



Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 10544/1
Permit type:	Purpose permit
Applicant name:	Shire of Yilgarn
Application received:	1 March 2024
Application area:	4.79 hectares (ha) of native vegetation within a clearing footprint of 5.19 ha
Purpose of clearing:	Road construction
Method of clearing:	Mechanical
Property:	Unallocated Crown Land (PIN 962514), Marvel Loch Unallocated Crown Land (PIN 962555), Parker Range Lot 1009 on Deposited Plan 91886 (Crown Reserve 6608), Marvel Loch 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 Cockatoo Tank Road reserve (PIN 11680162), Marvel Loch Parker Range Road reserve (PIN 11680163, 11680562, 11681099), Marvel Loch Marvel Loch-Forrestania Road reserve (PIN 11680392, 11680393, 11680394, 11712461, 11712462, 11712463), Parker Range Parker Range Road reserve (PIN 11680650, 11680651, 11680652, 11681106, 11682539), Moorine Rock Marvel Loch-Forrestania Road reserve (PIN 11712460, 11721929), Marvel Loch Unallocated Crown Land (PIN 12034664), Marvel Loch
Location (LGA area/s):	Shire of Yilgarn
Localities (suburb/s):	Marvel Loch, Moorine Rock, Parker Range, Skeleton Rock

1.2. Description of clearing activities

The Shire of Yilgarn (the Shire) is undertaking upgrades and maintenance along approximately 116 kilometres (km) of road within the Parker Range Road Reserve and Marvel Loch Forrestania Road reserve. The road will be connecting 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 Forrestania 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, 2024a).

Clearing of native vegetation distributed across either side of the road is required. The Shire has been granted three Clearing Permits associated with the project, i.e CPS 10049/1 for the southern section of the road, CPS 10197/1 northern section, and CPS 10265/1 central section (DWER, 2023a, b, and c respectively) (see Figure 1).

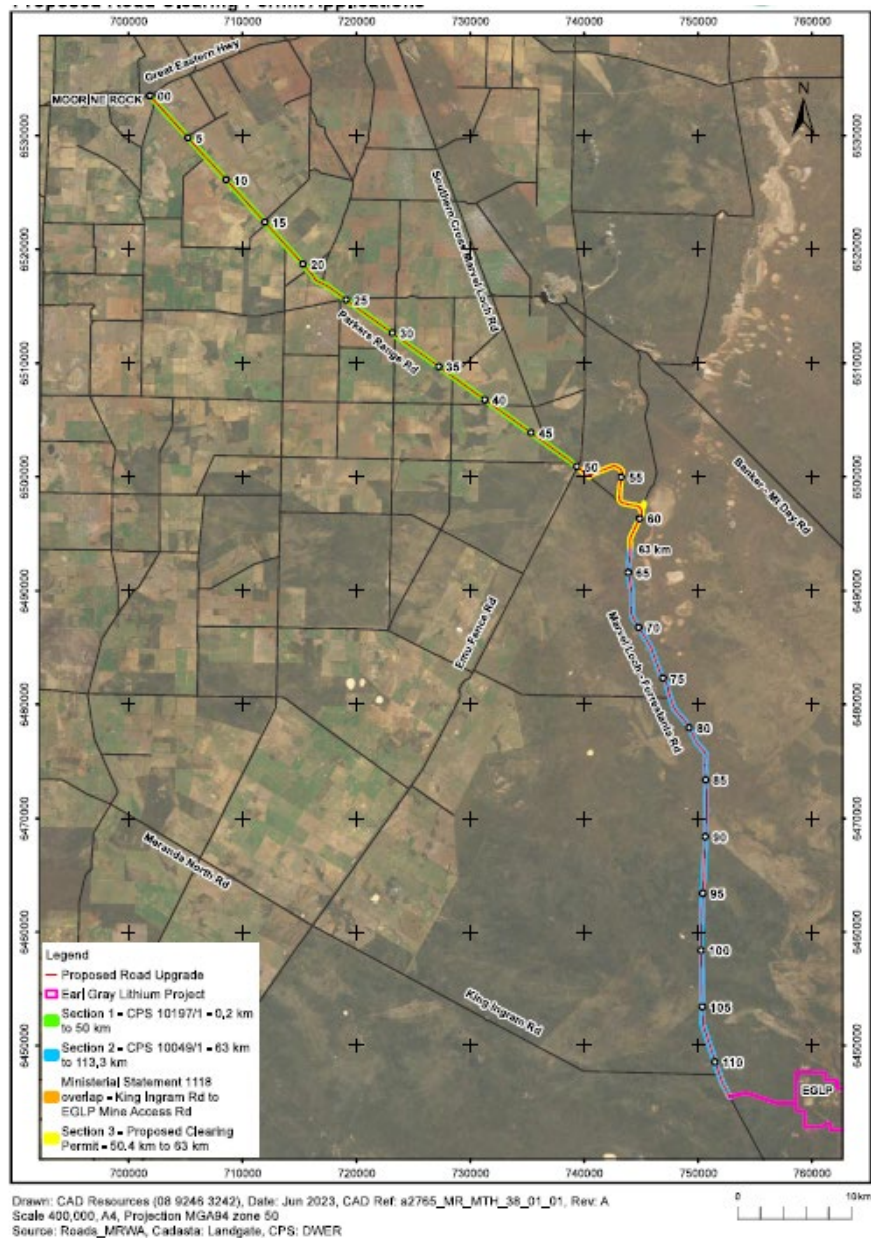


Figure 1. Road upgrades and associated clearing permits previously granted for the road project (Western Botanical, 2024a)

The granted clearing permits cover the entire length of the road project except for areas with native vegetation mapped as the *Eucalypt woodlands of the Western Australia Wheatbelt* (Wheatbelt Woodlands) listed Threatened Ecological Community (TEC) under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). These areas were excised from the previous clearing permit applications due to the lack of detailed information regarding the floristic characteristics and conservation values of the vegetation. Following a detailed survey over the excised areas for the determination of their conservation values with a reference to the Approved Conservation Advice for the Wheatbelt Woodlands (DOE, 2015), the Shire submitted this proposal (CPS 10544/1).

The proposal is to clear up to 4.79 ha of native vegetation within a clearing footprint of 5.19 ha within the Parker Range Road Reserve and Marvel Loch Forrestania Road reserve. The application area comprises of patches of native vegetation in various sizes, scattered over an approximately 113 km stretch of road alignment and transecting some reserves where realignment of the road is required.

1.3. Decision on application

Decision:	Granted
Decision date:	1 August 2024
Decision area:	4.79 hectares of native vegetation within a clearing footprint of 5.19 ha as depicted in Section 1.5, below.

1.4. Reasons for decision

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

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix B), relevant datasets (see Appendix F.1), the findings of the flora, vegetation and fauna surveys (see Appendix E), the clearing principles set out in Schedule 5 of the EP Act (see Appendix C), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3). The Delegated Officer also took into consideration 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 two Priority 1 (P1), three Priority 2 (P2), three Priority 3 (P3), one Priority 4 (P4), and three flora species of interest (SOI). 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 indirectly 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.
- Most of the proposed clearing area is mapped as the Wheatbelt Woodlands TEC, which is also listed as a Priority 3 Priority Ecological Community (PEC) by the Department of Biodiversity, Conservation and Attractions (DBCA). However, a detailed survey and assessment against the Conservation Advice for the TEC (DOE, 2015) indicated that only 0.4 ha of the vegetation meet the characteristics and threshold conditions of the TEC. The removal of the 0.4 ha of the TEC comprises a significant residual impact and requires an offset. An offset condition is placed on the permit. Indirect impacts to the TEC nearby can be managed by demarcating the clearing areas and adhering to the weed and land management conditions.
- The application area and surrounds contain suitable habitat 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.
- The proposed road alignment transects approximately 0.5 ha of an area within the Jilbadji Nature Reserve managed by DBCA. Supported by consent and advice provided by DBCA (DBCA, 2023a), the Delegated Officer considered the impact of the removal of 0.5 ha of native vegetation from the Reserve's total area of 208,866 ha is unlikely to be significant. Indirect impact to the conservational values of the Reserve in the form of inadvertent removal of priority flora and fauna and the spread and introduction of weeds can be mitigated by placing management conditions to the permit. This includes the demarcation of clearing area and the application of weed control measures.

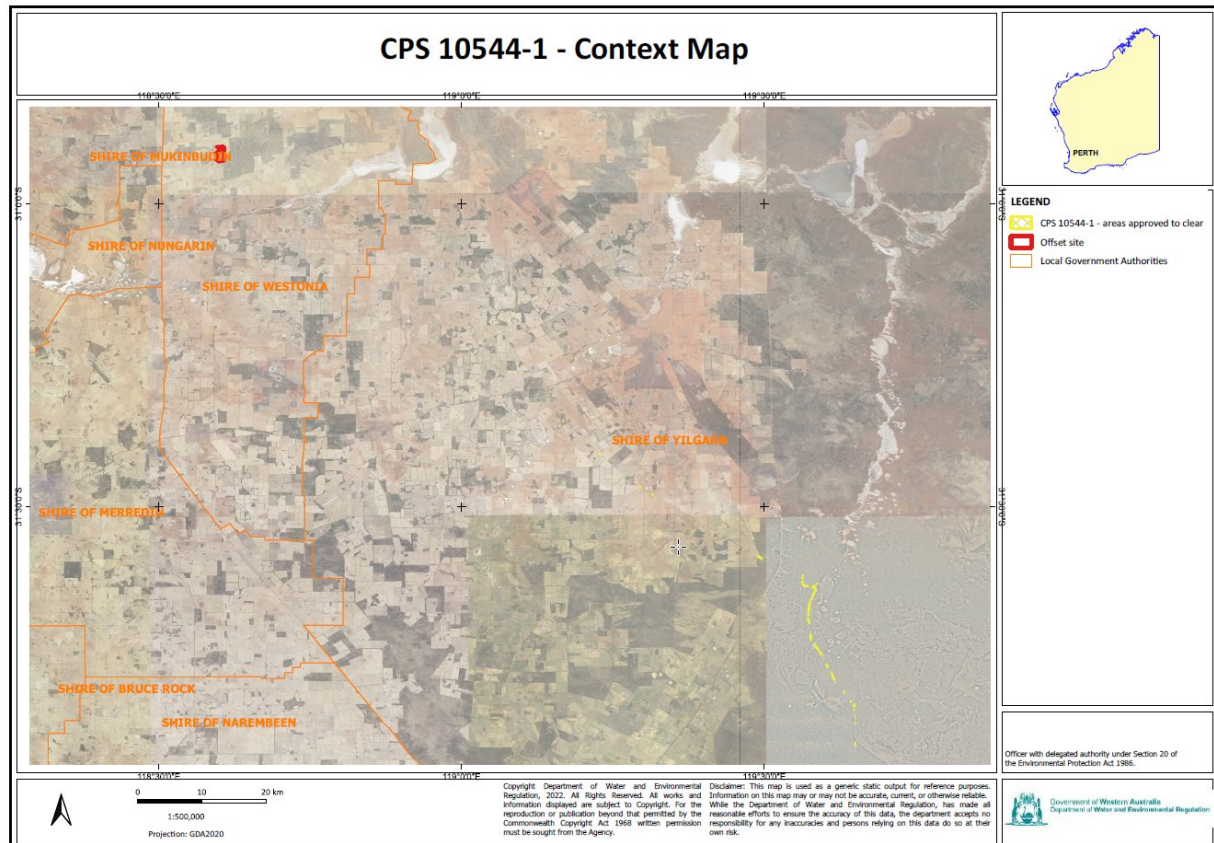
After consideration of the available information, advice from DBCA previously provided for CPS 10049/1, CPS 10197/1 and CPS 10265/1 relevant to the application area, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing 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 applicant has suitably demonstrated avoidance and minimisation measures. The offset provided counterbalances the impacts to 0.4 ha of vegetation identified as the Wheatbelt Woodlands TEC (see Section 4).

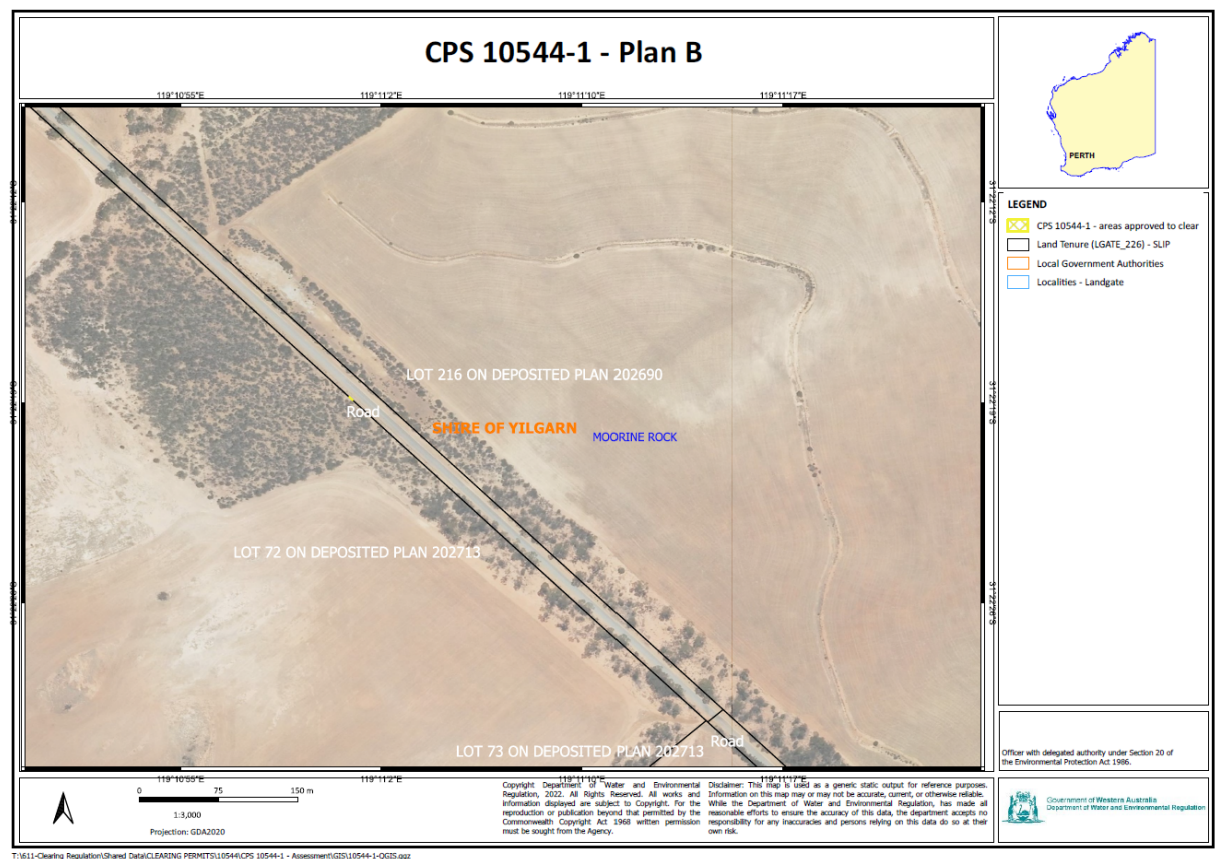
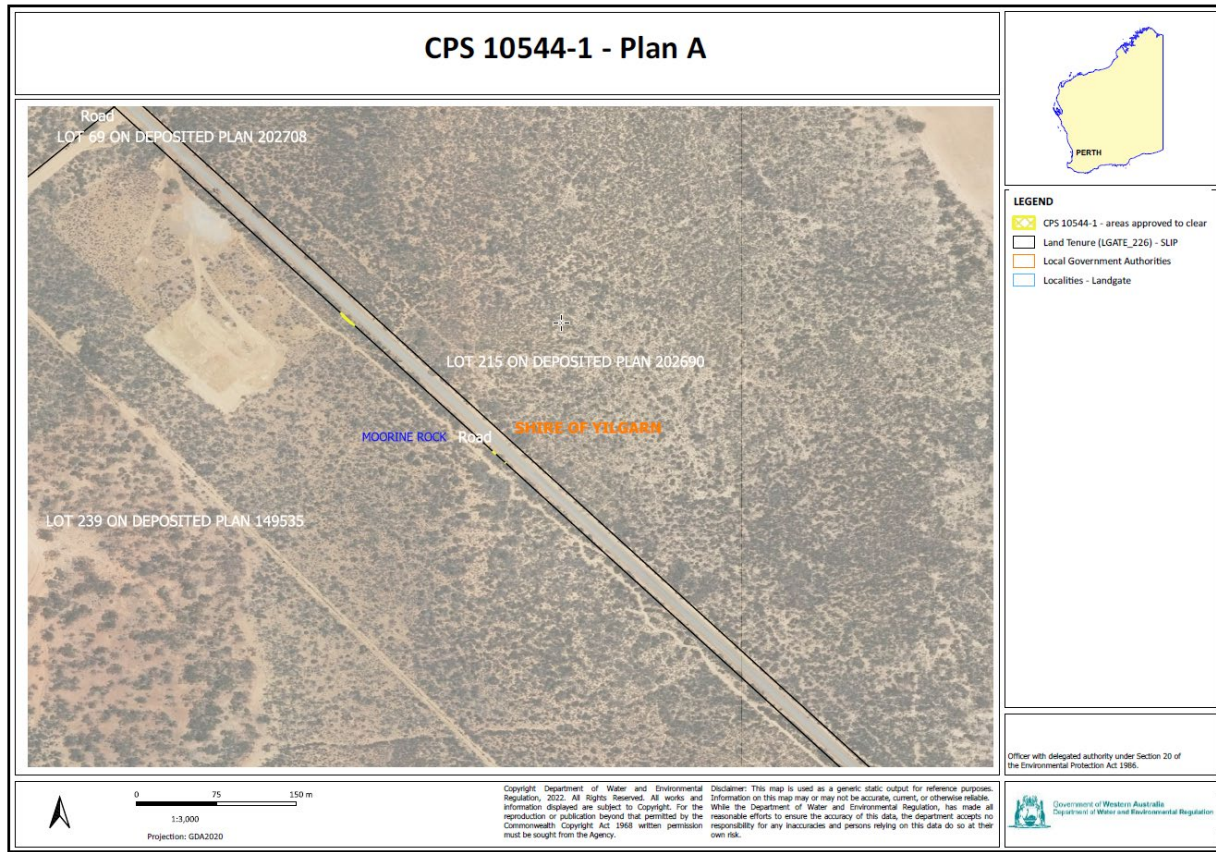
The Delegated Officer decided to grant a clearing permit subject to conditions to:

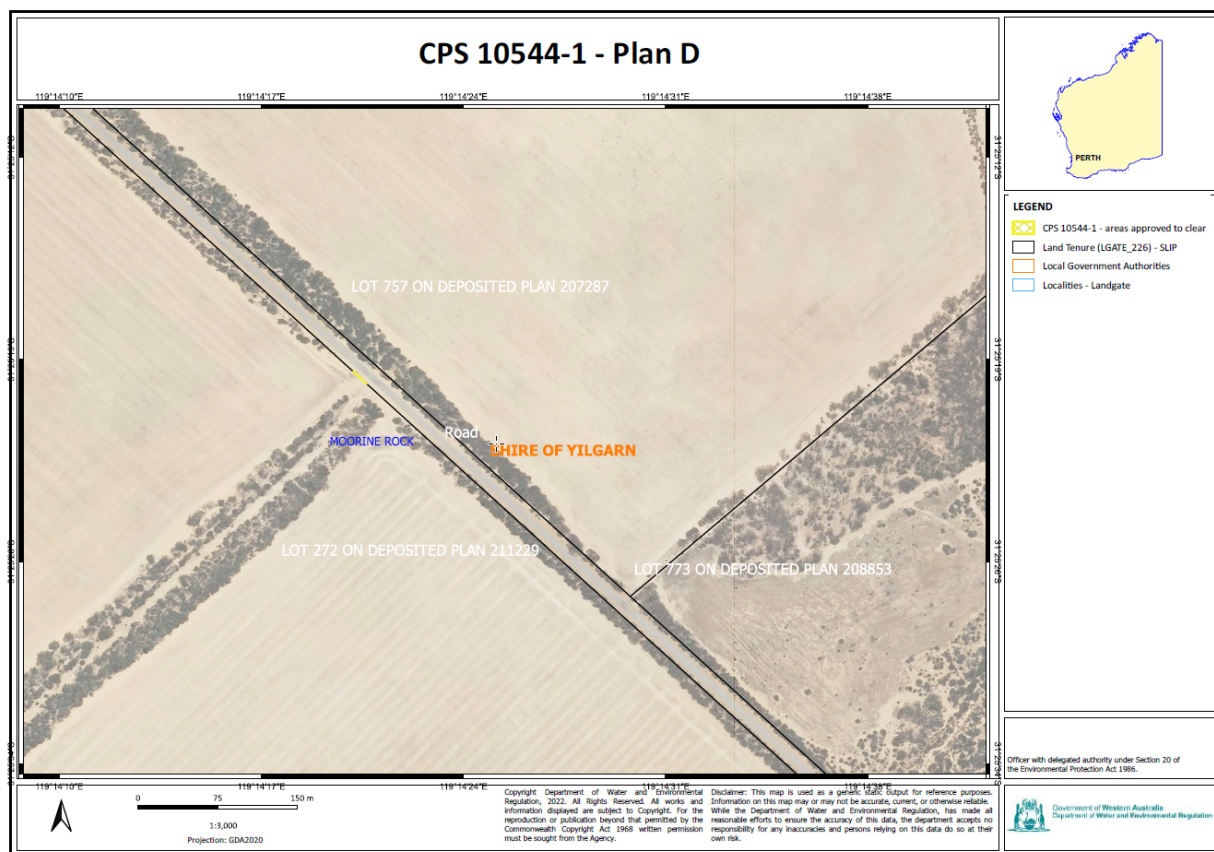
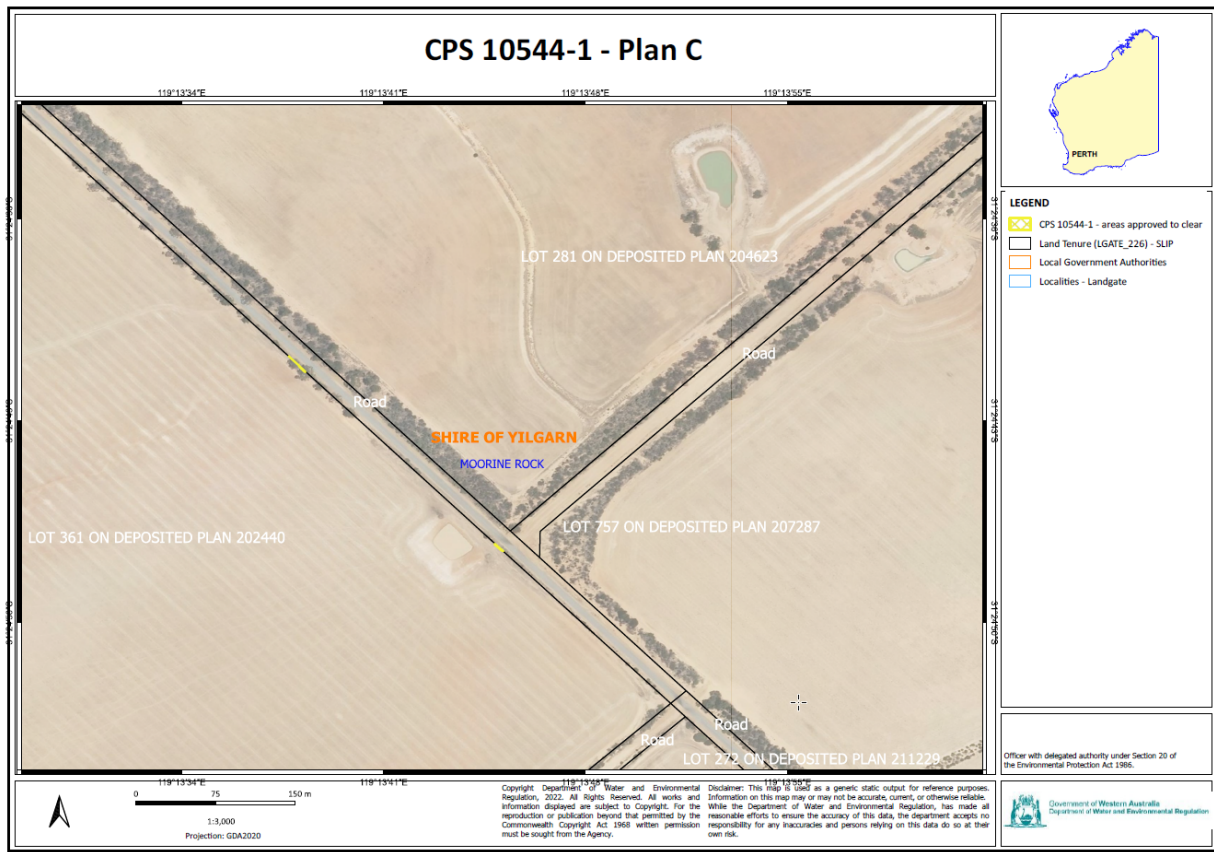
- avoid, minimise to reduce the impacts and extent of clearing
- take hygiene steps to minimise the risk of the introduction and spread of weeds

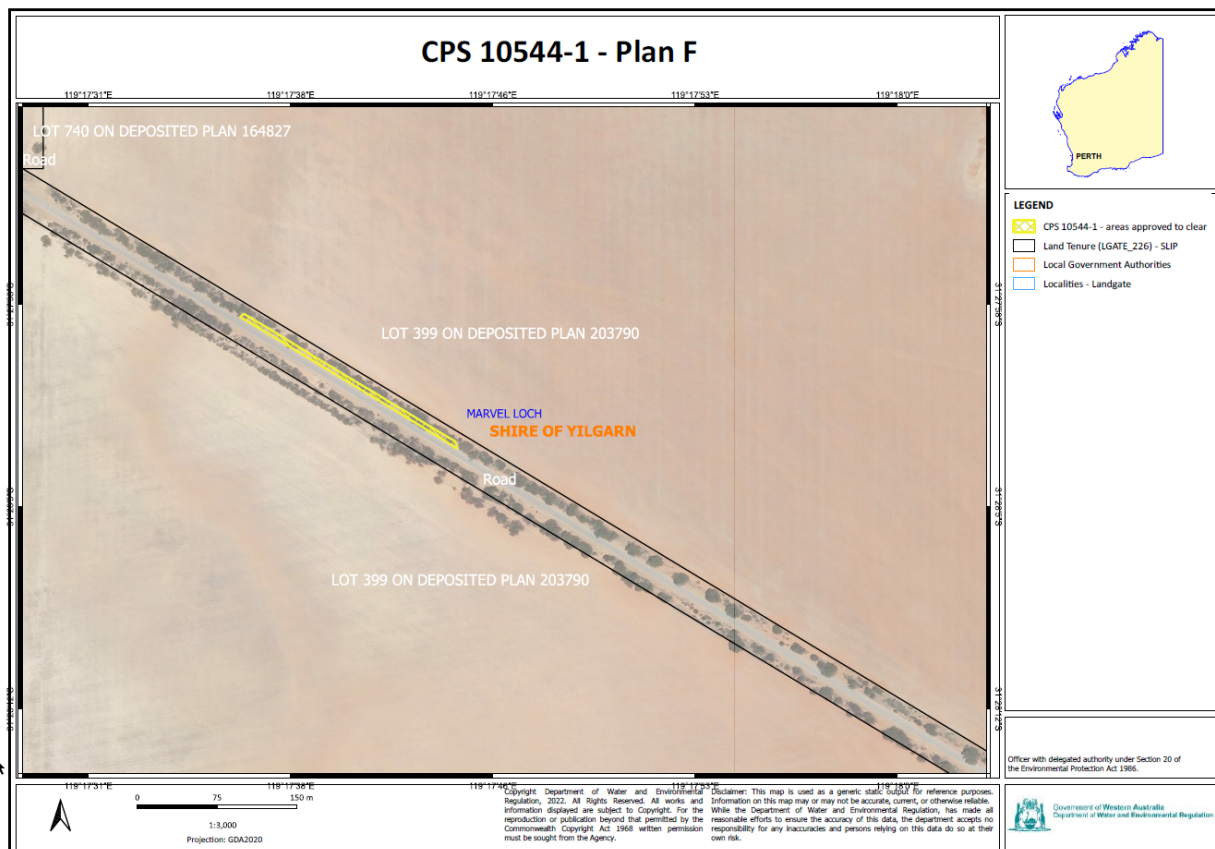
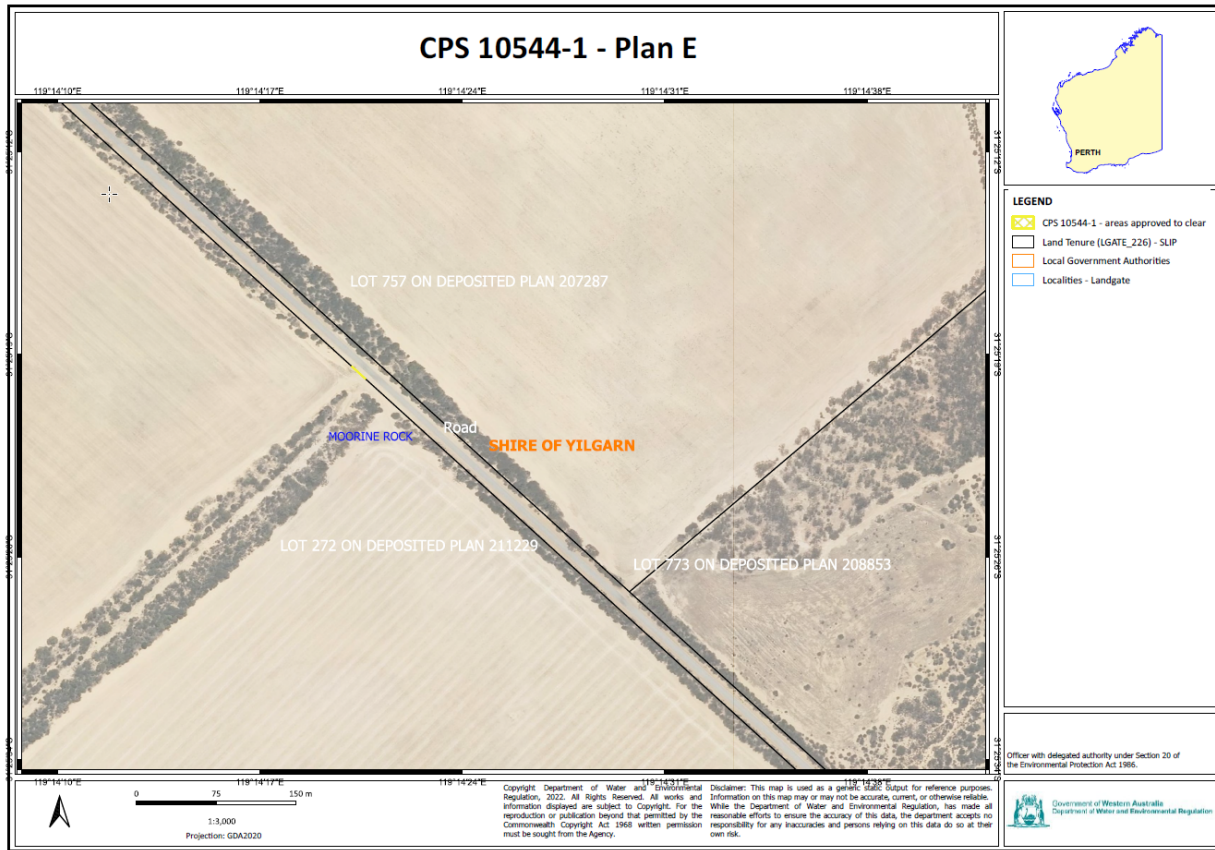
- staged clearing to minimise wind and water erosion
- undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity
- commence construction of drainage and road works within 3 months of authorised clearing
- dust management within the application area to suppress dust
- demarcation of clearing area
- priority flora and PEC management condition restricting the total area of impact
- provision of a suitable offset comprising of the acquisition and management of a 4.56 ha of vegetation identified as the TEC in Excellent condition and place it under a conservation covenant under the *Soil and Land Conservation Act 1945*.

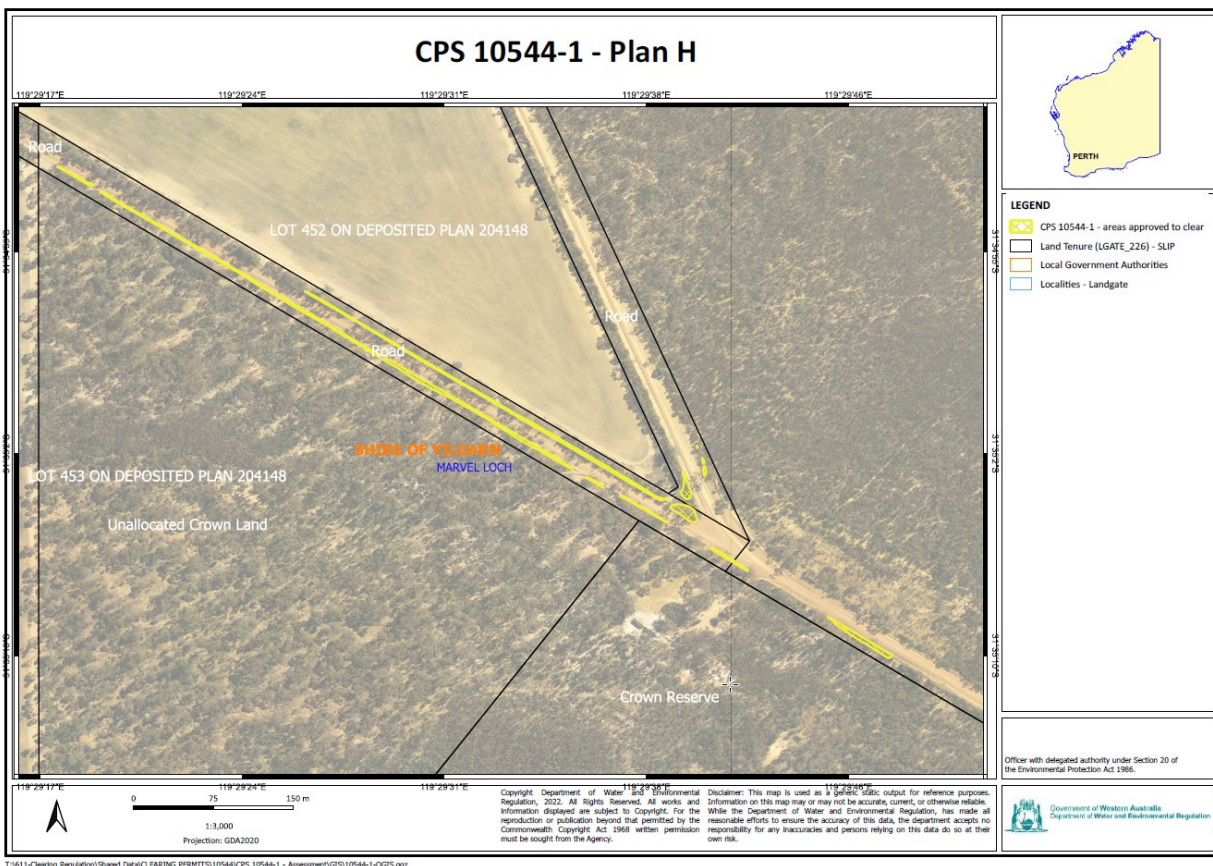
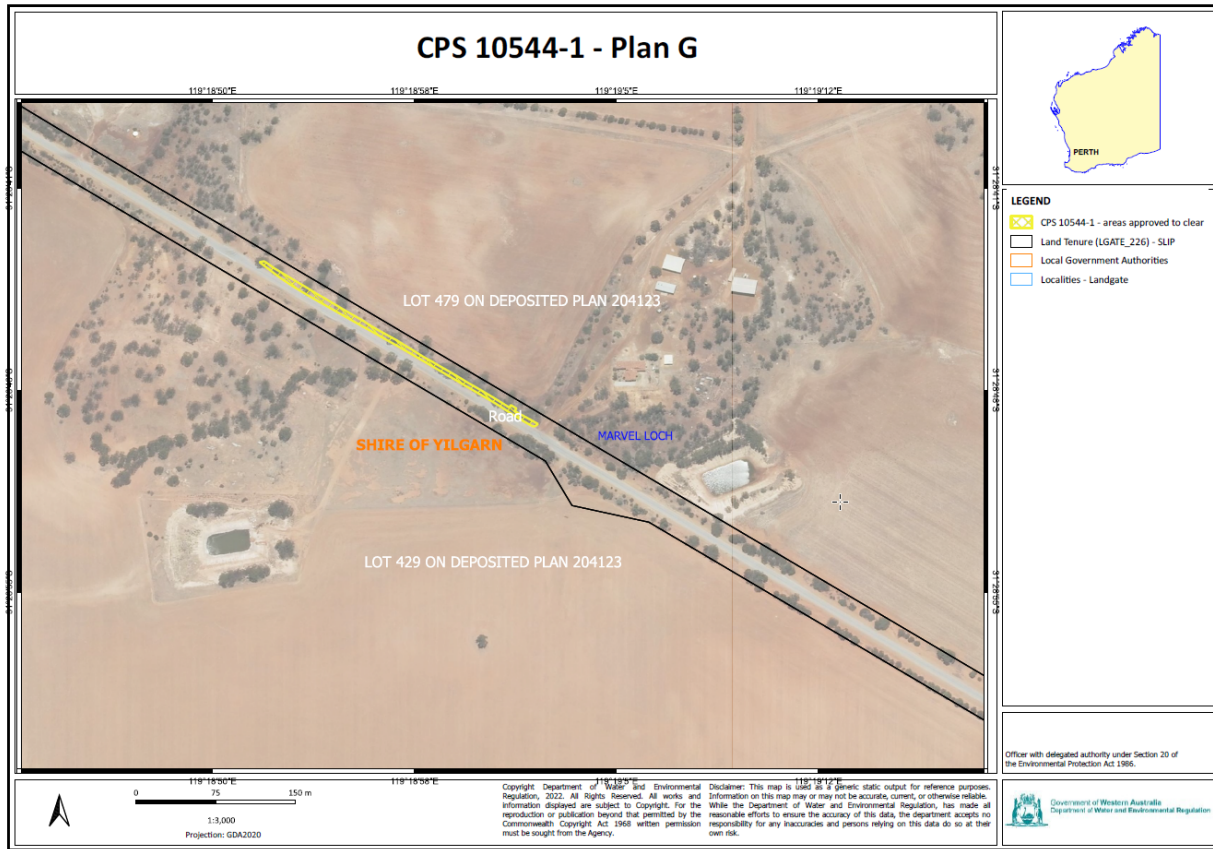
1.5. Site map

