 - Jarrah Forest – outlying patches in the eastern parts of JAF01 Northern Jarrah Forests and JAF02 Jarrah Forests adjacent to the Avon Wheatbelt, that are off the Darling Range, and
 - receive less than 600 mm mean annual rainfall. They are effectively an extension of the Avon Wheatbelt landscape in that they comprise areas subject to similar climate, landscape and threats.
- The structure of the ecological community is a woodland in which the minimum crown cover of the tree canopy in a mature woodland is 10% (crowns measured as if they are opaque).
- The key species of the tree canopy are species of *Eucalyptus*. The dominant and co dominant tree species *E. salmonphloeia* and *E. loxophleba*
- A native understorey is present but is of variable composition, being a combination of grasses, other herbs and shrubs.

A small proportion of the Northern Study Area, from chainage 0.2 km to 4.7 km and from 7.2 km to 8.2 km (approximately 6.5 km, 13.0%), is represented by narrow roadside remnants of up to approximately 2m wide between the graded road embankment and adjacent farm fence lines. The vegetation contains remnant isolated individual Salmon Gum and Gimlet trees and some small patches of tall eucalypts and smaller mallees with little or no native understorey. These have been mapped as Disturbed and have a vegetation condition rating of Completely Degraded. Due to the extent of clearing and the vegetation condition, the majority of these are not recognised as the Wheatbelt Woodlands TEC (Western Botanical, 2023b).

In other areas, at the southern end of the application area, although narrow, the majority of roadside remnants contain a representative array of understorey flora and few weeds and have been mapped as Good to Excellent vegetation condition rating (Keighery, 1994). The targeted survey performed by Western Botanical (2023b) has identified the adjoining patches of vegetation as the Wheatbelt Woodlands TEC. However, the survey confirmed that vegetation within the road alignment and application area does not meet the key diagnostic characteristics of the Wheatbelt Woodlands TEC (Western Botanical, 2023b, Covalent Lithium 2023b, 2023c).

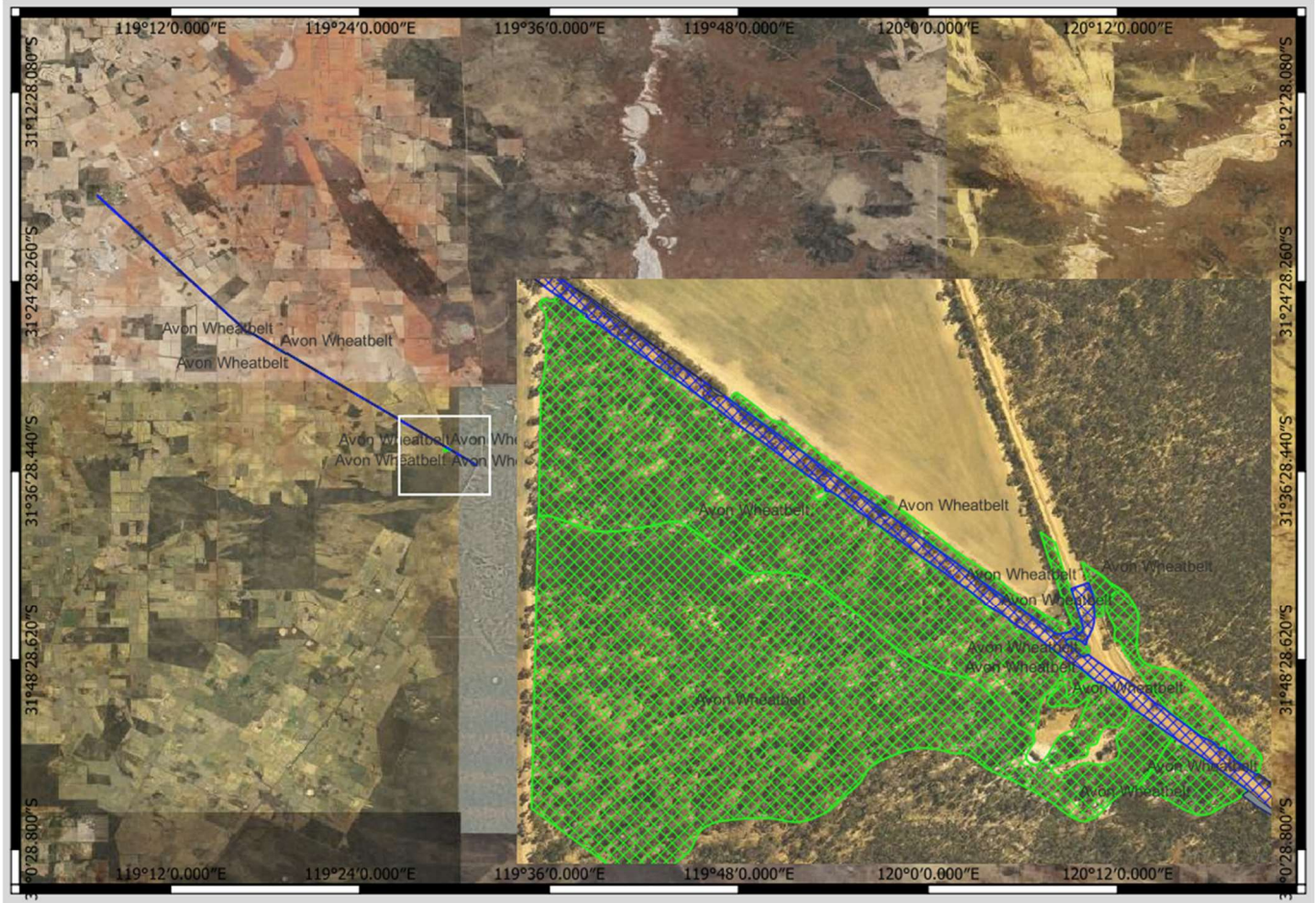


Figure 3. Vegetation adjacent to the application area at the southern end represents the Wheatbelt Woodland TEC. The roadside vegetation within the clearing footprint, however, does not represent the TEC (Western Botanical, 2023b, Covalent, 2023b)

Noting the absence of vegetation that represents the Wheatbelt Woodlands TEC in the application area, the proposed clearing will not directly impact on the Wheatbelt Woodlands TEC or reduce the extent of the Wheatbelt Woodlands TEC. Given the proximity to the Wheatbelt Woodlands TEC, however, clearing and the road works may have indirect impacts on the Wheatbelt Woodlands TEC nearby through the deposition of dust, and the introduction and spread of weed which could decrease the quality and conservation values of the Wheatbelt Woodlands TEC (DBCA, 2023a). To avoid and mitigate these indirect impacts on nearby Wheatbelt Woodlands TEC, the applicant is committed to apply dust management, weed control and demarcation of the clearing area prior to clearing. These are required as conditions in the permit.