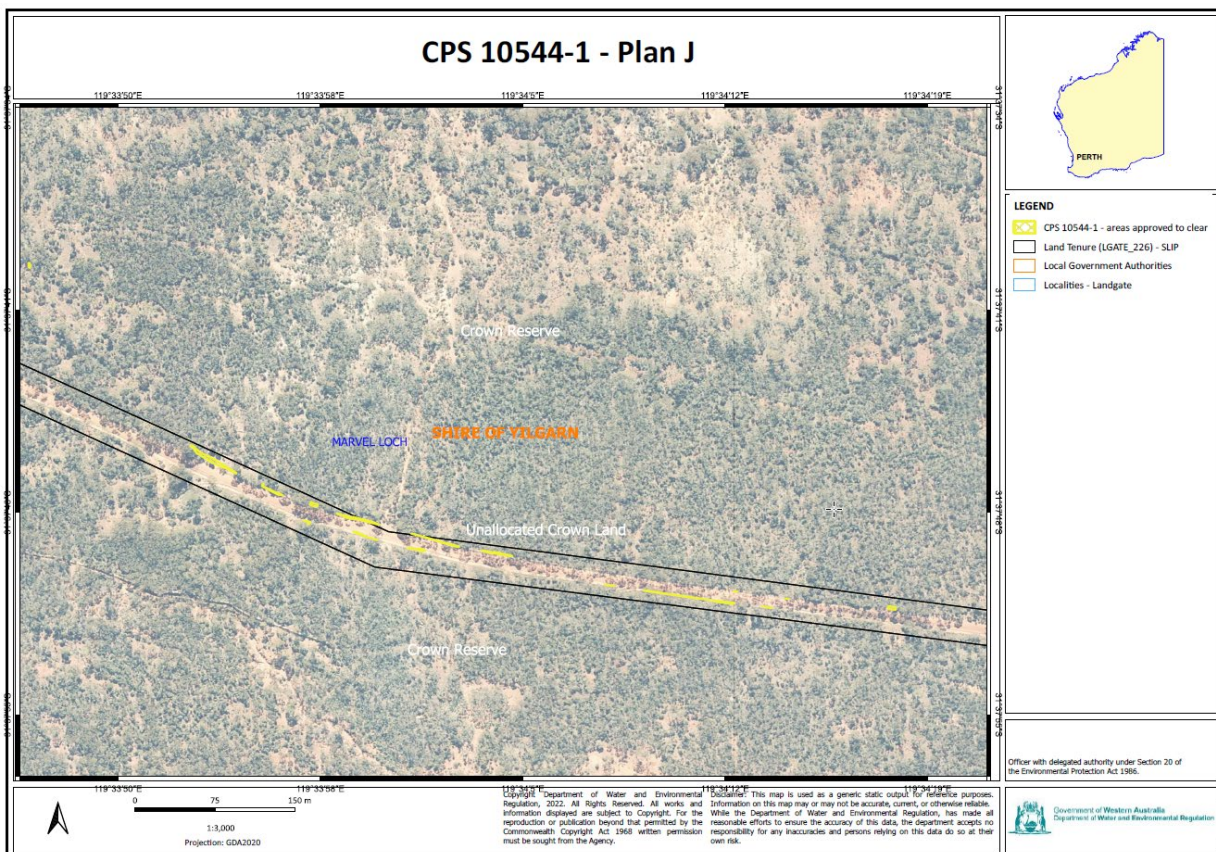
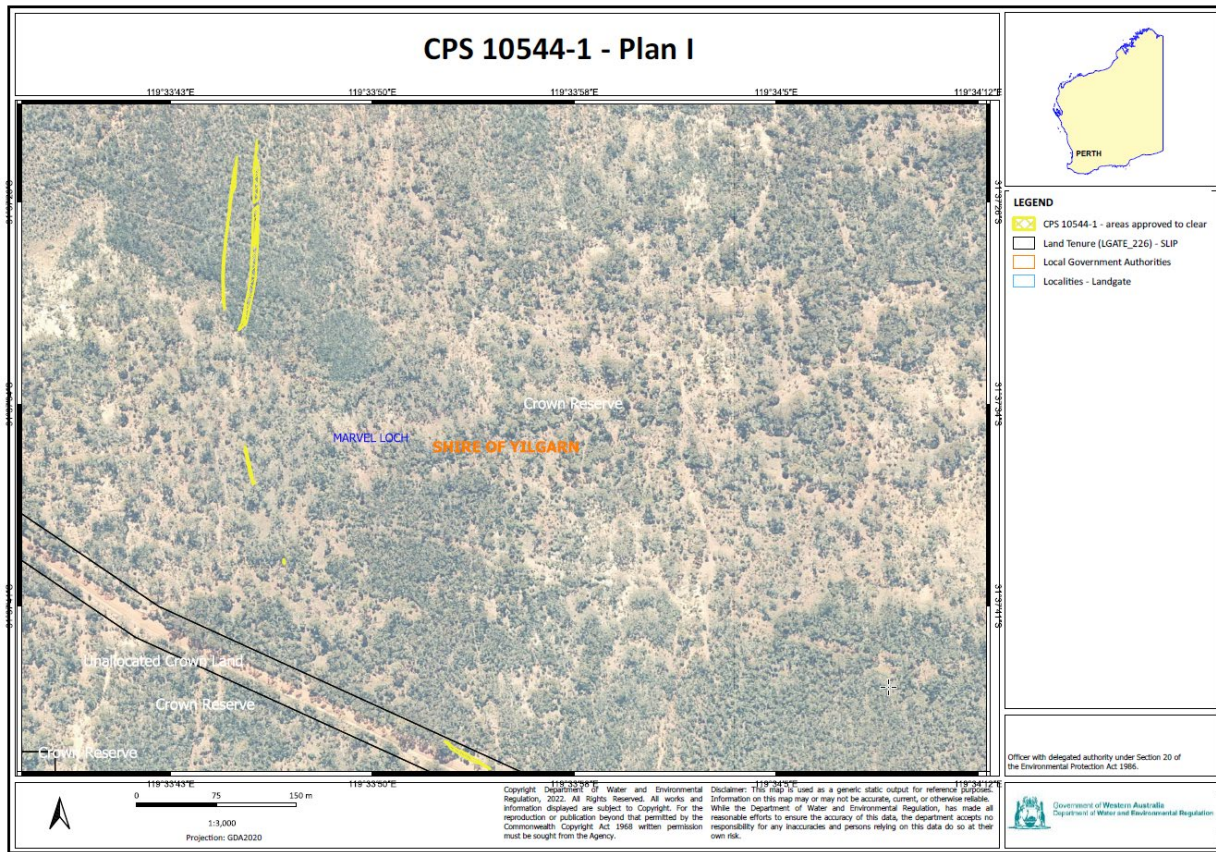


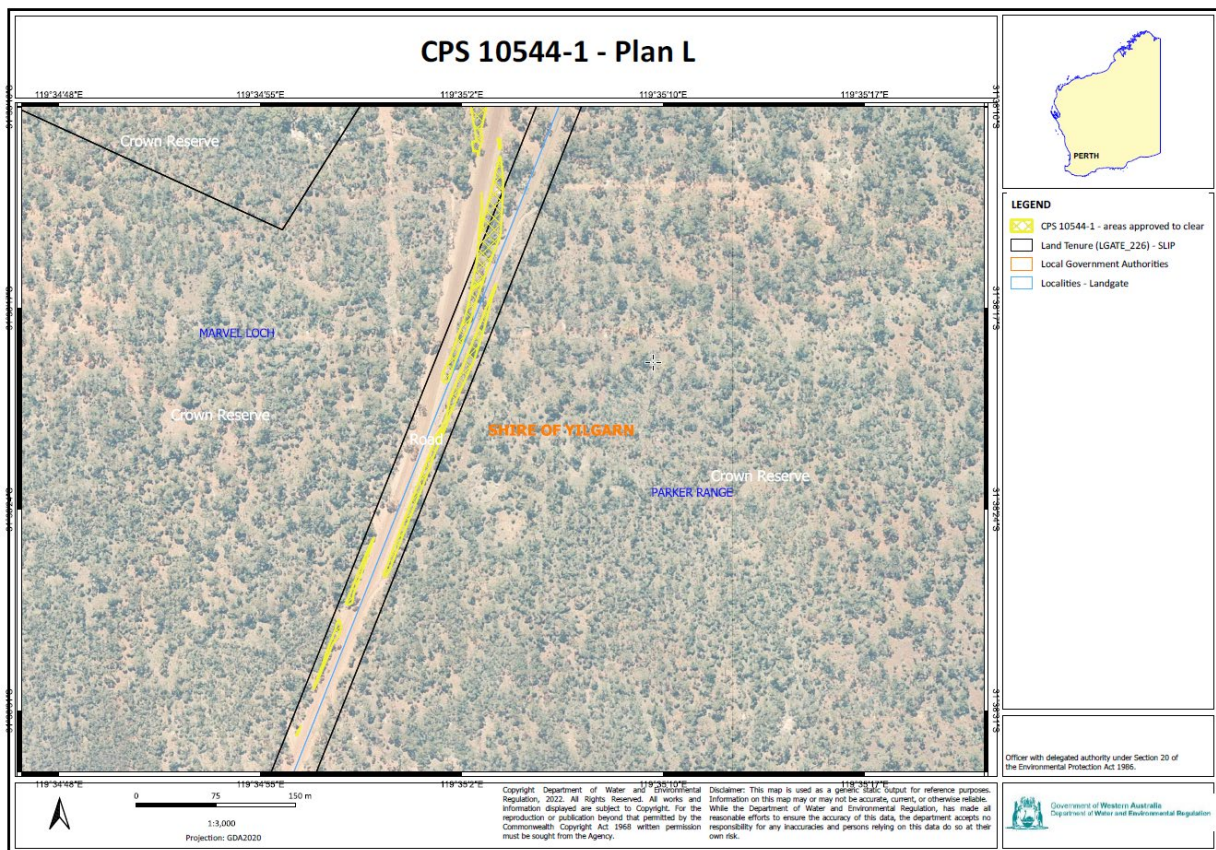
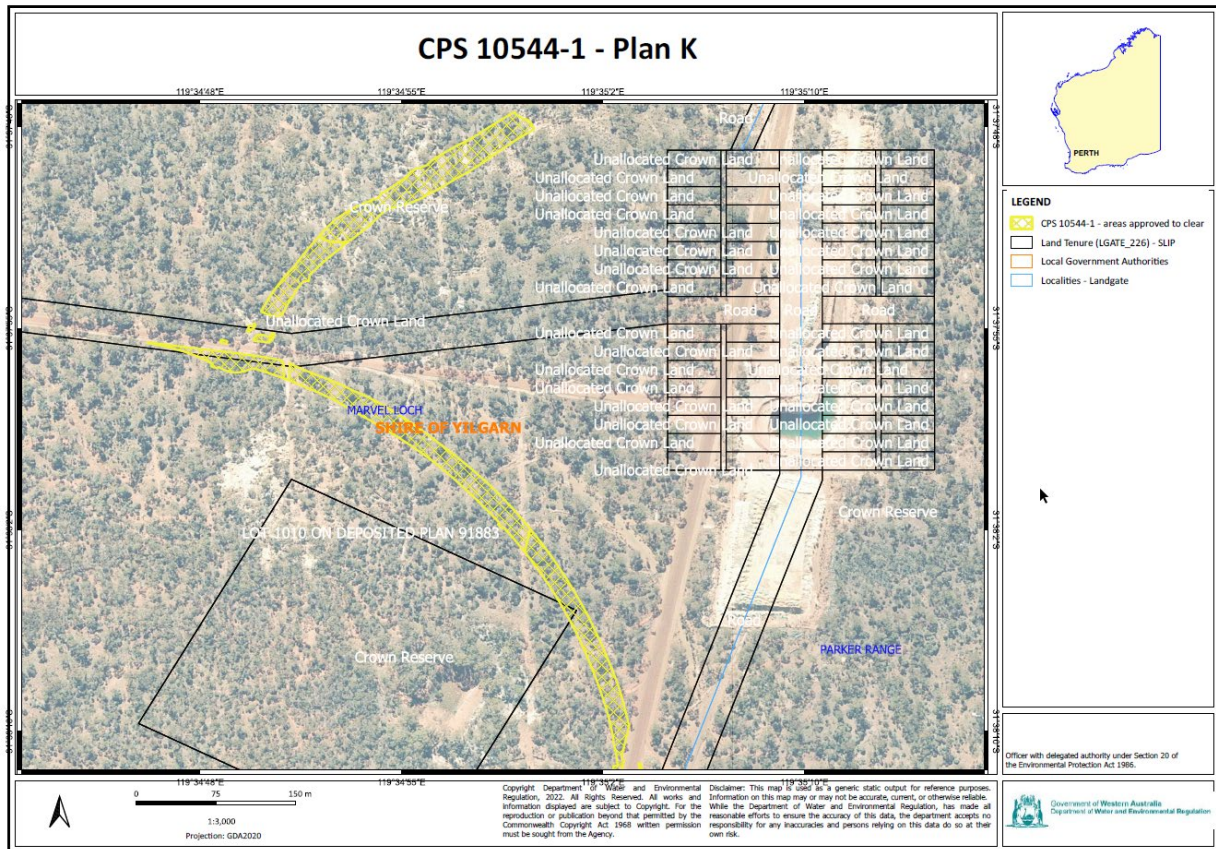


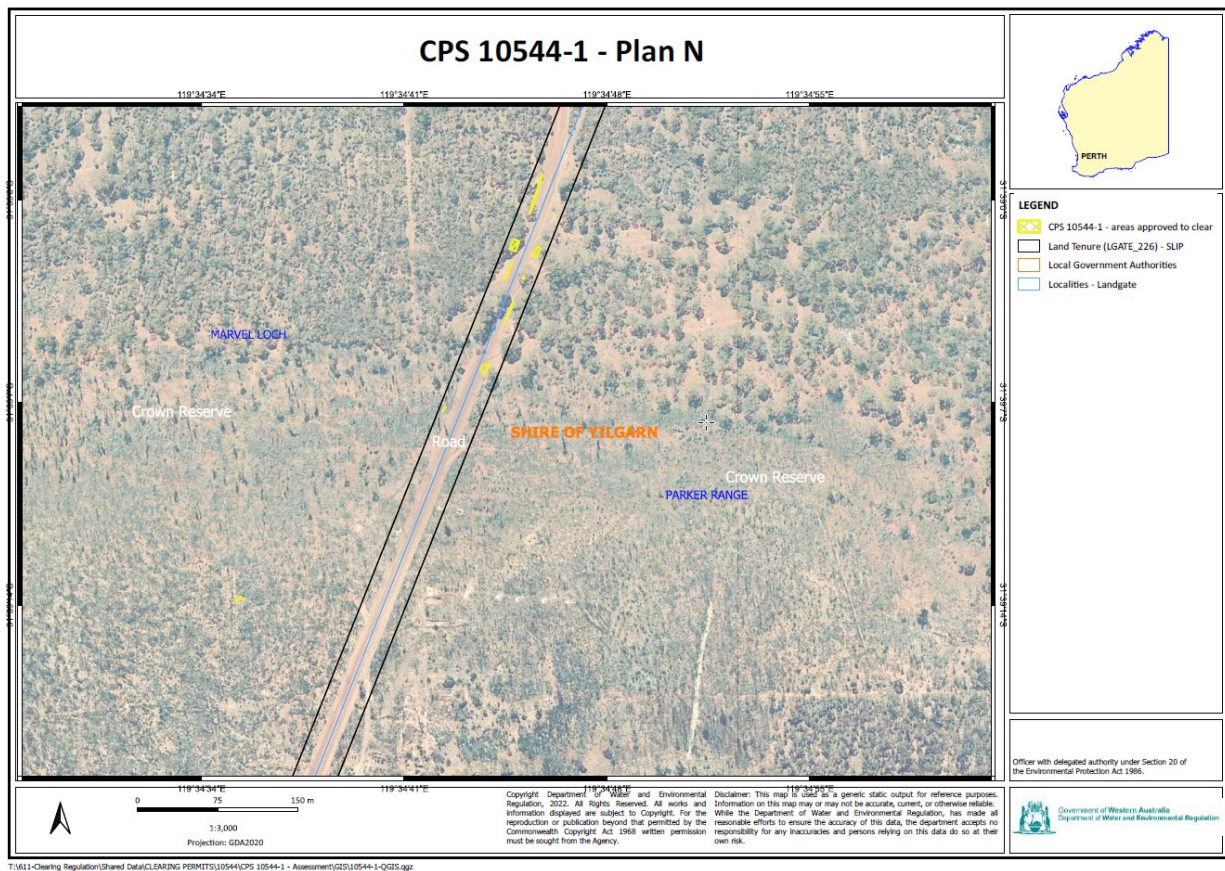
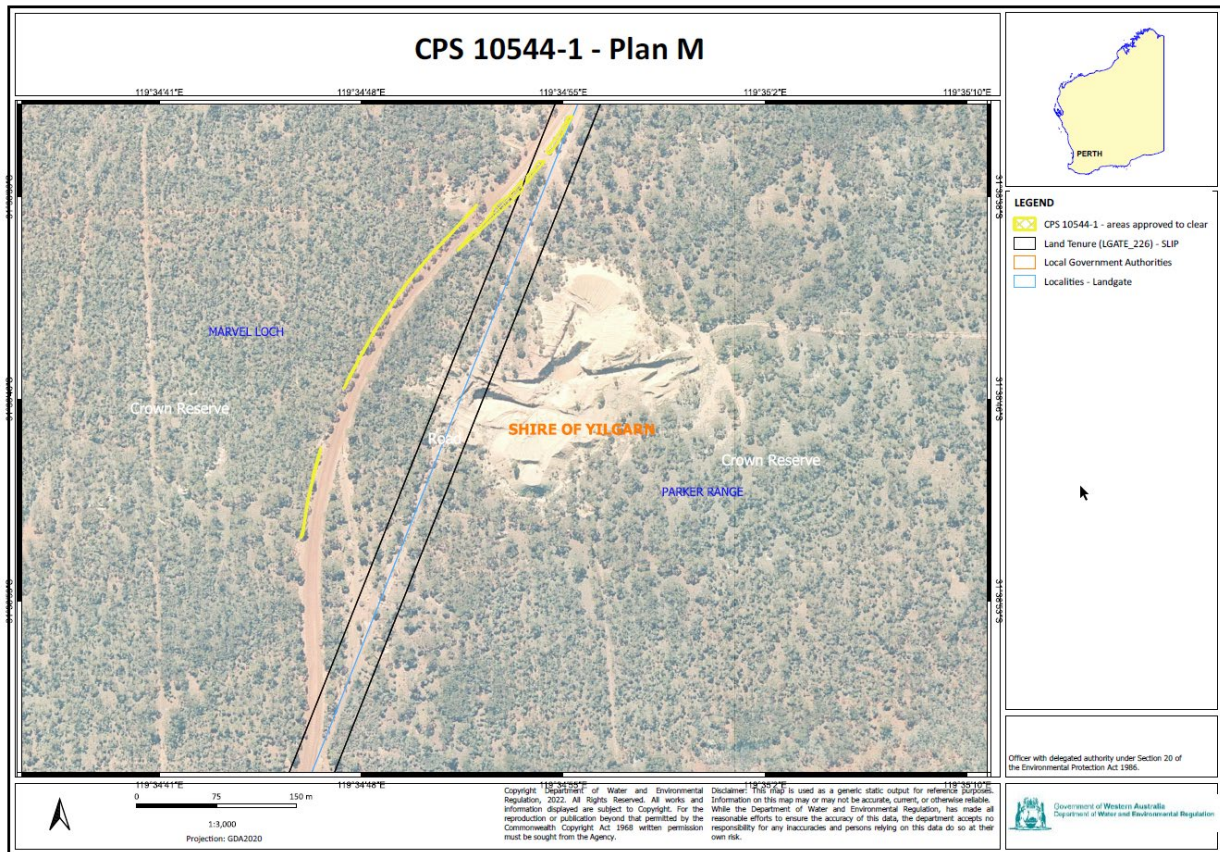