Conclusion:

The proposed clearing does not remove vegetation representative of the Wheatbelt Woodlands TEC, however, it may indirectly impact on the condition and values of the Wheatbelt Woodlands TEC nearby through the dispersion and deposition of dust, and spread of weeds. Management measures are required to mitigate this potential indirect impact.

Conditions:

To mitigate the indirect impact on the Wheatbelt Woodlands TEC nearby, the following conditions are imposed on the permit:

- Dust suppression and management
- Weed and dieback control and management.

3.2.4. Land resources – Clearing Principle (g)

Assessment

The sandy and loamy soils over the application area are prone to wind and water erosion when left bare. When rainfall is sufficient, bare ground can be prone to water erosion. Runoff in the area may transport sediments to nearby vegetation including the TEC and PEC which may affect the condition and habitat values of the vegetation. Indiscriminate flows of runoff may also exacerbate the spread of seedbank of weeds. Although the long and narrow configuration of the road may limit the risk of land degradation due to erosion, the cumulative impacts of the entire 116 km long roadworks can be significant. Land management measures including the use of surface drainage can mitigate the potential impacts of clearing due to water erosion. The applicant is committed to construct surface drainage along the road alignment to address the risk of water erosion.

Noting the arid climate of the region and the loose sandy and loamy soils at bare ground, the application area 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. Considering the cumulative extent of clearing and road works associated with this clearing permit application and two others, the dust load can be significant that clearing can increase the risks of dust deposition and land degradation. This may be exacerbated by the longer time required to clear. Limiting the exposure time of cleared area to wind and application of appropriate land management measures during and post clearing can mitigate this impact and avoid any appreciable and long-term land degradation. The applicant is committed to watering the cleared area to suppress dust. Sealing of the road will also reduce dust load in the long run.

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:

- Construction of road side drainage no later than three months after authorised clearing
- Commencement of road works no later than three months after authorised clearing
- Regularly suppress dust through dust management activities

3.3. Relevant planning instruments and other matters

Most of the application area lies within road reserves and unallocated crown land vested to the Shire of Yilgarn. The Shire of Yilgarn has provided authorisation for the proposed clearing on the lands. The northern-most 17.6 km of road overlaps with a section of the Parker Range Road included under Ministerial Statement MS1118.

The Shire, as the applicant, appointed Covalent Lithium as an authorised representative for the clearing permit application (Shire of Yilgarn, 2023b).

The application area is within the Westonia Groundwater Area proclaimed under the RIWI Act. The proposed clearing and road works, however, is unlikely to intercept the ground water nor require abstraction of water that permit or licences under the RIWI Act is not required.

The Department notified the representative of the claimant of the native title (Marlinyu Ghoorlie and Karratjibbin People Claimant Groups) of the clearing application. On 9 June 2023 the representative of Karratjibbin People Claimant Group responded to the notification relevant to the acceptance of CPS 10049/1 by requesting that if a heritage survey was to be performed, the traditional owner of the land be appointed for the survey (Karratjibbin People Claimant Group, 2023). Representative of the applicant, however, had already commissioned Terra Rosa Consulting to perform a heritage survey over the application areas for CPS 10049/1, CPS 10197/1, and CPS 10265/1 in 2022, whose report was provided during assessment.

The heritage survey was undertaken between 11 and 15 October with the endorsement of the Marlinyu Ghoorlie Traditional Owners. It was undertaken by six Marlinyu Ghoorlie representatives and two heritage consultants from Terra Rosa. Two Covalent representatives were also present during this time to support the survey team. Sites of heritage values were identified by the survey. The survey provided advice and direction for the operation of the mine on heritage sites avoidance, which were mostly relevant to the mining operations itself, rather than the existing road. The traditional owners also advised Covalent that all Mallee Fowl nests identified within the survey areas are to be avoided during the course of the proposed works. Any Mallee Fowl nests identified during these works must be

provided with a 20 m buffer of protection. No mallefowl mounds are within the proposed clearing area for CPS 10197/1.

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

DWER request for information and comments	Summary of comments provided by the applicant	Consideration of comment
Evidence of efforts taken to avoid and/or mitigate significant environmental impacts resulting from the proposed clearing. (DWER, 2023a, dated 10 July 2023)	Further avoidance and minimisation measures were exercised to minimise impact on environmental values. Specific actions to reduce the need for clearing associated with these considerations included the redesign of drains to make them shallower thereby reducing footprint, steepened batters to reduce clearing and wherever possible have maintained the road within the cleared corridor; all minimum standards that will avoid further intrusion onto the landscape. Where possible trees will be left if they are in the drain area not impacting the safety aspects of the road. Further avoidance may compromise the standards required by the Shire, Main Roads and Austroads (Covalent, 2023a, dated 27 September 2023)	DWER considered that the applicant has demonstrated efforts to minimise impacts by minimising the footprint and proposed clearing areas.
Clarification of impacts to priority flora species within the application area. Additional avoid, minimise and mitigation measures are required. Further surveys to determine impacts to “species of interest”, TEC and PEC (DWER 2023a, dated 31 August 2023)	Information on priority flora species and SOI was provided. Quadrat locations, data points and shapefiles relevant to conservation significant flora were also provided. Additional targeted survey is underway to provide further information on identity of the SOI.	DWER recognised further avoidance, minimisation and mitigation measures taken by the applicant. Data provided for impacts on conservation significant flora species, including that of SOI were provided to DBCA and incorporated in the assessment.
A flora and vegetation survey, including a TEC assessment, is required for the area proposed to be cleared.	The applicant revised the proposed clearing area and footprint. The revision has resulted in the reduction in the clearing area. Targeted survey was performed to identify the TEC in the application area. The revised clearing footprint has now avoided clearing of the TEC altogether.	DWER acknowledged the revision and applicant’s measures taken to reduce and avoid impacts. DWER concurred with the applicant that no TEC is impacted. The revised application area was re-advertised for 7 days on 16 November 2023.

Appendix B. 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 DWER 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.