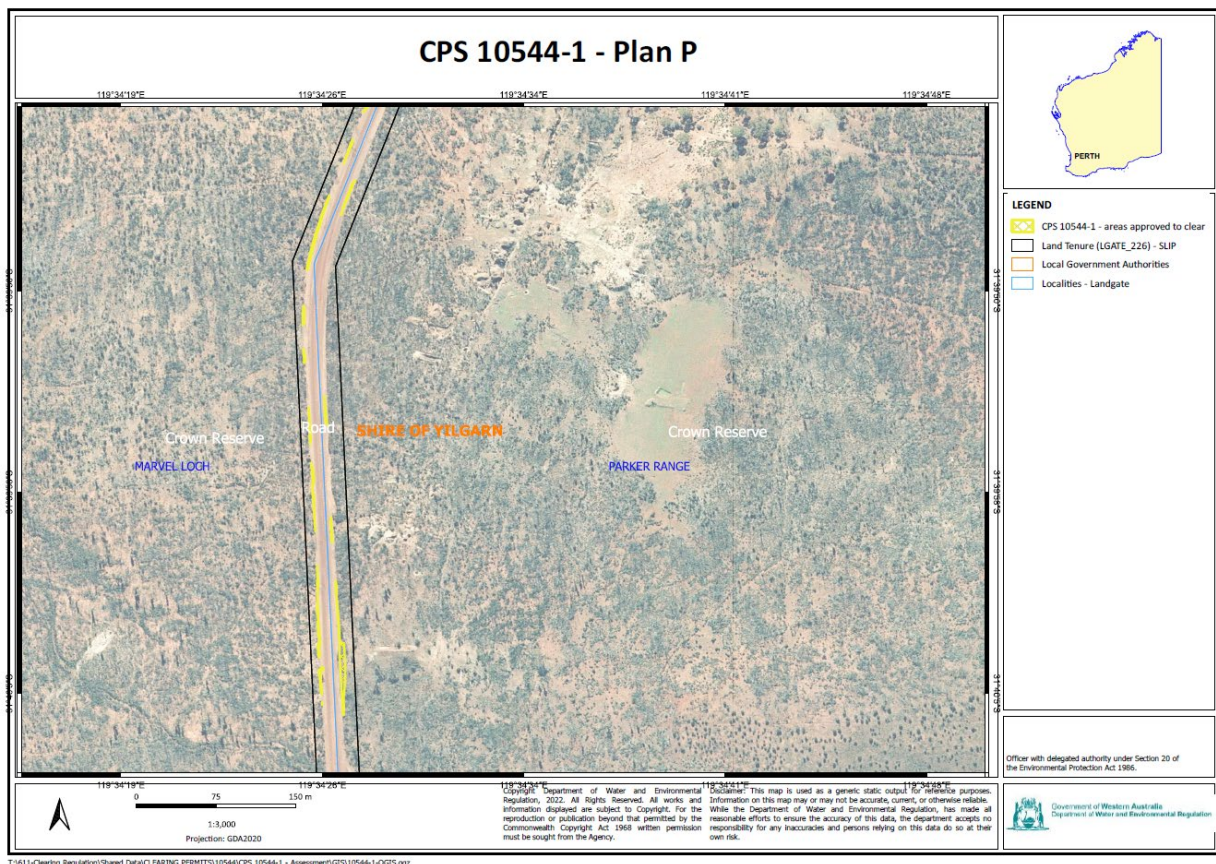
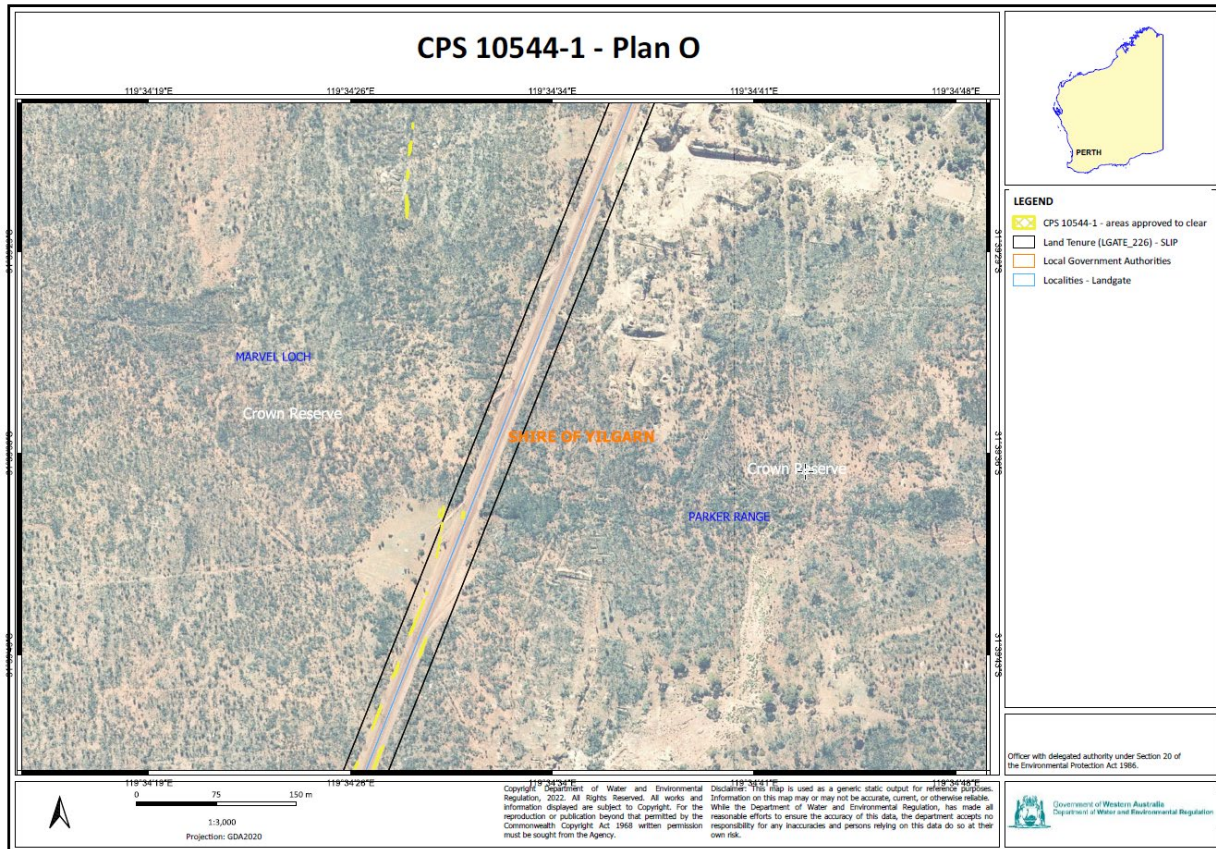


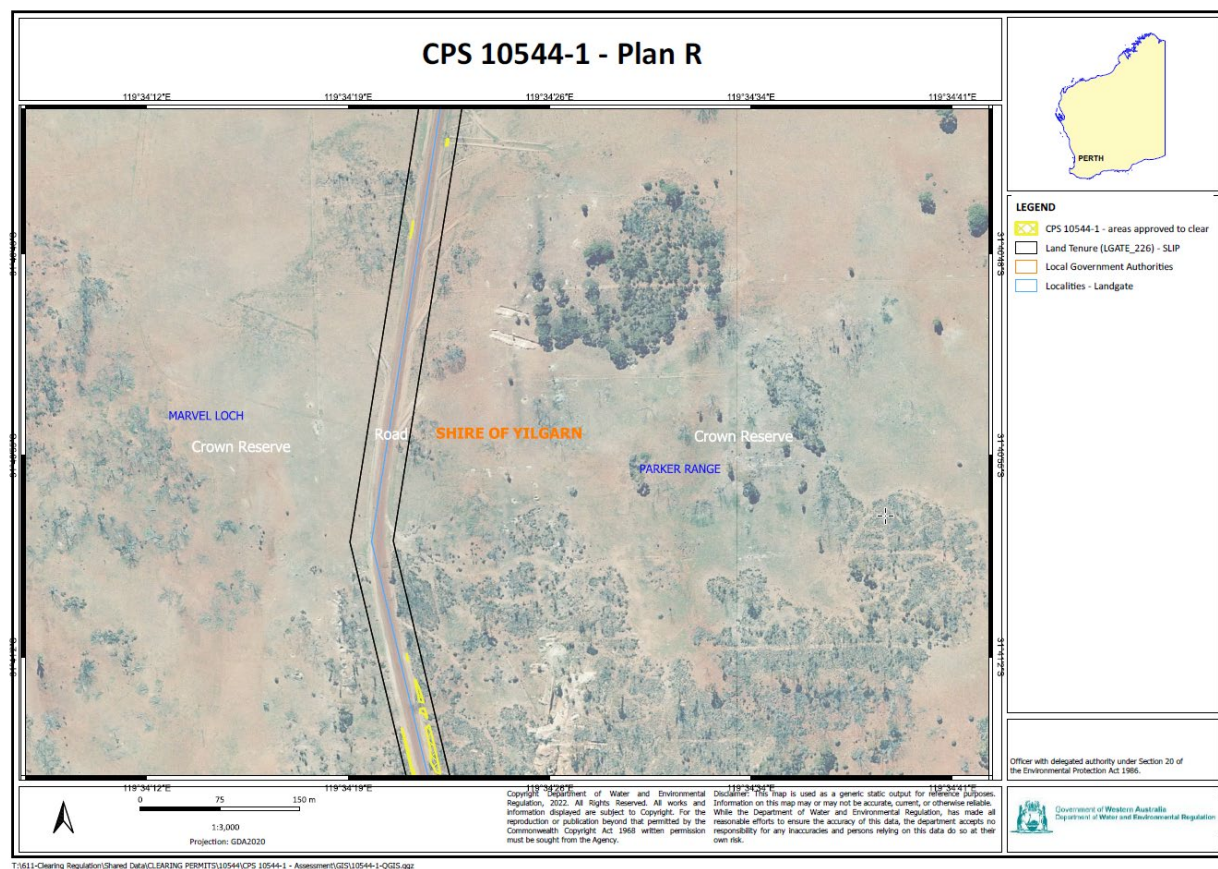
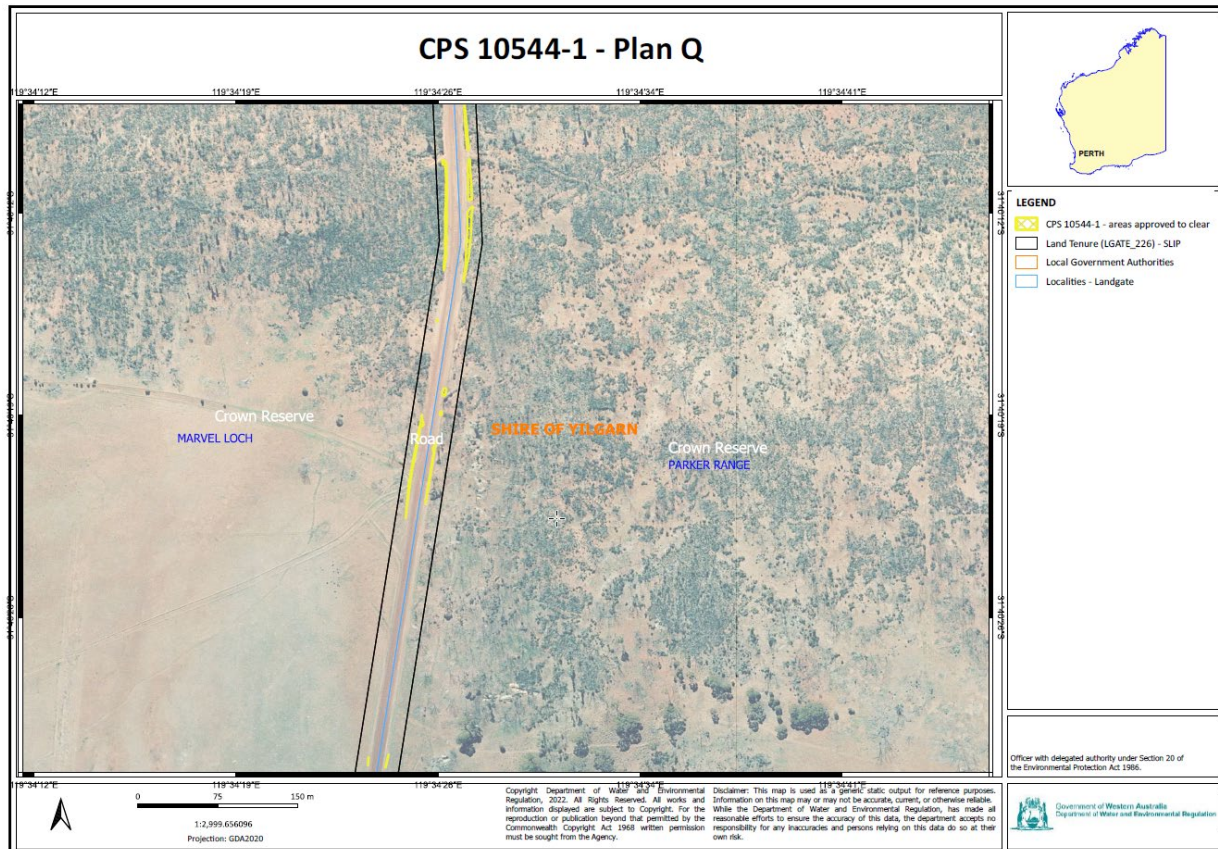


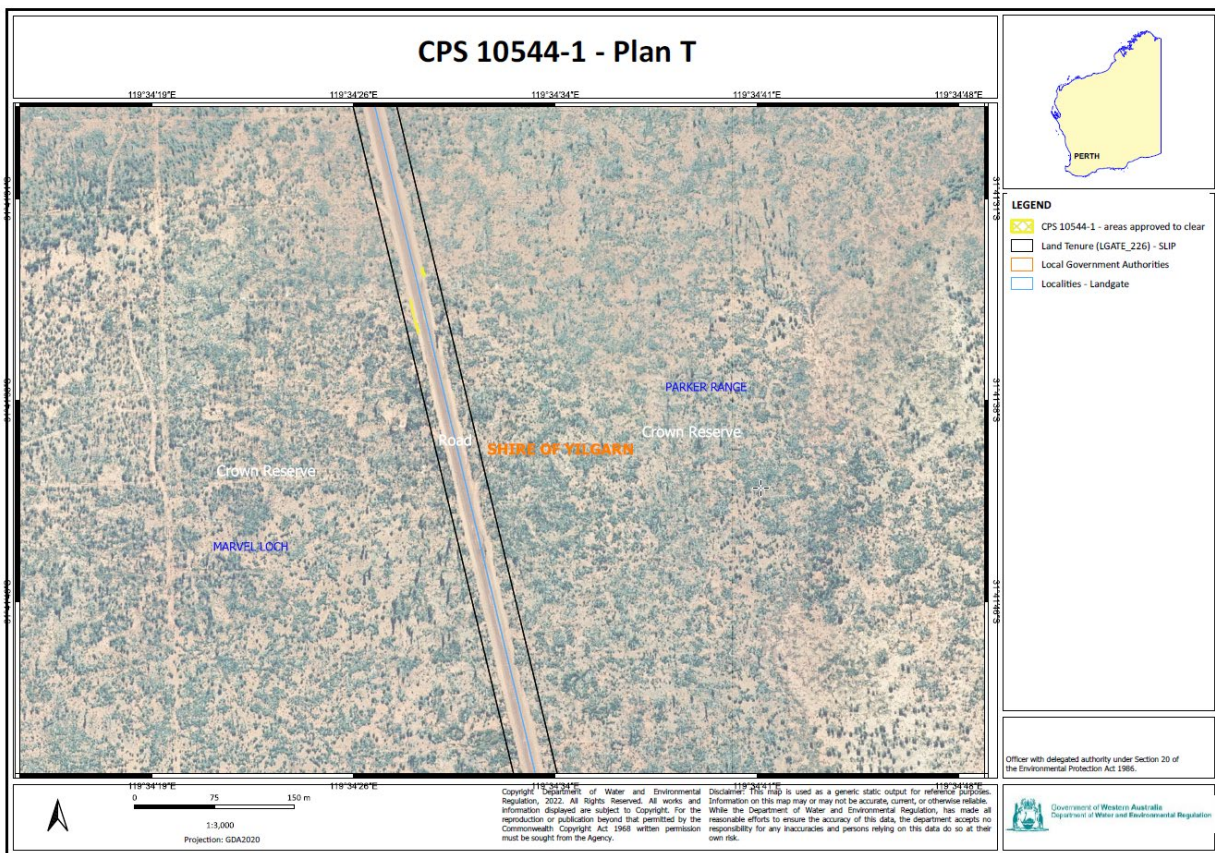
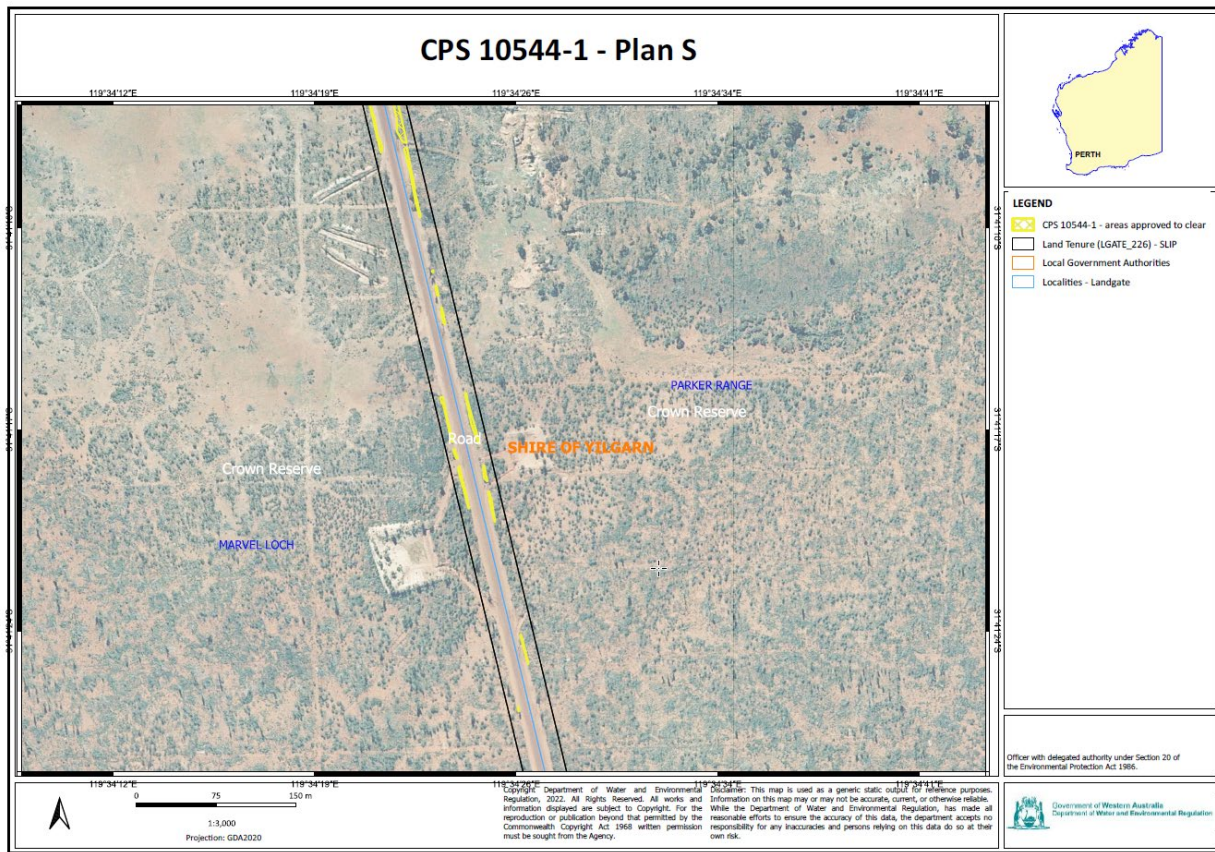