B.1. Site characteristics

Characteristic	Details
Local context	<p>The areas proposed to be cleared are located within the Parker Range road reserve within the Shire of Yilgarn, which falls within the Avon Wheatbelt and Coolgardie IBRA regions of Western Australia. The proposed clearing area is surrounded by agricultural land and remnant vegetation.</p> <p>Spatial data indicates the local area (20-kilometre radius from the centre of the area proposed to be cleared) retains approximately 45.86 per cent of the original native vegetation cover.</p>
Ecological linkage	<p>The areas proposed to be cleared may contribute towards fauna dispersal within the landscape due to the extensive clearing that has occurred within the local area, however there are no formal linkages mapped across the proposed clearing area.</p>
Conservation areas	<p>The application area is immediately adjacent to the Jilbadji Nature Reserve.</p>
Vegetation description	<p>The Detailed flora and vegetation survey (Western Botanical, 2023a; 2023b; 2023c) indicates the vegetation within the proposed clearing area and surrounds consists of fifty-one eucalypt-dominated Vegetation Associations and twenty-six Shrubland Vegetation Associations. The survey descriptions are available in Appendix E.</p> <p>This is consistent with the broad Beard mapped vegetation associations (VA):</p> <ul style="list-style-type: none"> • VA 1413 – Wattle, casuarina and teatree <i>Acacia-Allocasuarina-Melaleuca alliance</i>. • VA 8 – Wheatbelt; York gum, salmon gum etc. <i>Eucalyptus loxophleba</i>, <i>E. salmonophloia</i>. • VA 1068 – Goldfields; gimlet, redwood etc. <i>E. salubris</i>, <i>E. oleosa</i>. Riverine; rivergum <i>E. camaldulensis</i>; <p>The mapped vegetation associations retain approximately 98, 14 and 50 per cent of the original extent respectively (Government of Western Australia, 2019).</p> <p>The remnant vegetation within 20 km radius of the application area retains approximately 45.86 per cent of the original extent (Government of Western Australia, 2019).</p>
Vegetation condition	<p>The northern end of the application area comprises of roadside vegetation mapped in a Degraded condition (Keighery, 1994). The vegetation in the southern half of the application, although narrow, only has limited extent of weeds and contains vegetation in Good to Excellent condition (Keighery, 1994) (Western Botanical, 2023b).</p> <p>The full Keighery (1994) condition rating scale is provided in Appendix D. The full survey descriptions and mapping are available in 0.</p>
Climate and landform	<p>The Study Area is in a semi-arid (dry) warm Mediterranean climate (Beecham, 2001). Average annual rainfall is 292.8 mm, as recorded at the Bureau of Meteorology (BoM) Southern Cross station. Average monthly rainfall peaks from late autumn throughout winter (May– August), with the highest average rainfall occurring in June (40.7 mm). Mean maximum daily temperatures range from 16.3 °C in July to 34.5 °C in January with mean minimum temperatures ranging from 4.4 °C in July to 14.2 °C in January/February (BoM, 2023 in Western Botanical, 2023b).</p>
Soil description	<p>The dominant soil systems mapped by the Department of Primary Industries and Regional Development (DPIRD) over the application area include (Western Botanical, 2023b):</p> <ul style="list-style-type: none"> • Kellerberrin system: Valley floors, in the central Zone of Ancient Drainage, with alkaline red shallow loamy duplex, alkaline grey sandy duplexes mainly in branch valleys (shallow and deep), calcareous loamy earth and hard cracking clay. Salmon Gum-Gimlet-Wandoo

Characteristic	Details
	<ul style="list-style-type: none"> Woodlands. Wadderin system: Gently undulating rises on mixed gniessic terrain largely stripped of lateritic mantles with sandy duplexes and some sands and gravels, vegetated by Mallee and Kwongan heath. Greenmount System: Gently undulating rises to rolling low hills in the eastern Zone of Ancient Drainage. Loamy earth (mostly red, calcareous and clayey and stoney). Tandegin System: Sandplain dominated interfluves with weakly indurated lateritised crests and upper slopes and long colluvial yellow sandplain upper to lower slopes. Unlateritised surfaces dominated by sodic and alkaline duplex soils. AC1 System: Gently sloping to gently undulating plateau areas, or uplands, on granites, gneisses, and allied rocks, with long gentle slopes and, in places, abrupt erosional scarps.
Land degradation risk	Moderate to high risk of wind erosion, portion has a moderate to high risk of waterlogging, high risk of subsurface acidification, low risk water erosion and phosphorus export and salinity risk.
Waterbodies	The application area intersects several nonperennial minor tributary of the Yilgarn River.
Hydrogeography	The application area is within the Avon River Basin in the Swan Avon/Yilgarn hydrographic catchment. The northern end of the application area is mapped as having highly saline ground water (>35,000 mg/L). The application area is located within the Westonia Groundwater Area proclaimed under the RIWI Act.
Flora	Survey over the application area (footprint) identified the occurrence of one (1) Priority1, one (1) Priority2, eight (8) Priority 3, and one (1) Priority 4 flora species. Additionally, the survey also identified seven (7) flora species of interest (SOI) from the application area.
Ecological communities	No TEC or PEC are identified over the proposed clearing area. The Wheatbelt Woodland TEC and Plant Assemblages of the Parker Range PEC are adjacent to the application area.
Fauna	Nine conservation significant fauna species are recorded from within 20 km radius of the application area, with the chuditch and mallee fowl records being the largest numbers. The survey identified the vegetation around the application area as suitable habitat for conservation significant fauna species. However, it is not identified as critical habitat.

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*					
Avon Wheatbelt	9,517,109.95	1,761,187.42	18.51	174,980.68	1.84
Coolgardie	12,912,204.35	12,648,491.39	97.96	2,114,349.37	16.37
Beard Vegetation Association					
VA 1413	1,061,212.28	1,042,553.77	98.24	192,883.70	18.18

	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
Wattle, casuarina and teatree (acacia-alloccasuarina-melaleuca alliance).					
VA8 Wheatbelt; York gum, salmon gum etc. (<i>Eucalyptus loxophleba</i> , <i>E. salmonophloia</i>).	356,571.81	50,340.31	14.12	4,353.66	1.22
VA1068 gimlet, redwood etc. <i>E. salubris</i> , <i>E. oleosa</i> . Riverine; rivergum <i>E. camaldulensis</i>	74,875.46	37,249.16	49.75	2,607.07	3.48
Local area (calculation - delete if not required)					
20km radius	325,128	149,119	45.86	-	-

*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 G.1), and biological survey information (*Western Botanical, 2023a, 2023b, Covalent Lithium 2023c*), impacts to the following conservation significant flora identified from within the application area and surround are considered. Cumulative analysis is included in the analysis table by including data associated with other proposed clearing associated with the road project.