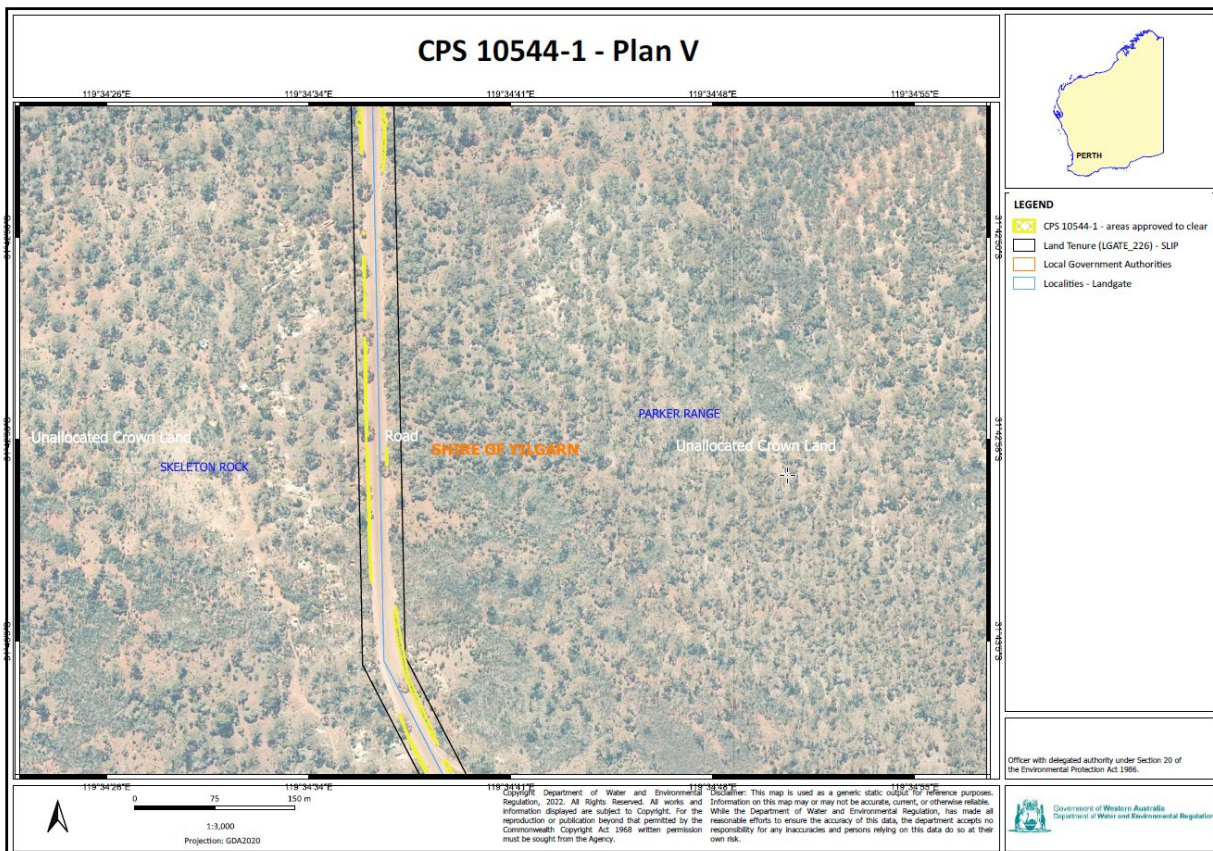
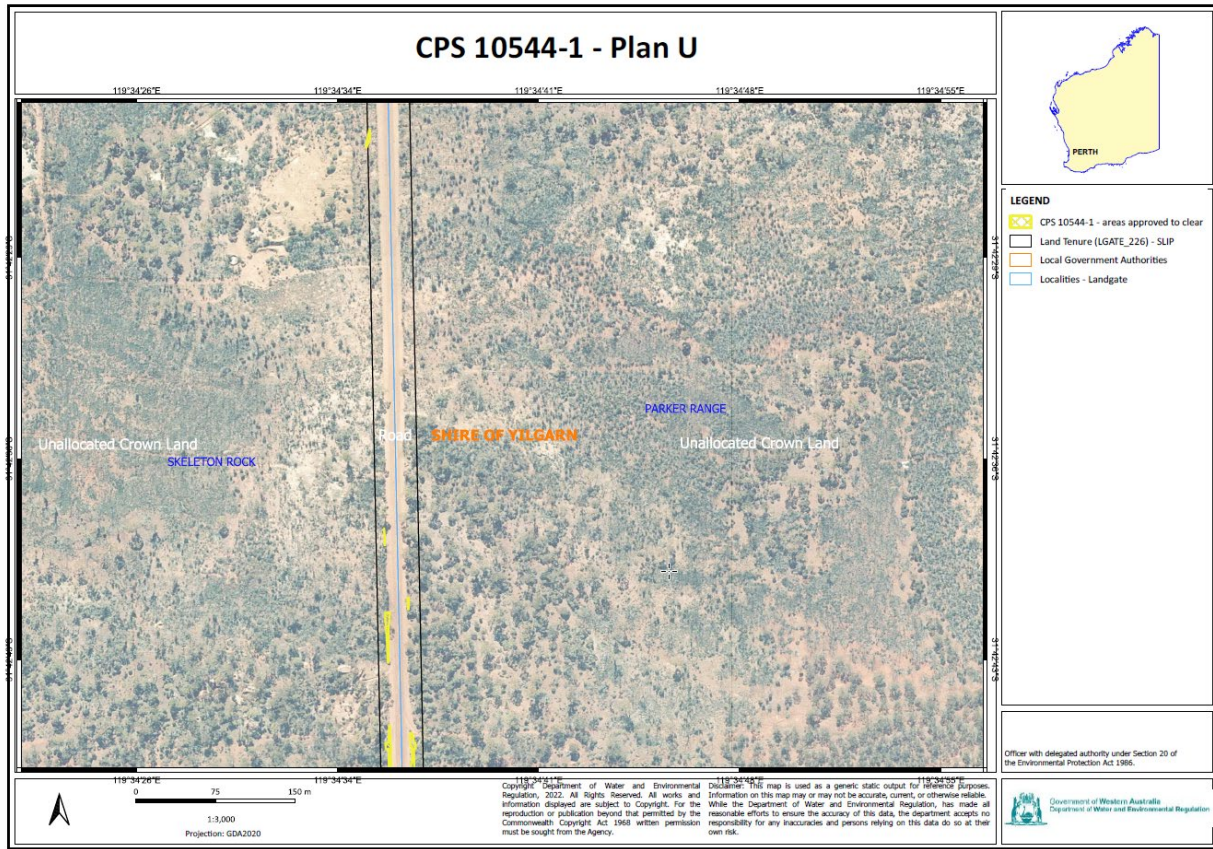


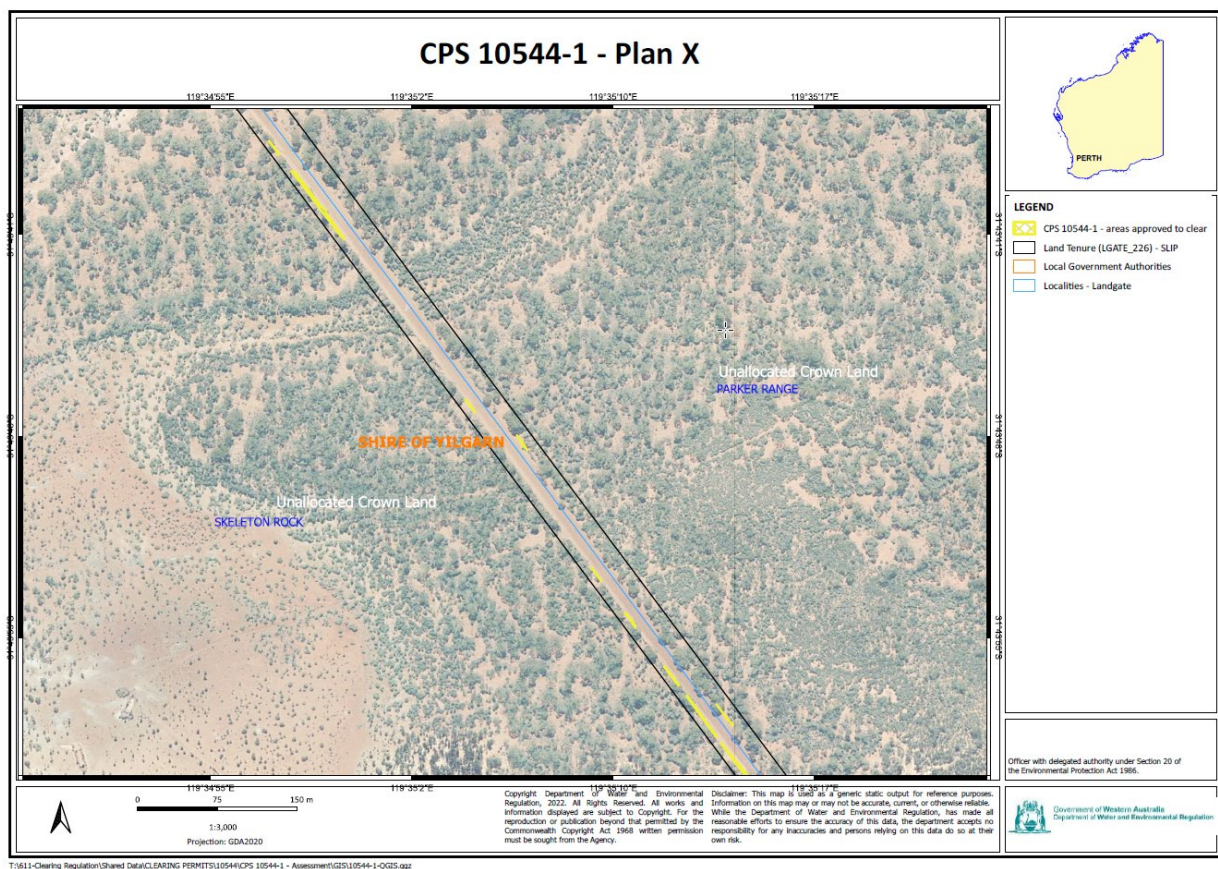
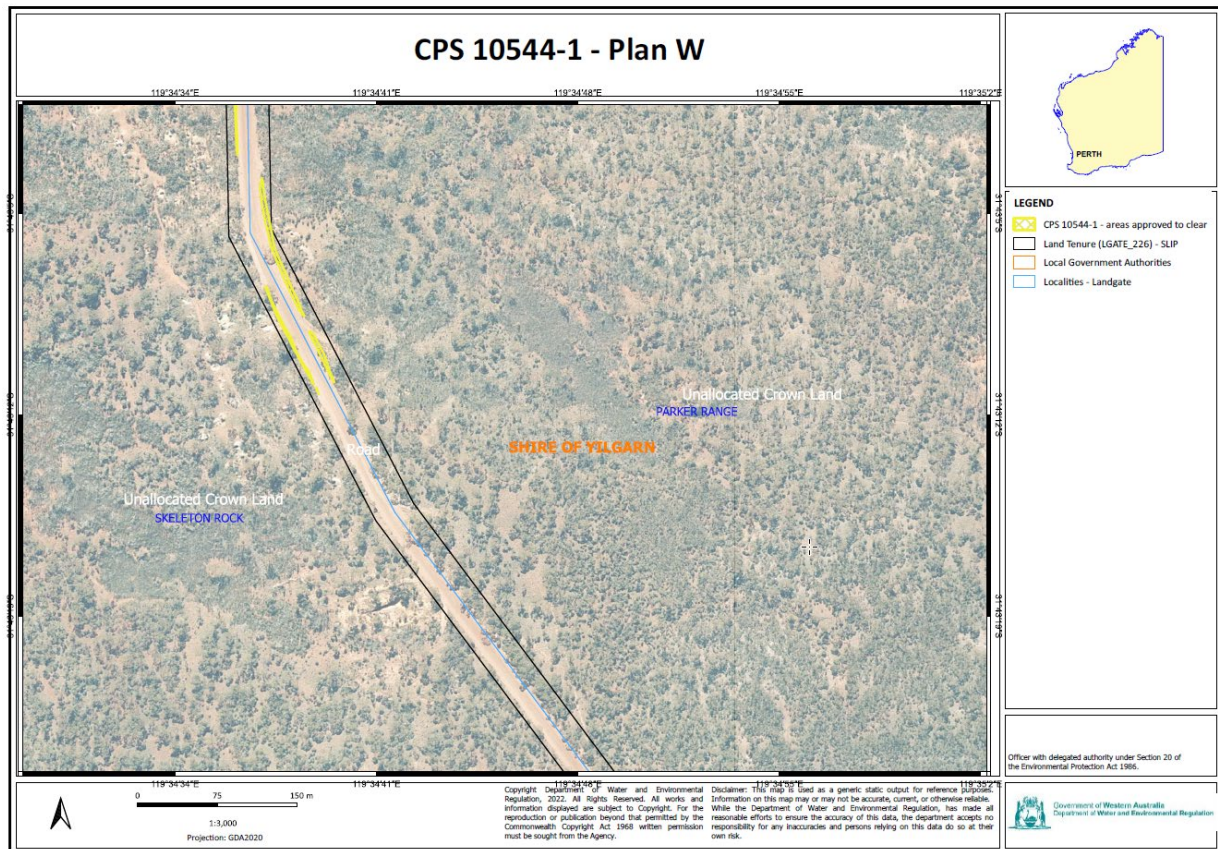


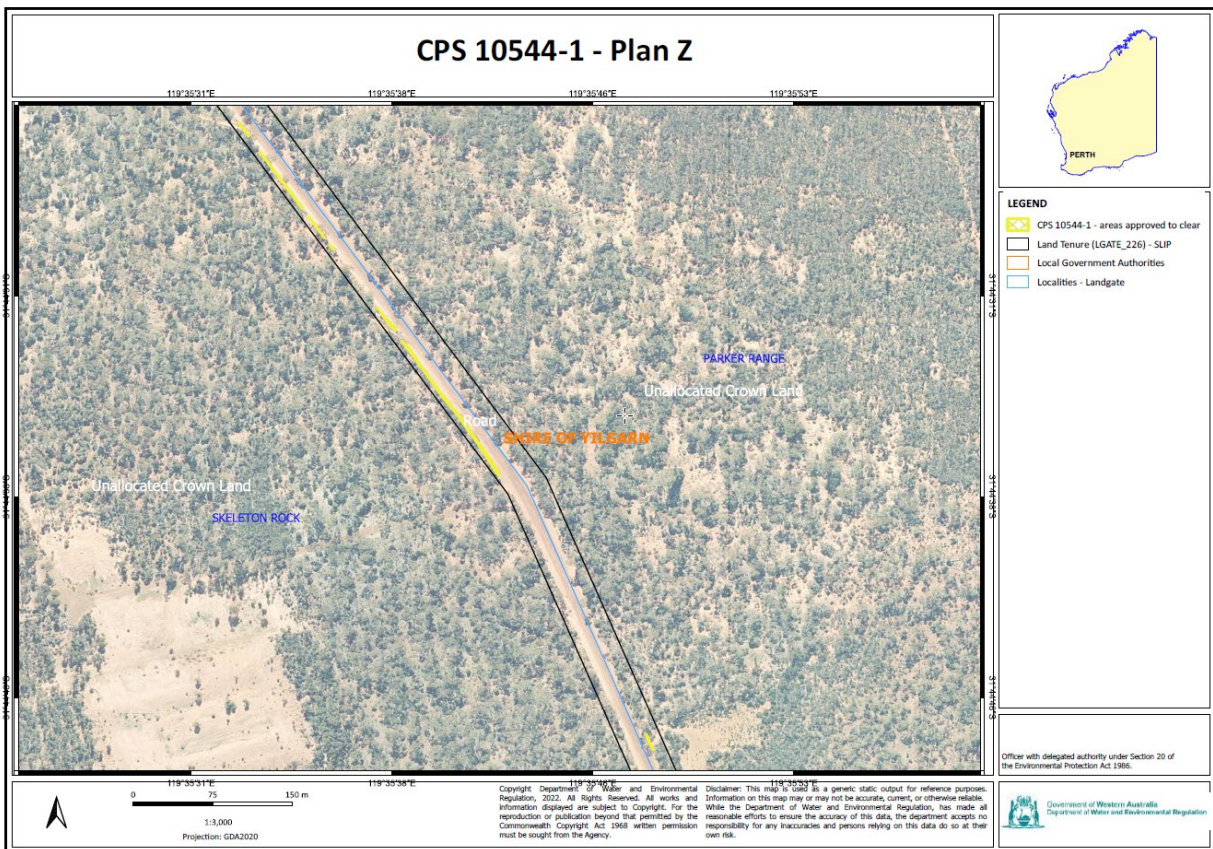
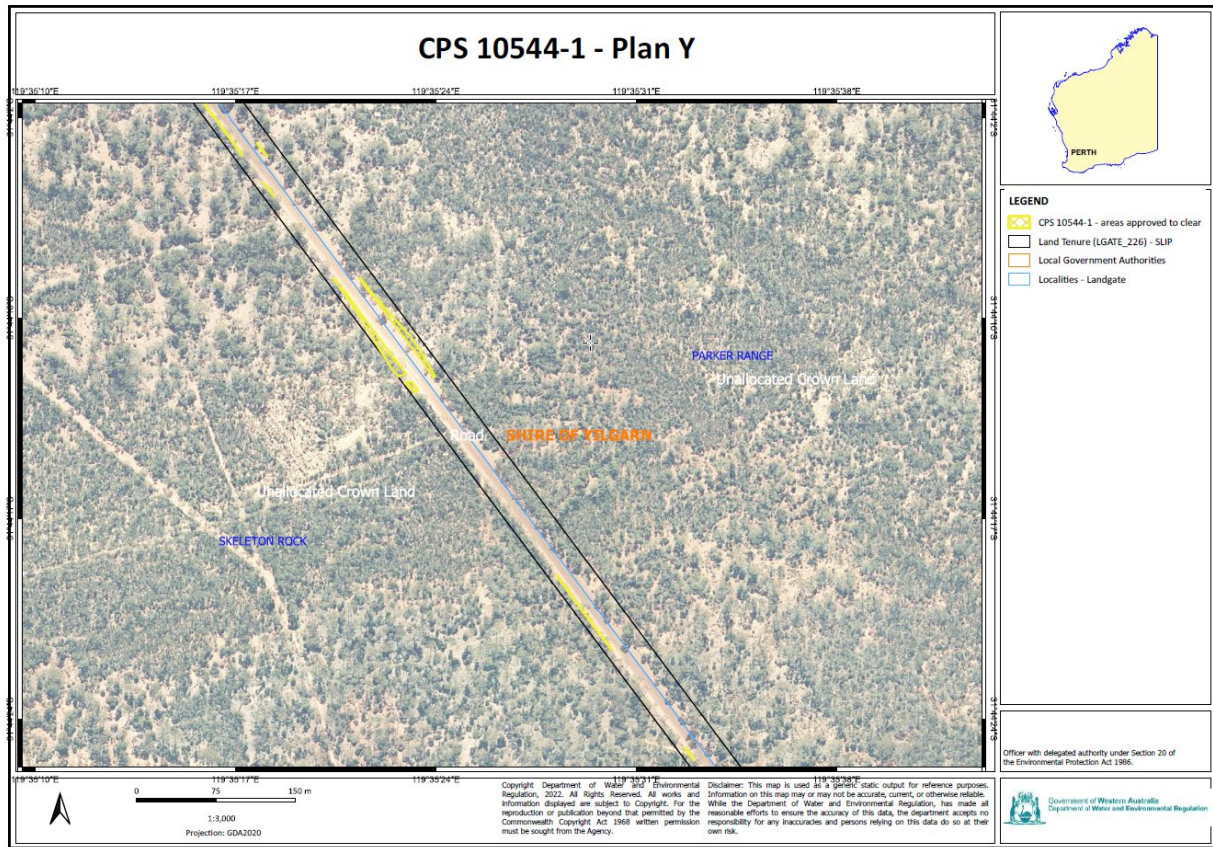