Species name	Conservation Status	Count within application area / footprint (CPS 10197/1)	Count within actual clearing area (CPS 10197/1)	Count in other application areas - footprint (CPS 10265/1 & CPS 10049/1)	Count outside of any proposed clearing associated with the project	Total count of known individuals- Regional population (region)	Total Count of individuals to be removed by the project	Impact of 10197/1 (% of total)	Cumulative impact of all clearing areas (% of total)
<i>Acacia crenulata</i>	P3	4	4	0	3,002	3,006	4	0.133	0.133
<i>Acacia neurophylla</i> subsp. resinous veins (GC-797)	SOI	3	0	0	1,238	1,241	0	0.000	0.000
<i>Banksia dolichostyla</i>	T	0	0	0	26,346	26,346	0	0	0
<i>Chamelaucium</i> sp. Parker Range (B.H. Smith 1255)	P1	3	3	655	36,253	36,911	569	0.008	1.542
<i>Drummondita</i> sp. green flowers (L. Shelton 304)	SOI	21	14	601	51,458	52,080	14	0.027	0.027
<i>Drummondita</i> sp. hairy sepals (L. Shelton 409)	SOI	20	1	0	390	410	1	0.244	0.244
<i>Eucalyptus exigua</i>	P3	12	4	1	250	263	4	1.521	1.521
<i>Eucalyptus polita</i>	P3	4	2	4	558	566	2	0.353	0.353
<i>Eutaxia lasiocalyx</i>	P2	4	4	43	185,116	185,163	5	0.002	0.003

Species name	Conservation Status	Count within application area / footprint (CPS 10197/1)	Count within actual clearing area (CPS 10197/1)	Count in other application areas - footprint (CPS 10265/1 & CPS 10049/1)	Count outside of any proposed clearing associated with the project	Total count of known individuals-Regional population (region)	Total Count of individuals to be removed by the project	Impact of 10197/1 (% of total)	Cumulative impact of all clearing areas (% of total)
<i>Grevillea communis</i> ms (P.M. Olde)	SOI	3	2	0	194	197	2	1.015	1.015
<i>Grevillea neodissecta</i>	P4	10	7	150	11,262	11,422	143	0.061	1.252
<i>Hakea pendens</i>	P3	22	22	201	10,578	10,801	212	0.204	1.963
<i>Phebalium</i> sp. ovate (WB40864)	SOI	6	0	0	2,471	2,477	0	0.000	0.000
<i>Phebalium</i> sp. Parker Range Road (G. Cockerton & B. Loudon WB40838)	SOI	11	1	180	6,726	6,917	6	0.014	0.087
<i>Phebalium</i> sp. tuberculate (G. Cockerton 394)	SOI	2	2	430	10,168	10,600	393	0.019	3.708
<i>Rinzia triplex</i>	P3	60	54	42	15,122	15,224	91	0.355	0.598
<i>Verticordia gracilis</i>	P3	1	1	5,641	29,019	34,661	5,624	0.003	16.226
<i>Verticordia mitodes</i>	P3	52	11	127	3,049	3,228	137	0.341	4.244
<i>Verticordia stenopetala</i>	P3	74	44	4,798	44,656	49,528	4,492	0.089	9.070

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority ; SOI : Species of interest

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)	Are surveys adequate to identify? [Y, N, N/A]
<i>Aganippe castellum</i> (tree-stem trapdoor spider)	P4	Y	Y	7.07	1	N/A
<i>Daphnia jollyi</i> (a water flea (inland south west))	P1	N	N	1.07	6	N/A
<i>Dasyurus geoffroyi</i> (chuditch, western quoll)	VU	Y	Y	1.96	102	Y
<i>Leipoa ocellata</i> (malleefowl)	VU	Y	Y	0.01	78	Y
<i>Macrotis lagotis</i> (bilby, dalgyte, ninu)	VU	Y	Y	10.17	1	Y
<i>Notamacropus irma</i> (western brush wallaby)	P4	Y	Y	1.22	4	Y
<i>Parartemia contracta</i> (a brine shrimp (Wheatbelt))	P1	N	N	6.67	4	N/A
<i>Phascogale calura</i> (red-tailed phascogale, kenngoor)	CD	Y	Y	2.03	1	Y
<i>Platycercus icterotis xanthogenys</i> (western rosella (inland))	P4	Y	Y	6.83	2	Y

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

B.5. Ecological community analysis table

Community name	Conservation status		Suitable habitat feature and vegetation types? [Y/N]	Suitable soil type? [Y/N]	Number of known records within 20 km radius (total)	Distance of closest record to application area (km)	Areas (ha)			Impact (% of total area)	
	WA	Commonwealth					Known records (total)	In actual clearing area (CPS 10197)	Actual clearing in other applications (CPS 10049/1 and 10265/1)	Clearing undue CPS 10197	Cumulative impact of all clearing areas
Eucalypt woodlands of the Western Australian Wheatbelt	P 3	Critically Endangered	Y	Y	102	0	7,357.48 (within 20 km radius)	0	0	0	0
Granite outcrop pools with endemic aquatic fauna	P33	NA	N	Y	21	0	50.00 (within 20 km radius)	0	0	0	0
Plant assemblages of the Parker Range System	P3	NA	Y	Y	3	0	41,725.73 (within 20 km radius)	0	3.47	0	0.007

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> "Native vegetation should not be cleared if it comprises a high level of biodiversity."</p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared contains locally and regionally significant flora, adjacent to a TEC and PEC, and potential habitat for conservation significant fauna, however impacts are not likely to be significant.</p>	May be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (b):</u> "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."</p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared may contain suitable habitat for conservation significant fauna. However, it is not considered to contain critical habitat for conservation significant fauna. No fauna species of conservation significance were identified during the biological survey over the application area.</p>	May be at variance	Yes <i>Refer to Section 3.2.2, above.</i>
<p><u>Principle (c):</u> "Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."</p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared does not contain threatened flora species.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.1, above.</i>

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Principle (d):</u> <i>“Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared does not contain a TEC.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.3, above.</i>
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 extent of the mapped native vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia. However, one of the mapped vegetation associations is mapped as having a remaining extent below 20 per cent and are therefore not consistent with these national objectives.</p>	May be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (h):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.”</i></p> <p><u>Assessment:</u></p> <p>The application area is immediately adjacent to the Jilbadji Nature Reserve. Weed and dust management measures will minimise indirect impacts to the adjacent reserve.</p>	Not likely to be at variance	No
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 clearing footprint intersects several minor non-perennial tributaries to the Yilgarn River. The vegetation proposed to be cleared, however, is not associated with water courses or wetlands. The proposed clearing is unlikely to impact on- or off-site hydrology and water quality.</p>	Not likely to be at variance	No
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u></p> <p>Being comprised of sandy soils, the soils in the application area are susceptible to wind and water erosion. The proposed clearing may increase the risks unless appropriate mitigation is applied.</p>	May be at variance	Yes <i>Refer to Section 3.2.4, 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 application area is within the Westonia Groundwater Area proclaimed under the RIWI Act. Ground water in parts of the application area is also saline. The proposed clearing and road works, however, is unlikely to intercept the ground water level, therefore it is unlikely to impact ground water quality. Surface water drainage impacts are being managed during construction of the road, therefore impacts to surface water is expected to be minimal.</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 Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Measuring vegetation condition for the South West and Interzone Botanical Province (Keighery, 1994)