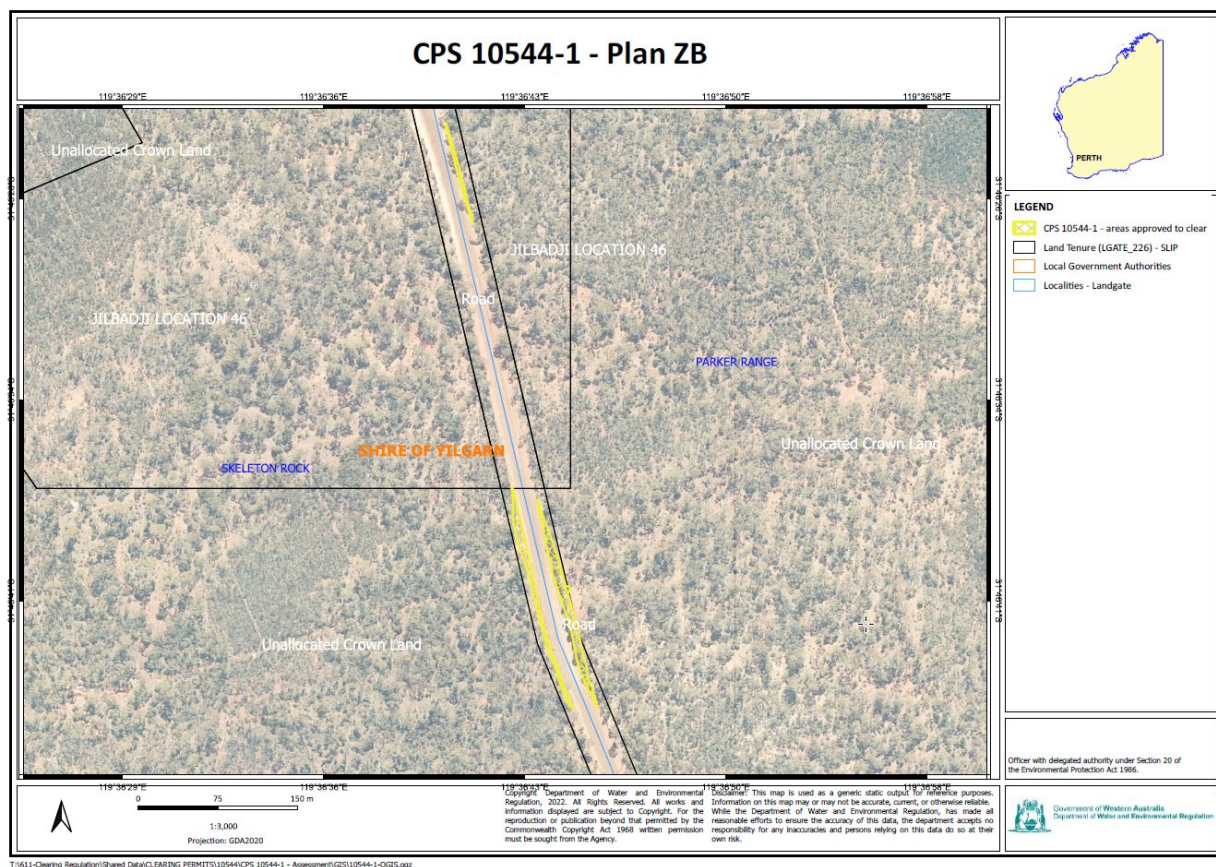
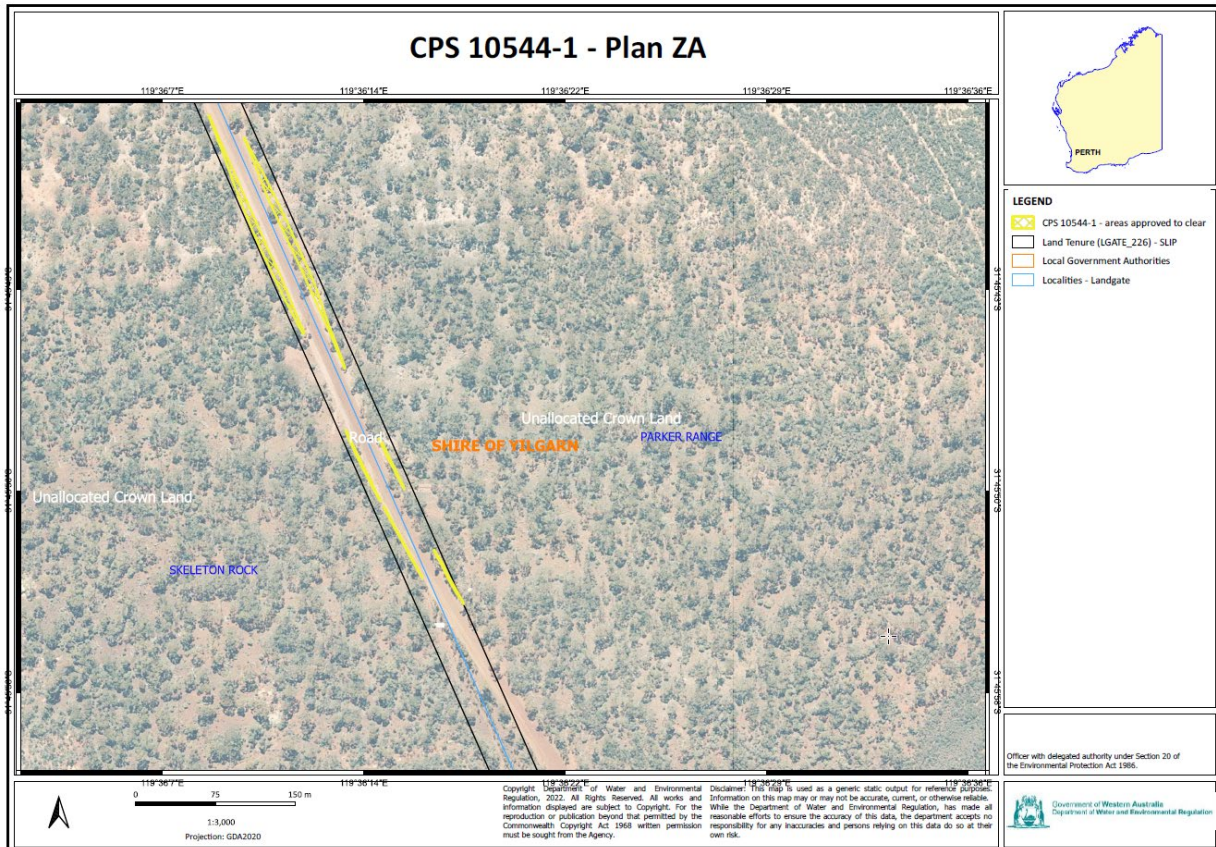


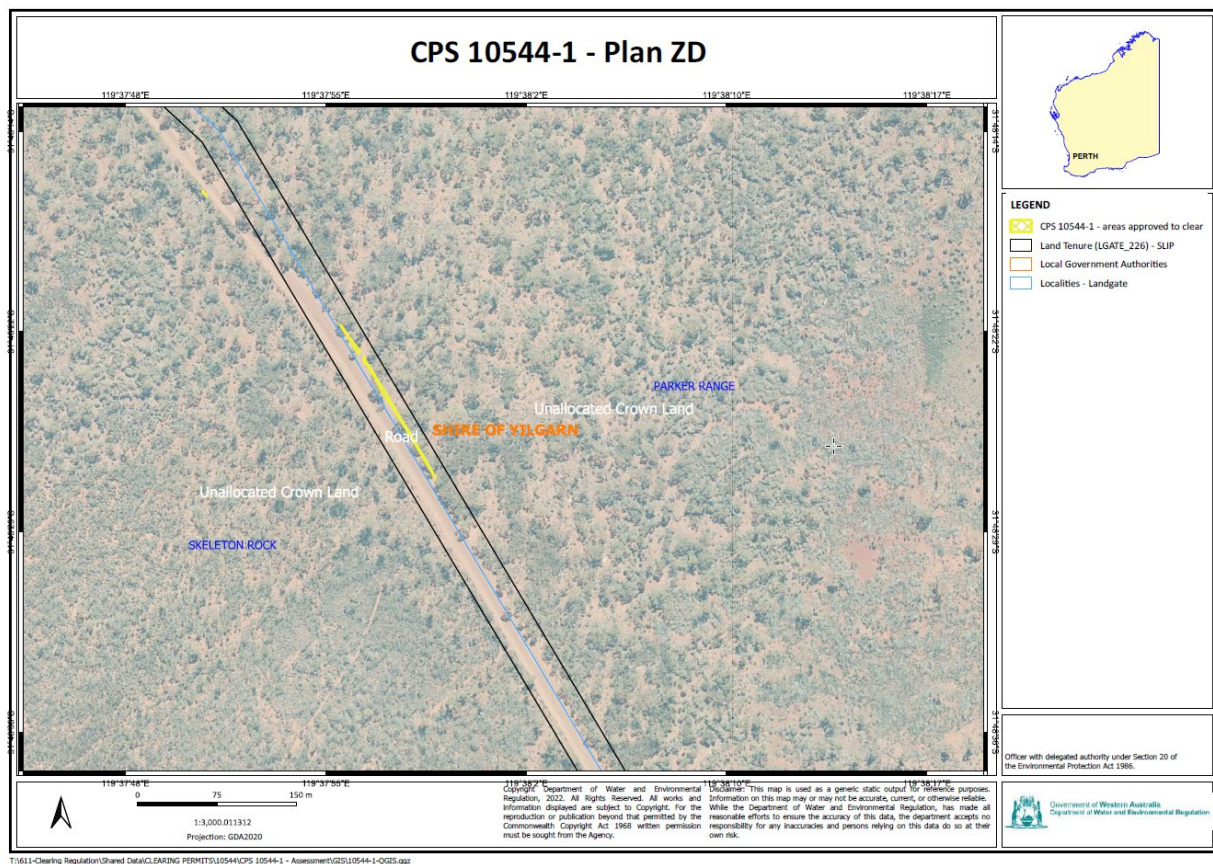
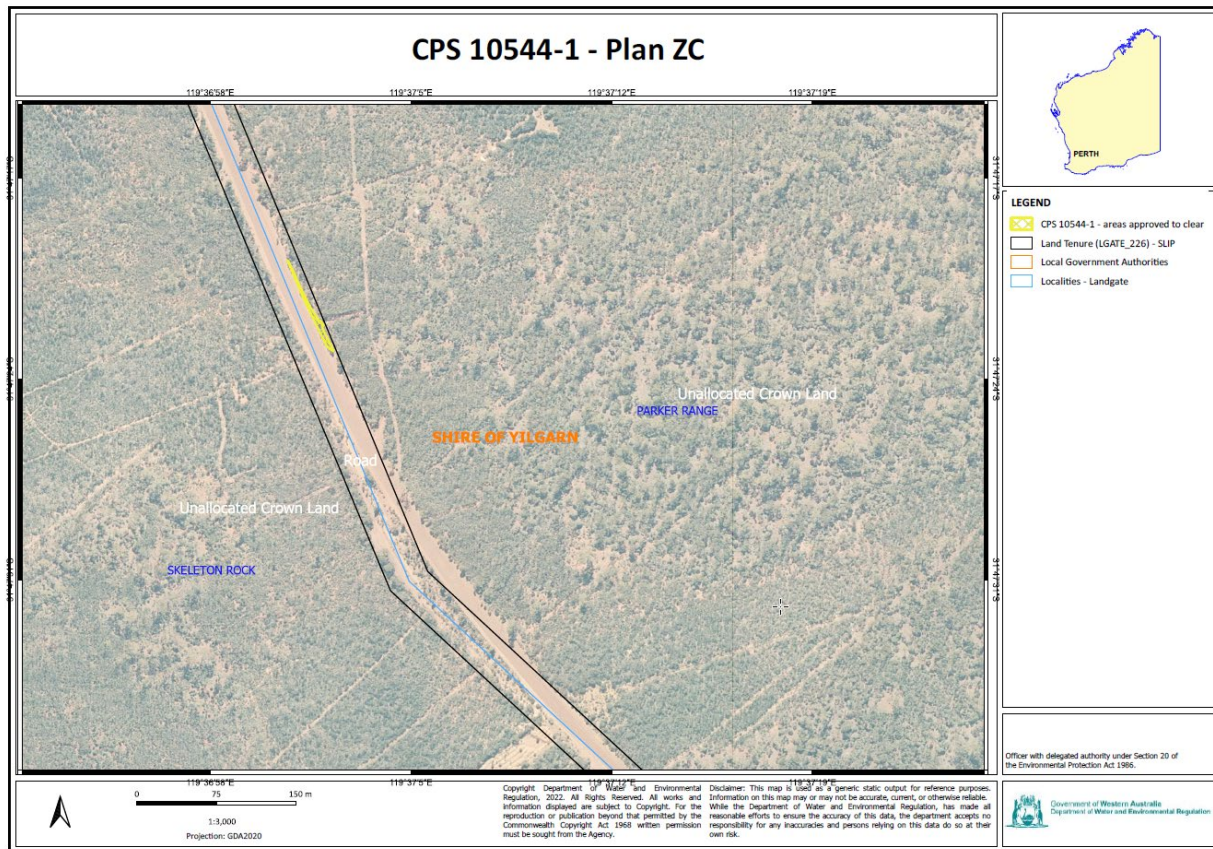


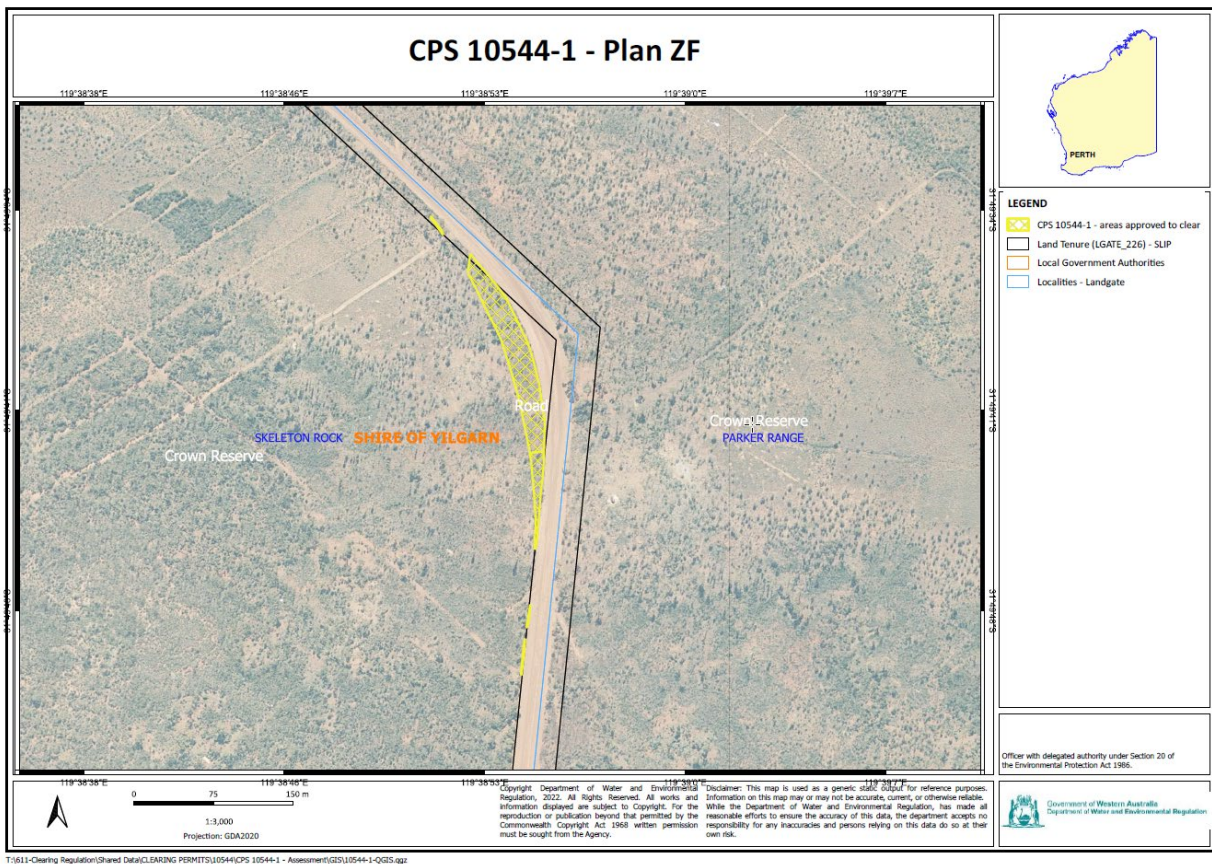
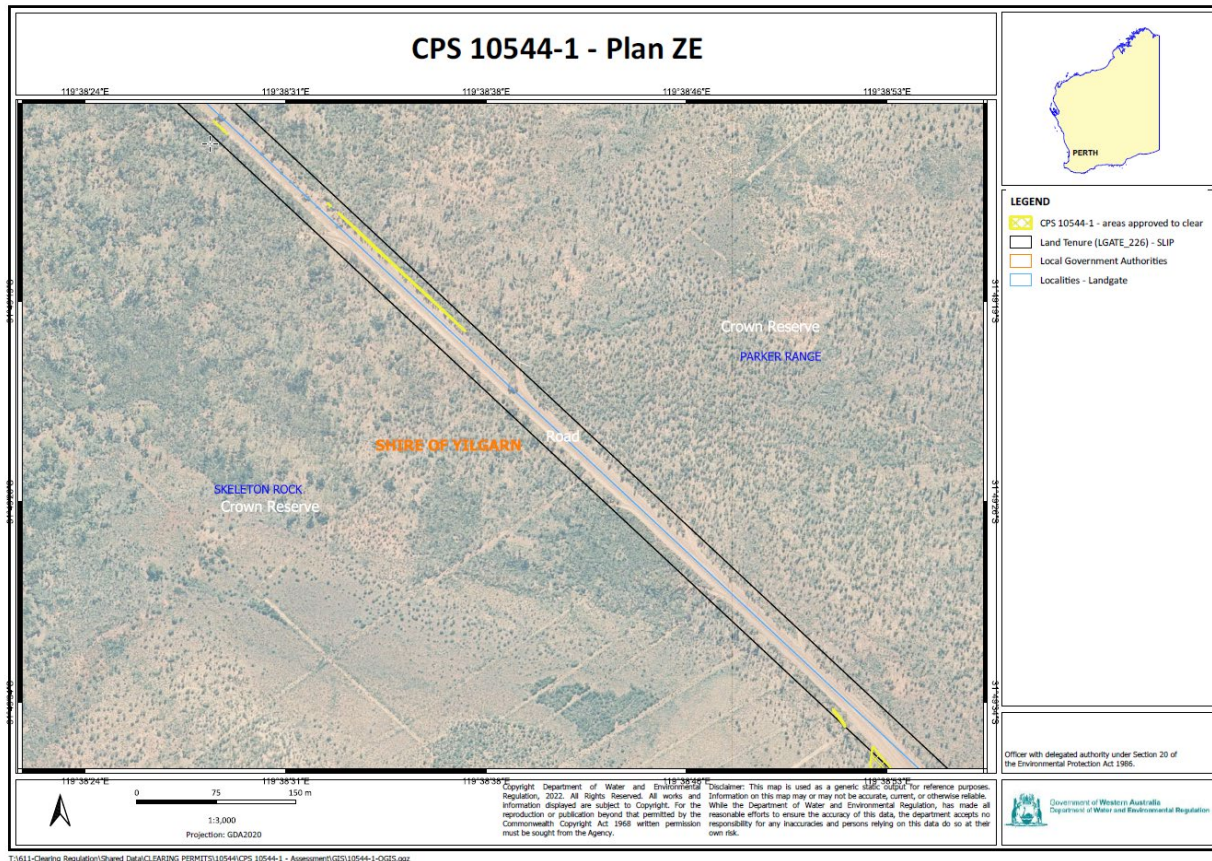