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.
Completely degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Appendix E. Biological survey information excerpts

The applicant commissioned consultants to perform biological and heritage surveys in support of the road works proposal and associated clearing permit applications including this application. The surveys covered the entire alignment of the proposed road works and beyond. The surveys are as follows:

- Detailed Flora and vegetation survey (Western Botanical, 2023a; 2023b; 2023c)
- 2023c) Assessment and Gap Analysis
- Terrestrial Vertebrate Fauna Survey (Ecoscape, 2022)
- Archaeological and Ethnographic (Terra Rosa, 2022)

Flora and Vegetation survey

The applicant, through Covalent Lithium, commissioned Western Botanical to perform a detailed survey and assessment of the flora and vegetation in the application area and around the road alignment of the proposed roadworks. The Study Area for the Desktop Assessment was approximately 115 km in length and 10,914 ha in size. In the area adjacent to freehold land (cleared agricultural land), the Study Area is narrow, commonly less than 2 m wide, and restricted to the road easement between fencelines either side of the road. In the area south of Cockatoo Tanks (Water Reserve 12369744) at approximately chainage 46 km, the vegetation has not been cleared for agricultural purposes and the Study Area extends to a 1 km wide alignment, 500m either side of the road alignment in areas of native vegetation. The Study Area lies entirely within the Shire of Yilgarn. Map of the survey area is depicted in Figure 5.

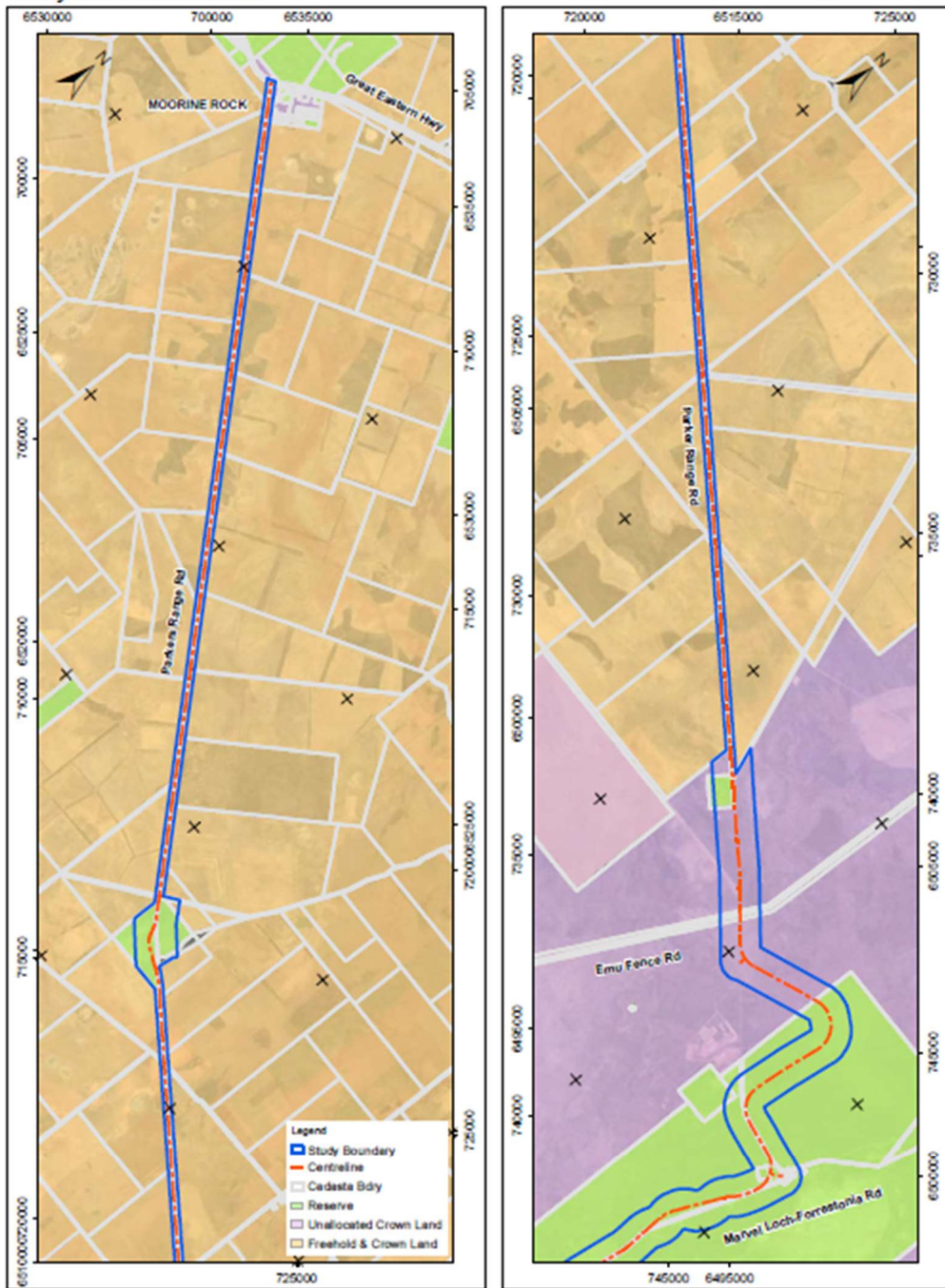
The study area was divided into two regions differing in survey intensity. Methods employed for the survey and assessment included vegetation mapping, vegetation condition, species profiling for vegetation association using 139 quadrats (20x20m and 50x50 m), targeted survey for significant species, targeted survey timing ranging between mid-Spring to late-Spring and early Summer depending on species, collection of specimen to be recognised in the field and identified using the WA Herbarium's Research Collection and reference to third party specialist taxonomist.

Multiple field surveys on a fortnightly basis were undertaken to assess the alignment in its entirety. Survey Effort to 21 February 2023 has included:

- (i) To date, 24 weeks of field survey with between 4 and 6 personnel per trip have been implemented over a period of 16 months, a total of approximately 840 man-days, consisting of:
 - (a) Fifteen x seven-day field trips (each consisting of 2 days travel and 5 days on-ground survey) with between 4 to 6 personnel commenced 29th November 2021 and continued until 23rd August 2023 on a fortnightly basis. One field trip was not undertaken to allow specimen identification and processing early in the assessment.
 - (b) A further nine x seven-day surveys field trip of the road alignment were re-commenced 26th September 2022 and continued to 21st February 2023.
- (ii) Surveys were redirected to other areas (potential borrow pits) from 29th August to 18th September 2022, reported separately by Western Botanical.

The Interim Report (Western Botanical, 2023b) specifically addresses the alignment covered by CPS 10197/1: Northern Section (Section 1) being chainage 0.20 km to 50.0 km: from (i) 200m south of the intersection of Great Eastern Highway and Stubbs Road, Moorine Rock, to the intersection of Parker Range Road and Fence Road, a total alignment of 49.8 km.

Results of the survey and assessment are used in the assessment of the application, as presented in the preceding sections of this report.



Drawn: CAD Resources (08 9246 3242), Date: Mar 2023, CAD Ref: a2765_MR_MTH_31_02_01, Rev: A
Scale 1:125,000, A4, Projection MGAS4 zone 50
Source: Roads_MRWA, Cadasta: Landgate

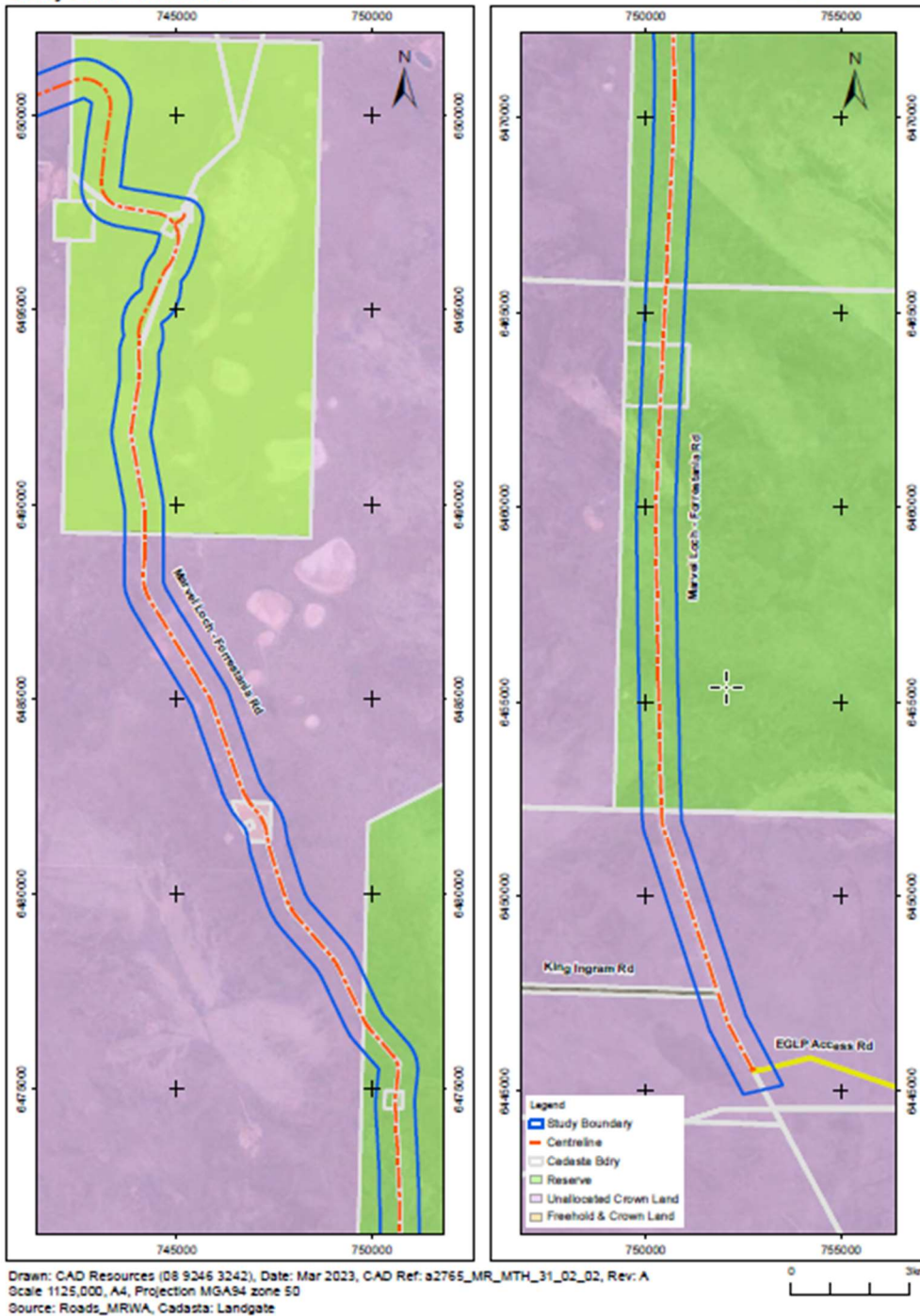


Figure 5. The survey area (Western Botanical, 2023a, 2023b, and 2023c)

Terrestrial Fauna Survey (Ecoscape, 2022)

The applicant commissioned Ecoscape to carry out a survey and assessment of terrestrial fauna over the application area and the road works alignment. The survey was undertaken by Ecoscape from the 28th of March to the 5th of April 2022. The purpose of the survey was to delineate fauna habitats, obtain knowledge on the likely fauna

assemblage and focus on identifying the presence/absence and suitable habitat of conservation significant listed species identified during the desktop assessment. This will allow for a better understanding of the local fauna's potential sensitivity to impacts resulting from the road installation. The outcomes of the survey and other information (e.g. desktop aspects) will be used to inform the environmental assessment and approvals process.

The key outcomes from the field survey identified:

- 136 Habitat assessments were conducted identifying four broad vertebrate fauna habitat types: Eucalypt Woodland, Shrubland, Regrowth and Seasonal Marsh/Wetland. Representative photographs of the habitats are presented in Figure 7. Both the Eucalypt Woodland (367.77 ha) and the Shrubland (1312.62 ha) provide habitat for most species in the area and made up the largest part of the survey area, with the Regrowth (5.76 ha) and Seasonal Marsh/Wetland (0.43 ha) being less common. These habitat types recorded during the survey are considered to be well represented outside the survey areas.
- Sixty-four vertebrate and one invertebrate fauna species were recorded during the survey, consisting of:
 - o Twenty-two mammals (seven introduced)
 - o Thirty-six birds
 - o Six reptiles
 - o One invertebrate.
- The conservation significant vertebrate fauna species recorded by the field survey were:
 - o Malleefowl *Leipoa ocellata* (EPBC-VU, BC-VU), listed as a 'Threatened' fauna taxon at the conservation level of 'Vulnerable' under both Commonwealth and State legislation
 - o Western Brush Wallaby *Notamacropus irma* (DBCA-P4), classified as 'Priority 4' by DBCA.
 - o Central Long-eared Bat *Nyctophilus major* (DBCA-P4), classified as 'Priority 4' by DBCA. Ambiguous call recorded, this has been added on a precautionary basis
- None of the identified conservation significant fauna occur within the application area
- The targeted Malleefowl mound searches identified two previously unrecorded Malleefowl nest mounds, one of which was active. The mounds are located more than 2 km south of the application area.
- In accordance with guidelines for the critically endangered Arid Bronze Azure Butterfly (*Ogyris subterrestris* *petrina*) (ABAB), a targeted survey was conducted to determine the presence/absence of the sugar ant species (*Camponotus* sp. nr. *terebrans*) on which its larvae parasitise. Sugar ants were detected at two single trees out of the 100 trees sampled. Densities of sugar ant colonies found during this survey are low, however, it is a requirement that the presence of the sugar ant colonies be reported to DBCA.