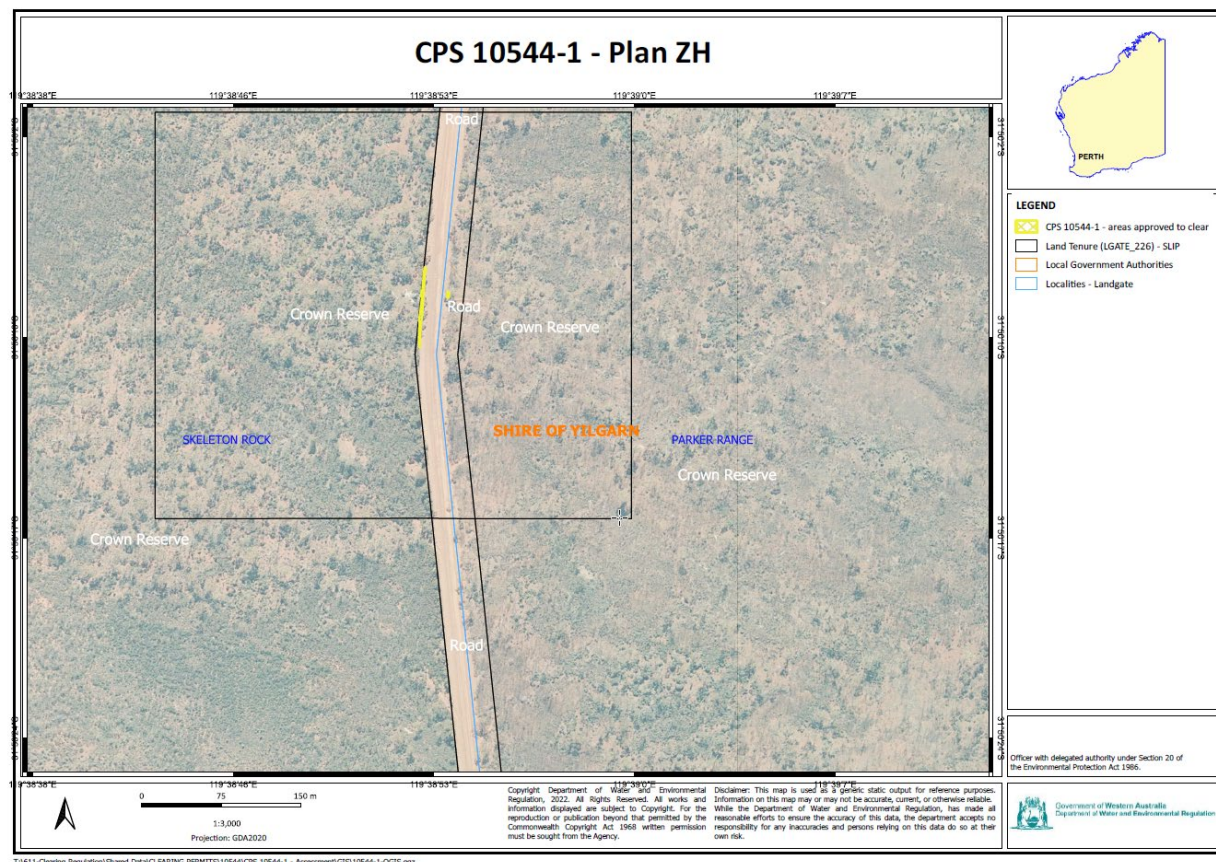
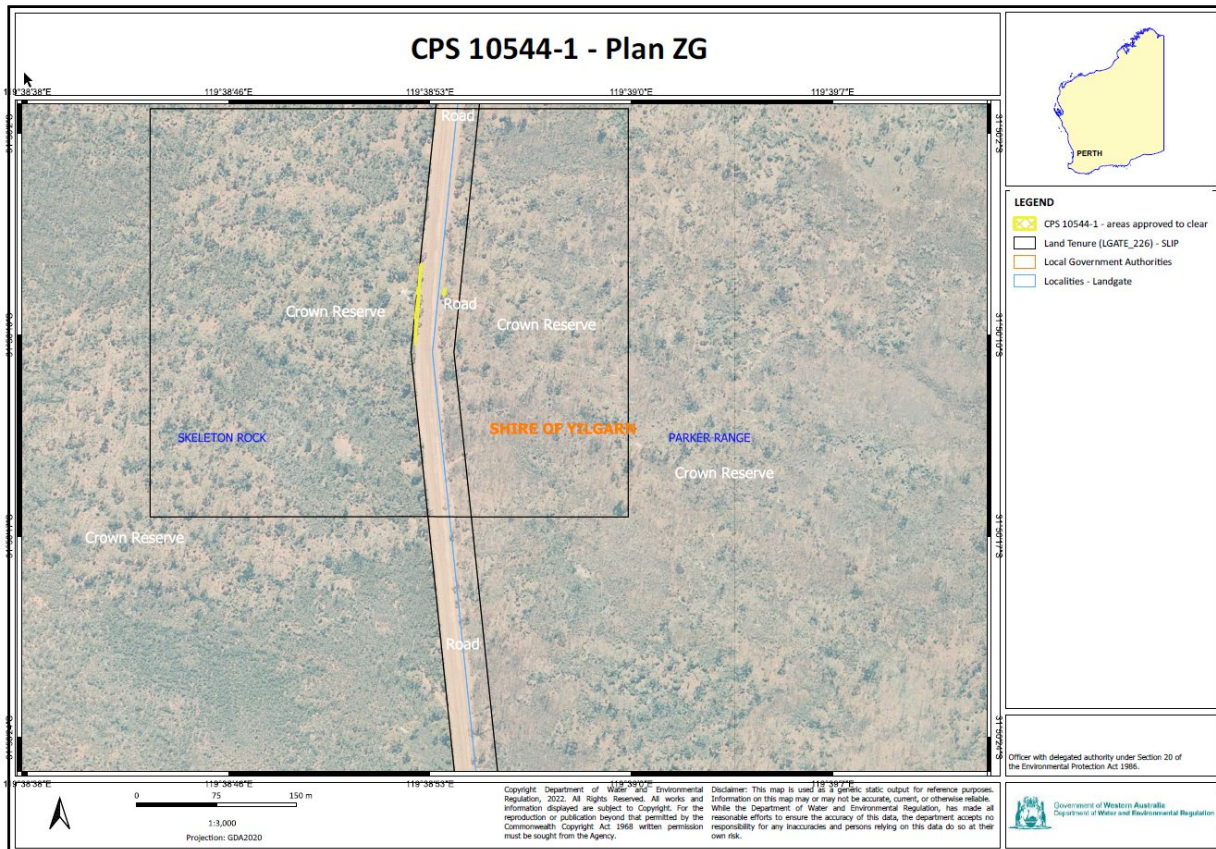












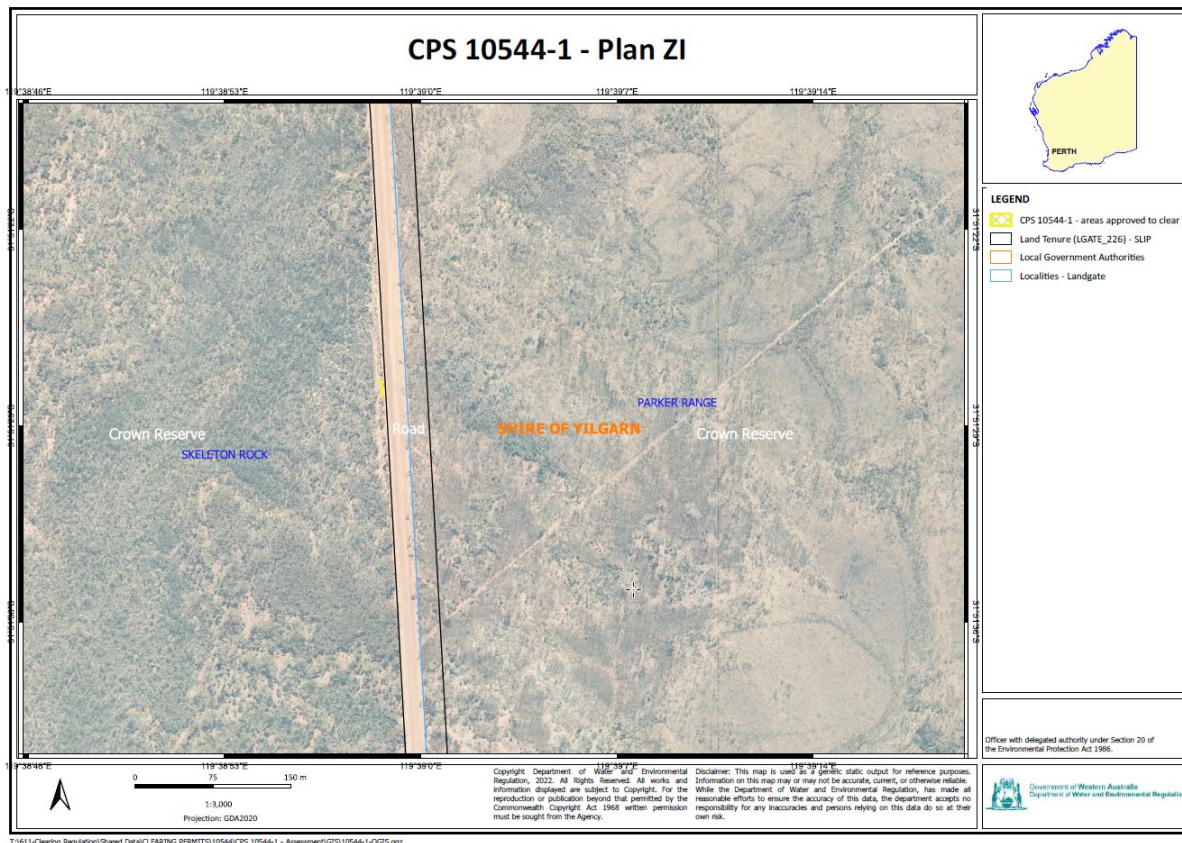


Figure 2. Map of the application area

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

2 Legislative context

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

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

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

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- EPBC Act
- *Rights in Water and Irrigation Act 1914* (RIWI Act)
- *Soil and Land Conservation Act 1945*

Relevant policies considered during the assessment include:

- *Environmental Offsets Policy* (2011)

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)
- *Environmental Offsets Guidelines* (August 2014)
- 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 impacts on environmental values. With regards to the potential impacts on the Wheatbelt Woodland TEC relevant to this application, the applicant submitted that measures have been undertaken to avoid and minimise disturbance to the TEC as far as practicable. The measures, however, must consider the fact that the design of the road in terms of width and alignment must meet the standards and safety requirements set out by the Shire, Main Roads WA and Austroads. The measures include:

- wherever it is safe to do so, road batters are planned to be steepened and/or barriers approved by Main Roads WA installed. The batters associated with these valleys were designed at 1:3 but where possible will be reduced to 1:2 with installation of Armco barriers approved by Main Roads WA to further reduce vegetation clearing. Clearing of hill crests to widen the road, however, cannot be further reduced or they will not meet road safety standards.
- the redesign of drains to make them shallower thereby reducing footprint,
- maintain the road alignment within the cleared corridor
- retain trees in the drain area as much as possible and if not impacting the safety aspects of the road (Figure 3).
- careful consideration to road alignment and sensitivity to adjacent vegetation and priority species
- intensive traffic management to safely divert all traffic around the construction activities but within the road footprint removing the need for additional clearing
- TEC areas are to be clearly identified and signposted to ensure boundaries are demarcated and managed appropriately. This application is a worst-case scenario based on spatial data overlaying mapped TEC with areas subject to road widening activities. The actual clearing of vegetation and particularly large trees associated with the TEC will be minimised where possible. Further mitigation of impacts can be achieved where possible, during ongoing road works on a case-by-case basis where mature trees are identified and retained through visible flagging tape and GPS data. It is estimated approximately 40 trees can be retained.
- sealing the road surface (currently unsealed) will provide significant long-term mitigation and protection to roadside vegetation from dust generated by vehicle movements throughout the dry season and protection against pathogens during the wet season
- stockpiling topsoil and vegetative materials from cleared areas for the purpose of rehabilitation. Removal and deposition of vegetation to be cleared (and has been cleared under existing permits) from the road upgrade will be provided to local landholder adjacent to the road and spread to assist in the rehabilitation of a paddock and borrow pit area. This ensures optimised use of cleared vegetative material and seed source for rehabilitation.

After consideration of avoidance and mitigation measures, it was determined that an offset to counterbalance the significant residual impacts to 0.4 ha vegetation identified as the Wheatbelt Woodlands TEC was necessary. In accordance with the Government of Western Australia's *Environmental Offsets Policy* and *Environmental Offsets Guidelines*, these significant residual impacts have been addressed through the conditioning of environmental offset requirements on the permit. The nature and suitability of the offset provided are summarised in Section 4.



Figure 3. Trees in the drain and road side areas will be retained as much as possible (Western Botanical 2024b)



Figure 4. Sign post near to areas identified as the Woodlands of the WA Wheatbelt TEC (Western Botanical, 2024b)

3.2. Assessment of impacts on environmental values

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

The assessment against the clearing principles (see Appendix C) identified that the impacts of the proposed clearing present a risk to adjacent flora and vegetation including a TEC, fauna, conservation areas and / or land and water resources. The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

3.2.1. Biological values - Biodiversity, Flora and Vegetation – Clearing Principles (a), (c) and (e)

The vegetation in the local area is mapped to vegetation association level. Six mapped vegetation associations occur within the Project Area, (8,128,1068,1148,1271 and 1413) (DPIRD 006; 2019). The vegetation types are characterised by the occurrence of Proteaceous scrubheaths, rich in endemics, on residual lateritic uplands and derived sandplains with mixed eucalypt, *Allocasuarina huegeliana* and Jam-York Gum woodlands on Quaternary alluvials and colluvials. Surveys over the application area and surrounds identified 21 vegetation units within the study area. The vegetation units structurally comprise of tall eucalypt-dominated woodlands and mallee shrublands. The vegetation of the application area and surrounds have been assessed as being in Pristine to Very Good condition (Keighery, 1994). The structure, composition and condition of some of the vegetation units, particularly those with Eucalypt woodlands, may support the Wheatbelt Woodland TEC (Western Botanical, 2024a).

Biodiversity and conservation significant flora

The vegetation types 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 identified the occurrence of one (1) Priority1, three (3) Priority2, two (2) Priority 3, and four (4) flora SOI from the application area. 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 area.

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 clearing permits 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, DWER sought advice from DBCA (2023a, b, c). 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.

Grevillea lissopleura (P1) is a shrub with a restricted distribution known from six locations between Mt Palmer in the north to 60 km east of Holt Rock in the South (extent of occurrence (EOO) <2,300 km²). The application area is around the centre of this species known distribution. Quantitative data on the population size of the species is not available but 1,815 plants were recorded during a survey at Mt Holland in 2019, and frequency information recorded on herbarium specimens ranges from individual or few plants to scattered and frequent. A total of 5,796 individuals have been known, many of which were identified during the multiple surveys by Western Botanical. Eighty-six plants or 1.49% of the known population occurs within the proposed clearing for CPS 10544/1. Seventy-four (74) individuals may also be impacted by the previously granted clearing under CPS 10049/1. Cumulatively, the taking of 160 individuals accounts for 2.8% of the known population. While this may not have a significant impact on the conservation status of this species, given the restricted distribution and level of exploration interest in the area, any further loss of this species may contribute to cumulative impacts to this species. Demarcation of the actual clearing area would avoid inadvertent clearing of individuals nearby and further mitigate impacts.

Acacia asepalae (P2) is a diffuse, much-branched shrub that grows up to 0.5-1.5 m high. It is known to occur on red-brown sandy loam soil over undulating plains, along drainage lines. Its distribution is limited to the Merredin, Southern Cross and Western Mallee sub-bioregion where the application area is limited. Surveys over the application and surrounds found this species in abundance. A total of 25,184 individuals are known from the local area, which includes 103 individuals within the application area. A further 98 and 82 individuals were identified within the clearing areas of CPS 10049/1 and CPS 10265/1, respectively. The taking of 103 individuals from the application area contributes the loss of 0.41% of known individuals, and 1.1% cumulatively. While this may not be considered significantly impacting the conservation status of the species, given its limited distribution to the sub-bioregions, further taking of this species must be avoided to avoid the cumulative impact on the species. Demarcation of the clearing area may mitigate this potential impact.

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/Forrestiana 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. A further 47 individuals are being removed under CPS 10049/1, CPS 10197/1 and CPS 10265/1. Noting that a total of 185,509 have been identified within the local area, the removal of a total of 51 individuals (0.002% of total known population) is not considered significant locally or regionally. Secondary impacts of clearing, however, may affect the many individuals occurring in close 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.

Many of the other SOI identified by Western Botanical are considered to be well represented within the WA Herbarium collection. Western Botanical undertook identification of the specimens using the resources of the WA Herbarium, both the Reference and Research Collections. Western Botanical are very familiar with the local vegetation and are confident that none of these represent any known Threatened or Priority listed flora and therefore do not represent a significant concern for this clearing application. 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. This includes *Grevillea* aff. *huegelii* Marvel Loch with a total of 514 records locally. Six (6) individuals will be taken under the proposed clearing. Another ten (10) individuals are to be taken under CPS 10265/1, that together with the proposed clearing, a total of 16 individuals (3.1%) of the total local population will be removed from the local area. While this does not seem to be significant, care must be exercised to avoid further clearing of this species, noting that this taxon could be significant to the conservation if it is found to be a novel species. Clear demarcation of the application area may avoid inadvertent removal of the taxon individuals nearby.

Several conservation significant flora species have been recorded within 50 m of the application area as listed in the table below.

Table 1. Conservation significant flora species adjacent to the application area

Taxon	Conservation Status	Distance to application area (km)	Number of known individuals in the local area
<i>Acacia crenulata</i>	P3	0.01	3,006
<i>Balaustion grandibracteatum</i> subsp. <i>junctura</i>	P2	0.06	78,752
<i>Brachyloma stenolobum</i>	P1	0.04	11,721
<i>Cryptandra</i> sp. <i>Zigzag</i> (G. Cockerton-319)	SOI	0.05	783
<i>Eremophila caerulea</i> subsp. <i>merrallii</i>	P4	0.01	76
<i>Eucalyptus</i> aff. <i>salubris</i> pruinose branchlet form (G. Cockerton & J. Warden WB40196)	SOI	0.01	1,661
<i>Eucalyptus calycogona</i> subsp. <i>miraculum</i>	P1	0.02	445
<i>Hakea pendens</i>	P3	0.01	10,801
<i>Microcorys</i> sp. <i>Forrestiana</i> (V. English 2004)	P4	0.03	344,780
<i>Phebalium drummondii</i>	P3	0.06	5,217
<i>Phebalium</i> aff. sp. <i>Yerilgee Sandplain</i> (J. Jackson 223)	SOI	0.02	22,161
<i>Rinzia fimbriolata</i>	P1	0.05	138
<i>Rinzia medifila</i>	P1	0.01	34053
<i>Rinzia torquata</i>	P3	0.05	6251
<i>Rinzia triplex</i>	P3	0.03	15224

<i>Stenanthemum aff. bremerense</i> (WB40845)	P4	0.01	5092
<i>Verticordia mitodes</i>	P3	0.07	3278
<i>Wilsonia sp. upright</i> (G. Cockerton 661)	SOI	0.05	270

Given their location outside of the clearing area, the conservation significant flora species individuals will not be removed by the clearing. However, due to their proximity, indirect impacts or inadvertent removal of the species can occur at the time of clearing. This emphasises the importance of demarcating the clearing area prior to and during clearing to avoid impacts of the conservation significant flora species nearby.

A threatened species (*Banksia dolichostyla*) has been recorded in the region, the nearest record to the application area is located approximately 16.5 km south of the application area where it is identified and recorded in abundance. Although the vegetation adjacent to the application area may contain habitat that would support *B. dolichostyla*, the multiple surveys have confirmed that no threatened flora species including *B. dolichostyla* will be impacted by the proposed clearing. Demarcation of the clearing area will provide further avoidance of impacts to any individual occurring.

Plant Assemblages of the Parker Range PEC

The majority 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). The vegetation proposed to be cleared, however, mostly is within the road reserve, outside of the mapped PEC areas. Clearing, therefore, is unlikely to remove any vegetation from the PEC. Indirect impacts of clearing through the introduction of weed and dispersion of dust, however, may reduce the quality of the PEC. This risk can be avoided and minimised by the application of weed and dust control measures which are required as conditions to the permit.

Six vegetation associations mapped over the application area includes Vegetation Association VA 8 whose current extent of cover is below the National Target of a minimum 30%. Vegetation Association 8 within the Merredin sub-bioregion retains approximately 14% of its pre-European cover, whilst that in the Southern Cross bioregion retains more than 90%. Together, VA 8 in the two sub-bioregion retains approximately 24% of their original extent prior to European colonisation. VA 8 is described as occurring in the Wheatbelt region comprising mostly of York gum and salmon gum etc. (*Eucalyptus loxophleba*, *E. salmonophloia*). Being described only at the association level, the mapping of VA 8 is broad. Some of the tall eucalypt woodland type of vegetation 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 application area would coincide with VA 8 vegetation type. While acknowledging that clearing may impact on the environmental values of the remnant VA 8 in the local area, noting that most of the clearing will occur within the road reserve, the proposed clearing is unlikely to significantly reduce the extent of this 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 values – Threatened Ecological Community – Clearing Principle (d)

A large portion of the road project sites is mapped as the Wheatbelt Woodlands PEC (Priority 3), synonymous with the Commonwealth listed TEC (of the same name) under the *EPBC Act*. The vegetation in the area comprises of eucalypt woodlands which are likely to support the TEC (Western Botanical, 2023a; 2023b).

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. salmonophloia* and *E. loxophleba*
- A native understorey is present but is of variable composition, being a combination of grasses, other herbs and shrubs.

The Conservation Advice also underlines that most of the ecological community lies within the intensive land use zone of south-western WA (Shepherd et al., 2002). The agricultural clearing line presently (as of December 2014) demarcates the intensive and extensive land use zones (See Figure 5). The extensive, largely uncleared vegetation east of the agricultural clearing line, is known as the Great Western Woodlands. The agricultural clearing line, the eastern boundaries for the Avon Wheatbelt and Mallee IBRA bioregions, and the eastern boundary for the Transitional Rainfall Province all generally occur in parallel (noting exceptions such as the Lake Hope district). Each of these could be used to delineate the eastern extent of the ecological community. However, the IBRA bioregional boundaries intrude east into the Great Western Woodlands, therefore the Conservation Advice focuses on the cleared wheatbelt landscape in the intensive land use zone and excludes those within the Great Western Woodlands.