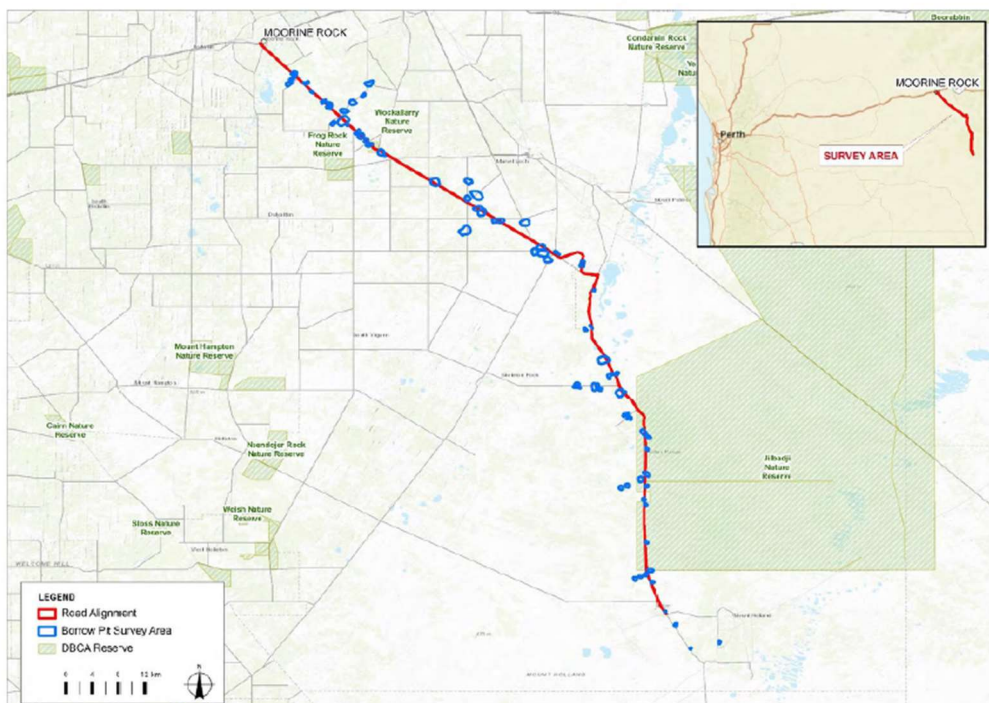


Figure 6. Survey area and locations (Ecoscape, 2022)





Habitat type	Description	Photograph
Eucalypt woodland	<p>Open Eucalypt woodland consisting of mixed compositions of Eucalypt species. Occurring within this habitat type are Salmon Gum, Mallee, Mallet, Gimlet, Red Morrel and Wandoo. Occurring mostly over low shrubs on clay, clayey sand and sandy clay soils; minimal understory, 30-50% litter cover; high frequency of fallen logs.</p> <p>Disturbance: Low to high.</p> <p>Fire Age: >10 yrs.</p> <p>Extent: 367.77ha, 11.7%</p>	
Shrubland	<p>Closed to dense shrublands of mixed species (<i>Allocasuarina</i>, <i>Hakea</i>, <i>Acacia</i>, and/or <i>Melaleuca</i>) on clay, clayey sand, sand or sandy clay soils; gravel; 50-95% litter cover.</p> <p>Disturbance: Low to high.</p> <p>Fire Age: 5-10 yrs.</p> <p>Extent: 1312.62ha, 41.77%</p>	
Regrowth	<p>Vegetation regrowth in previously cleared areas such as old borrow pits. Comprising of open shrubland of mixed species (<i>Allocasuarina</i>, <i>Hakea</i>, <i>Acacia</i>, and/or <i>Melaleuca</i>) on clayey sand or sandy clay soils; gravel; 10% litter cover.</p> <p>Disturbance: Low to high.</p> <p>Fire Age: >10 yrs.</p> <p>Extent: 5.76ha, 0.18%</p>	
Seasonal Marsh	<p>Seasonal inundated marsh with Samphire and low <i>Melaleuca</i> shrub; clay soils; quartz; 5% litter cover.</p> <p>Disturbance: Low.</p> <p>Fire Age: >10 yrs.</p> <p>Extent: 0.43ha, 0.01%</p>	

Figure 7. Fauna habitats identified over the survey area (Ecoscape, 2022)

Appendix G. Sources of information

G.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)

G.2. References

Bamford, M, Inglis, R & Watson, K 2009, *Mammals of the Avon Region*.

Benshemesh, J 2007, *National Recovery Plan for Malleefowl *Leipoa ocellata**. Available from:

file:///X:/02_References/Fauna/Fauna species info/Birds/Malleefowl - Bustard - Curlew/Benshemesh2005_Malleefowl_Recovery-Plan.pdf. Commonwealth of Australia (2001) *National Objectives and Targets for Biodiversity Conservation 2001-2005*, Canberra.

- Covalent Lithium (2023a). *Response to DWER request for further information for CPS 10197/1*. Received 27 September 2023. DWER Ref: DEWERDT841609, DWERDT840337
- Covalent Lithium (2023b). *Revised application areas and impact on flora and vegetation. Response to DWER request for further information for CPS 10049/1, CPS 10197, and CPS 10265*. Received 8 November 2023. DWER Ref: DWERDT868662.
- Covalent Lithium (2023c). *Confirmed revised application area and impact on flora and vegetation for CPS 10049/1, CPS 10197/1 and CPS 10265*. Received 10 November 2023. DWER Ref: DWERDT868662.
- Covalent Lithium (2023d). *Response to DWER request for further information for CPS 10049/1*. Received 27 September 2023. DWER Ref: DWERDT841609, DWERDT840337
- Department of Biodiversity, Conservation and Attractions (DBCA) (2023a) *Species and Communities Branch TEC/flora advice for clearing permit application CPS 10197/1*, received 27 September 2023. Department of Biodiversity, Conservation and Attractions, Western Australia (DWER Ref: DWERDT840252).
- Department of the Environment (2015). *Approved Conservation Advice - Appendices for the Eucalypt Woodlands of the Western Australian Wheatbelt*. Canberra: Department of the Environment. Available from: <http://www.environment.gov.au/biodiversity/threatened/communities/pubs/128-conservation-advice-appendices.pdf>. In effect under the EPBC Act from 04-Dec-2015
- Department of the Environment Water Heritage and the Arts 2010, *Survey Guidelines for Australia's Threatened Bats: Guidelines for detecting bats listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999*. Available from: [file:///X:/02 References/Commonwealth/Guidelines/DEWHA](file:///X:/02%20References/Commonwealth/Guidelines/DEWHA%202010%20survey-guidelines-bats.pdf) 2010 survey-guidelines-bats.pdf.
- Department of Environment Regulation (DER) (2013). *A guide to the assessment of applications to clear native vegetation*. Perth. Available from: https://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/Guide2_assessment_native_veg.pdf.
- Department of Primary Industries and Regional Development (DPIRD) (2019). *NRInfo Digital Mapping. Department of Primary Industries and Regional Development*. Government of Western Australia. URL: <https://maps.agric.wa.gov.au/nrm-info/> (accessed 30 June 2020).
- Department of Water and Environmental Regulation (DWER) (2019). *Procedure: Native vegetation clearing permits*. Joondalup. Available from: https://dwer.wa.gov.au/sites/default/files/Procedure_Native_vegetation_clearing_permits_v1.PDF.
- Department of Water and Environmental Regulation (DWER) (2023a). *Clearing Permit Application CPS 10197/1. Request for further information*. Sent 31 August 2023. DWER Reference: DWERDT829148.
- Department of Environment and Conservation (2012). Chuditch (*Dasyurus geoffroii*) Recovery Plan. *Wildlife Management Program No. 54*. Department of Environment and Conservation, Perth, Western Australia
- Ecoscope (Australia) Pty Ltd (2022) *Covalent Logistics Road Terrestrial Vertebrate Fauna Survey*, prepared for Covalent Lithium'. Fremantle. Dated July 2022. DWER Reference: DWERDT871959
- Environmental Protection Authority (EPA) (2016). *Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment*. Available from: http://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/EPA%20Technical%20Guidance%20-%20Flora%20and%20Vegetation%20survey_Dec13.pdf.
- Environmental Protection Authority (EPA) (2016). *Technical Guidance – Terrestrial Fauna Surveys*. Available from: https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/Tech%20guidance-%20Terrestrial%20Fauna%20Surveys-Dec-2016.pdf.
- Government of Western Australia. (2019) *2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report)*. Current as of March 2019. WA Department of Biodiversity, Conservation and Attractions. <https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics>

- Hedde, E. M., Loneragan, O. W., and Havel, J. J. (1980) *Vegetation Complexes of the Darling System, Western Australia*. In Department of Conservation and Environment, Atlas of Natural Resources, Darling System, Western Australia.
- Karratjibbin People Claimant Group(2023). *Response to DWER notification of clearing permit application CPS 10049/1*. Received 13 June 2023. DWER Reference: DWERDT79258.
- Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Mattiske, E.M. and Havel, J.J. (1998) *Vegetation Complexes of the South-west Forest Region of Western Australia*. Maps and report prepared as part of the Regional Forest Agreement, Western Australia for the Department of Conservation and Land Management and Environment Australia.
- Molloy, S., Wood, J., Hall, S., Wallrodt, S. and Whisson, G. (2009) *South West Regional Ecological Linkages Technical Report*, Western Australian Local Government Association and Department of Environment and Conservation, Perth.
- Northcote, K. H. with Beckmann G G, Bettenay E., Churchward H. M., van Dijk D. C., Dimmock G. M., Hubble G. D., Isbell R. F., McArthur W. M., Murtha G. G., Nicolls K. D., Paton T. R., Thompson C. H., Webb A. A. and Wright M. J. (1960-68) *Atlas of Australian Soils*, Sheets 1 to 10, with explanatory data. CSIRO and Melbourne University Press: Melbourne.
- Schoknecht, N., Tille, P. and Purdie, B. (2004) *Soil-landscape mapping in South-Western Australia – Overview of Methodology and outputs* Resource Management Technical Report No. 280. Department of Agriculture.
- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) *Native Vegetation in Western Australia, Extent, Type and Status*. Resource Management Technical Report 249. Department of Agriculture, Western Australia.
- Terra Rosa Consulting (2022). *Report on the Archaeological and Ethnographic Site Avoidance Survey of the Borrow Pits and Buffalo Survey Areas with Marlinyu Ghoorlie Traditional Owners*, Prepared for Covalent Lithium Pty Ltd.
- Western Australian Herbarium (1998-). *FloraBase - the Western Australian Flora*. Department of Biodiversity, Conservation and Attractions, Western Australia. <https://florabase.dpaw.wa.gov.au/> (Accessed August 2023)
- Western Botanical (2023a). *Interim Detailed Flora and Vegetation Assessment and Gap Analysis Moorine Rock to Mt Holland minesite. Southern Section, Parker Range to Mt Holland, Supporting Clearing Permit CPS 10049*. Prepared for: Covalent Lithium Pty. Ltd. and Shire of Yilgarn Report Ref: WB1003. Dated June 2023. DWER Reference: DWERDT871948
- Western Botanical (2023b). *Interim Detailed Flora and Vegetation Assessment and Gap Analysis Moorine Rock to Mt Holland minesite. Northern Section, Gt Eastern Hwy to Fence Road Supporting Clearing Permit CPS 100197*. Prepared for Covalent Lithium Pty Ltd. Report Ref: WB1001, Dated June 2023. (DWER Reference DWERDT871963)
- Western Botanical (2023c). *Interim Detailed Flora and Vegetation Assessment and Gap Analysis Moorine Rock to Mt Holland minesite. Central Section, Parker Range to Mt Holland, Supporting Clearing Permit CPS 10049*. Prepared for: Covalent Lithium Pty. Ltd. and Shire of Yilgarn Report Ref: WB1003. Dated June 2023. DWER Reference: DWERDT871965
- Shire of Yilgarn (2023a). *Application and supporting documents for Clearing permit Application CPS 10197/1*. Received 15 May 2023. DWER Ref: DWERDT779363.
- Shire of Yilgarn (2023b). *Appointment of Covalent Lithium as authorised representative of the Shire of Yilgarn for Clearing permit Applications CPS 10049/1, CPS10197/1 and CPS 10265/1*. Received 8 May 2023. DWER Ref: DWERDT775386.