During the assessments of CPS 10049/1, CPS 10197/1 and CPS 10265/1, DWER requested advice from DBCA regarding the potential impacts of clearing to the TEC. Noting the poorly known occurrences and extent of the TEC, DBCA recommended a detailed survey of the vegetation and assessment of the results against the key diagnostic characteristics for the TEC as prescribed by the Approved Conservation Advice.

Following a detailed survey over the application area, the majority of the vegetation units within the application area were assessed as having the vegetation, soil and landforms characteristics of the TEC. However, most of the tall eucalypt woodlands within the application area (measuring approximately 4.39 ha) occurs within the Great Western Woodlands in the extensive land use of WA, which are excluded from the definition of the TEC as per the Conservation Advice. Only the tall eucalypt woodlands occurring to the west of the extensive land use zone line, measuring 0.4 ha in total area are identified as the TEC based on the Conservation Advice.

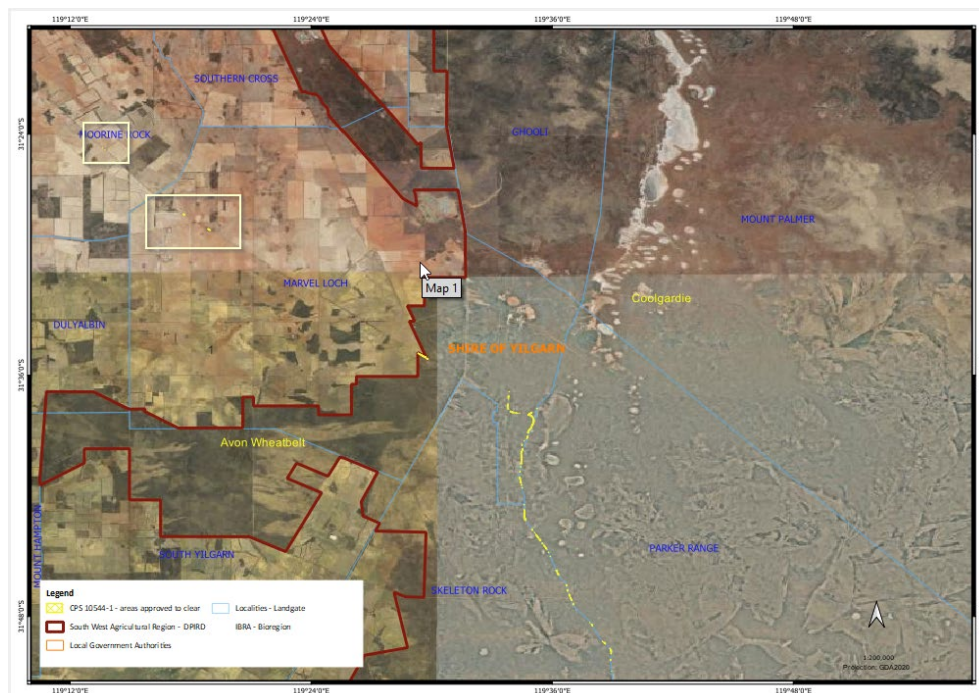


Figure 5. Most of the application area falls within the Extensive Land-use zone of WA (to the east of the red line on the map) which coincides with the Great Western Woodlands). Eucalypts woodlands within the GWW are excluded from the TEC. Application areas containing Eucalypt Woodlands that meet the diagnostic characteristics of the TEC are highlighted with the white boxes.

The removal of 0.4 ha of the TEC represents approximately 0.00001 percent of the recorded TEC in the local area. Although this seems to be insignificant in size, given the conservation values of and threats upon the TEC, the Delegated Officer considers the loss of 0.4 ha of the TEC that is in Very Good to Excellent (Keighery, 1994) condition a significant residual impact (SRI) on the conservation values of the TEC. A suitable offset is required to counterbalance the SRI on the TEC and placed as a condition to the permit. The offset requirements and justification are discussed in Section 4. Indirect impact of clearing on the TEC nearby can be minimised and mitigated by demarcating the clearing area and performing weed and erosion control measures, which are required as conditions to the Permit.

Conclusion:

The proposed clearing will remove 0.4 ha of vegetation identified as the Wheatbelt Woodlands TEC. This comprises a significant residual impact.

Condition:

Given the above, the following conditions are placed on the clearing permit:

- Suitable offset is to be provided to counterbalance the SRI on the TEC
- Demarcation of clearing area to avoid inadvertent clearing of vegetation in nearby TEC
- Implementation of weed management
- Implementation of land management including dust control

3.2.3. Biological values – Fauna – Clearing Principle (b)

Assessment

Nine conservation significant fauna species have been recorded from the local area (10 km radius of the application 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 adjacent to 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, 2024a). 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*), 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, 2024a), the assessment of potential impacts of clearing on conservation significant fauna is focused on the following fauna species.

Chuditch (*Dasyurus geoffroii*)

Chuditch has been recorded 91 times from within the local area. The Vulnerable fauna species requires 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, 2024a). The vegetation adjacent to the application area 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, 2024a) that despite its current absence, it is determined to be known in the area.

While it is possible for chuditch to forage into the vegetation within the clearing footprint, considering the availability of the vast TEC and PEC in Excellent condition nearby, 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 66 records of malleefowl are known from within a 20 km radius of the application area, most of which are concentrated in the TEC and PEC within the reserve east of the application area (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, 2024a). Two malleefowl mounds were identified approximately 50 km south of the footprint perimeters in the most recent survey (Ecoscape, 2024a). 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 within the application area, 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.

Western Brush Wallaby (*Notamacropus irma*)

Available databases shows eight (8) 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), which 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.

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 Inland Western Rosella at the time of the survey. The vegetation proposed to be cleared along the application area may contain suitable habitat for Inland Western 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, 2024a). 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 100 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 individuals present to move to adjacent vegetation ahead of the 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.

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

The groundwater in the application area is mapped as saline. The proposed clearing and road works, however, will not intercept the ground water. The saline ground water is unlikely to impact the soils and surface waters in the project area. Limited clearing of roadside vegetation is also unlikely to increase the uptake of the saline groundwater.

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 conservation areas 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 113 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 roadside 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.

3.2.5. Conservation areas - Clearing Principle (h)

Assessment

The road works and proposed clearing traverse nature reserves which are protected for the conservation of flora and fauna. The road works and clearing, however, are mostly contained within the road reserves traversing the conservation areas that most of the clearing will not remove vegetation from the reserves. However, the road at the corner along the Marvel Loch- Forrestiana Rd currently has a sharp corner that is identified as unsafe. For safety purposes, the road alignment at this corner is proposed to be realigned by increasing its curvature. Approximately 0.5 ha of vegetation within the Jilbadji Nature Reserve is required to be removed. The amount of clearing constitutes approximately 0.0002% of the of Jilbadji Nature Reserve's total area of 207,218 ha.

Given the relatively small extent of impact, DBCA's Parks and Wildlife Service (2023e) provided consent and approval for the proposed limited encroachment and removal of 0.5 ha of vegetation within the nature reserve's boundary. Further impacts on the nearby vegetation and conservation significant flora are avoided and mitigated through conditions on the permit.

Given the above and noting that the proposed clearing within the nature reserve is fringing already cleared areas on a frequently utilised road with no critical fauna habitat being disturbed, it is considered unlikely the conservation values of the nature reserve will be significantly impacted.



Figure 6. Approximately 0.5 ha of fringing vegetation within the Jilbadji Nature Reserve is required to be cleared for the realignment of the road to increase safety.

Conclusion

Based on the above assessment, the proposed clearing is unlikely to result in a significant impact on the conservational values of the Jilbadji Nature Reserve. Indirect impacts of clearing to the vegetation and priority flora individuals occurring within the conservation area can be avoided and mitigated by placing management conditions to the permit.

Conditions

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

- demarcation of clearing area prior to and during clearing to avoid inadvertent clearing of nearby vegetation or any priority flora species occurring nearby
- application of stringent weed management and control measures.

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. Parts of the application area traverses Reserve 10552 owned by the Department of Planning, Lands and Heritage (DPLH) who provided their authorisation and support for the proposed clearing (DPLH, 2024). The application area also transects Jilbadji Nature Reserve. DBCA as the owner and manager of the nature reserve provided their authorisation and consent for the Shire to apply for a clearing permit (DBCA, 2023e). The Shire has provided authorisation for the proposed clearing on the lands. Part of the footprint overlaps with areas included under Ministerial Statement MS1202.

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. Permit or licences under the RIWI Act is not required.

DWER notified the representatives of the claimant of the native title (Marlinyu Ghoorlie and Karratjibbin People Claimant Groups) of the clearing application. On 17 May 2024, the representative of Karratjibbin People Claimant Group responded to the notification relevant to the acceptance of CPS 10544/1 by objecting the granting of a clearing permit unless a heritage survey is to be performed and the traditional owner of the land be appointed for the survey (Karratjibbin People Claimant Group, 2024). Representative of the applicant, however, had already commissioned Terra Rosa Consulting to perform a heritage survey over the application areas 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 malleefowl mounds are within the proposed clearing area for CPS 10544/1.

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.

4 Suitability of offsets

Through the detailed assessment outlined in Section 3.2 above, the Delegated Officer has determined that the following significant residual impacts remain after the application of the avoidance and mitigation measures summarised in Section 3.1:

- the loss of 0.4 ha of vegetation identified as the Wheatbelt Woodlands TEC (Critically Endangered under the EPBC Act). The identification is based on a detailed survey as recommended by DBCA and with a reference to the EPBC Act Conservation Advice for the Wheatbelt Woodlands TEC as discussed in Section 3.

The applicant proposed an environmental offset consisting of:

- (a) Land acquisition of Lot 366 on Deposited Plan 203231, Morrison Road, Shire of Westonia, measuring a total of 260 ha in area size, located approximately 70 km northwest of the clearing area. The property is currently zoned rural. The parcel contains the following values:

- approximately 260 ha of native vegetation in Pristine to Excellent condition (Keighery, 1994)
- approximately 19 ha of the Wheatbelt Woodlands TEC
- adjacent to Chiddarcooping Nature Reserve (R 19210) and cleared armlands, providing connectivity between conservation areas
- remnant native vegetation surrounded by farmlands within the extensively cleared region of Wheatbelt
- habitats for conservation significant fauna species.

Once acquired, the property will be used as a banked offset for similar projects / offsets. Protection of the property will maintain connectivity between remnant native vegetation and fauna habitats and reduce the risk of further clearing for farming or other purposes.

- (b) To offset the SRI of CPS 10544/1, the applicant proposes to secure a 4.56 ha portion of Lot 366 that contains the Wheatbelt Woodlands TEC by placing it under a conservation covenant under the *Soil and Land Conservation Act 1945*. The following on ground actions will also be performed over the offset site:
- fencing
 - feral animal control
 - weed inspection and control
 - increase maintenance of firebreaks if required

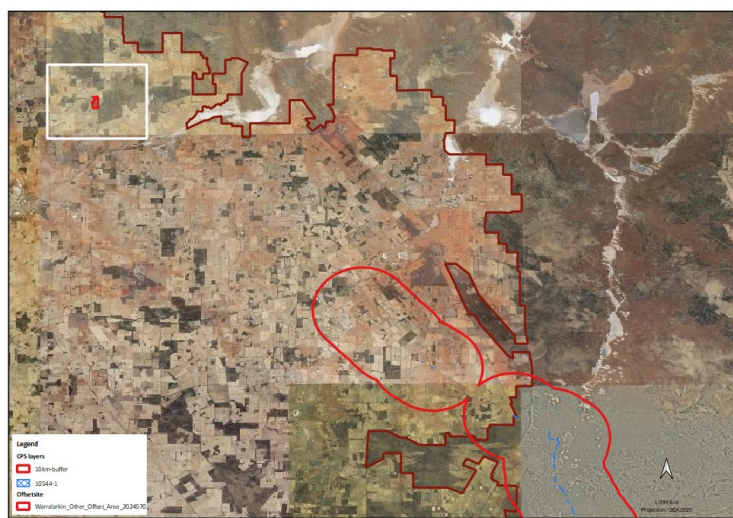


Figure 7. The proposed offset site is located approximately 70 km northwest of the impact site, surrounded by cleared area and farmlands within the Intensive Use Zone of the Wheatbelt region.

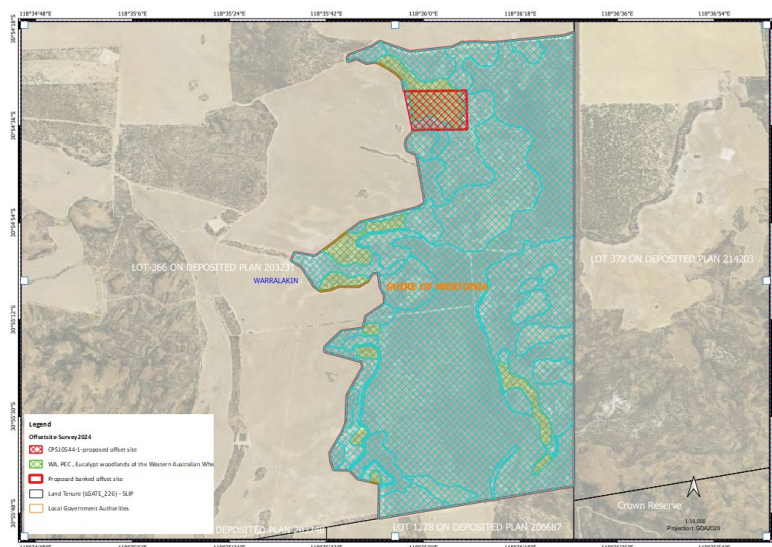


Figure 8. The proposed offset site comprises of approximately 19 ha of vegetation identified as the Wheatbelt Woodland TEC within Lot 366 which will be acquired in its entirety as a banked offset.

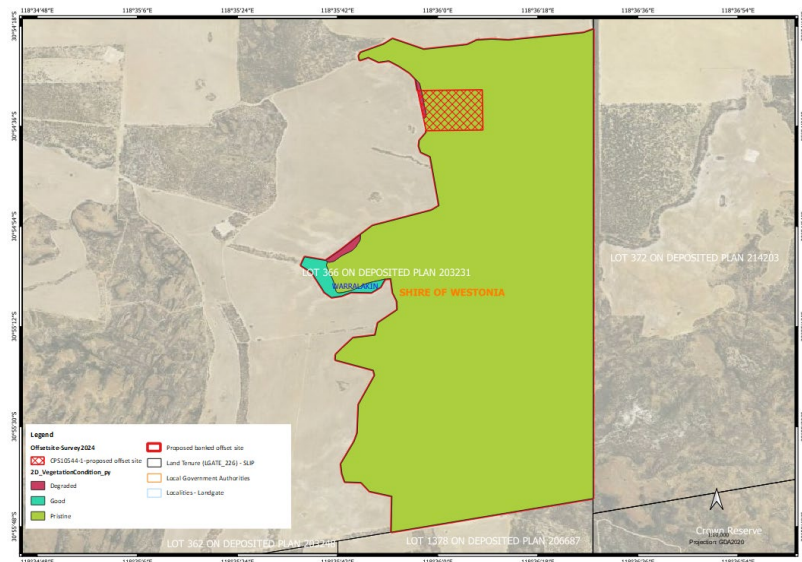


Figure 9. Proposed offset site contains vegetation mostly in Pristine condition (Keighery, 1994) (Western Botanical, 2024b)

The Delegated Officer considers that this adequately counterbalances the significant residual impacts listed above. The proposed offset is in accordance with the Government of Western Australia's *Environmental Offsets Policy*. The justification for the values used in the offset calculation is provided in Appendix F.

End

Appendix A. Additional information provided by applicant

Information requirements	Summary of comments	Consideration of comment
The occurrence of conservation significant flora species over the application area and previously granted clearing areas under CPS 10049/1, CPS 10197/1, and CPS 10265/1) to inform the cumulative impact of clearing on the conservation values and the species.	Composite flora data resulted from multiple surveys over the application area and the previously approved clearing areas and surrounds is provided (Covalent Lithium, 2024a)	DWER acknowledged receipt of the data set which is used in the assessment of impact of the proposed clearing permit. The composite flora data is discussed within the decision report (see Section 3.2.1 and Appendix B.3).
Evidence of efforts taken to avoid and/or mitigate significant environmental impacts resulting from the proposed clearing	All mitigation options for the existing road upgrade have been considered in conjunction with the necessary road safety requirements (note this road has been subject to six vehicle accidents in the previous 12 month period). Avoidance and minimisation measures summarised in Section 3.1 of this decision report.	DWER acknowledged the importance of project designs' adherent to the standards and requirements for road safety set out by the Shire, Main Road WA and Austroads. DWER acknowledged the applicant's efforts and measure taken and committed to avoid, minimise and mitigate impacts of clearing of native vegetation for the purpose of the road construction associated with this clearing proposal.
Identification of satisfactory environmental offsets, particularly in relations to the scores used for the offset calculation with a reference to the WA Environmental Offsets Policy (2011) and WA Environmental Offsets Guidelines (2014).	<ul style="list-style-type: none"> Agreement with or comments on the department's offset calculation <p>The proponent has reviewed the DWER's offset calculation and agrees with the offset calculation on the basis of the advice provided, noting that the required offset on this basis, is 4.56 ha of Wheatbelt Woodlands TEC. The supporting documentation has been updated to reflect these calculations.</p> <ul style="list-style-type: none"> Commitment regarding the land acquisition and its placement under a conservation covenant, or any proof of agreement with DBCA if it is to be ceded to DBCA. <p>The proponent is committed to the acquisition of the proposed offset property and subsequent placement under a conservation covenant, in the event that there is no agreement to cede the site to DBCA. All commitments within the Offset strategy to manage the property including the subdivision, fencing, weed and feral animal control will be undertaken for either options.</p>	DWER considers the revised proposed offset as adequate. The offset requirements are placed as part of the offset conditions of the clearing permit.

Information requirements	Summary of comments	Consideration of comment
	<ul style="list-style-type: none"> Shapefiles of the entire Lot and part of Lot 366 on Deposited Plan 203231 – Morrison Road, Shire of Westonia containing the above values proposed as the offset are provided. <p>The NVCP supporting document has been revised to reflect these changes the revised offset plan and application (Covalent 2024b, c, and d)</p>	

Appendix B. Site characteristics

B.1. Site characteristics

The information provided below describes the key characteristics of the area proposed to be cleared and is based on the best information available to 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.

Characteristic	Details
Local context	<p>The area proposed to be cleared comprises of patches of native vegetation scattered over a large linear footprint of more than 100 km within the Parker Range Road and Marvel Loch Forrestiana Road reserves in the Shire of Yilgarn. The area falls within the eastern portion of the Avon Wheatbelt and western portion of the Coolgardie IBRA regions of Western Australia. It intersects the Merredin subregion of the Avon Wheatbelt and the Southern Cross subregion of the Coolgardie bioregion. The largest position of the application area falls within the Southern Cross subregion and is located within the western boundary of the Great Western Woodlands. Parts of the application area along the Parker Range Road are within the Merredin sub-bioregion which falls within the extensively cleared agricultural zone.</p> <p>The proposed clearing area is surrounded by agricultural lands, crown reserves, conservation reserves. Previous land uses include grazing / pasture, cultivation – dry land agriculture and mineral exploration.</p> <p>Spatial data indicates the local area (10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 63.33 per cent of the original native vegetation cover.</p>
Ecological linkage	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.
Conservation areas	The proposed road alignment and clearing traverses the Jilbadji Nature Reserve and the Wockallarry Nature Reserve. The proposed clearing, however, is mostly within the road reserves that traverse the nature reserves. Approximately 0.5 ha of the proposed clearing is required for the realignment of the road and is located within the Jilbadji Nature Reserve.
Vegetation description	<p>Biological surveys over the application area identified 21 vegetation units. The vegetation units mostly comprise of tall eucalypt woodlands and mallee shrublands, typical of the region.</p> <p>The full survey descriptions and maps are available in Appendix G.</p> <p>This is consistent with the six vegetation associations mapped over the application area, as follows: VA 8 – Moorine Rock, described as medium woodland; salmon gum and gimlet.</p>

Characteristic	Details
	<p>VA 128 – Parker, Moorine Rock, described as bare areas; rock outcrops</p> <p>VA 1068 – Parker, described as Medium woodland; salmon gum, morrel, gimlet and <i>Eucalyptus sheathiana</i></p> <p>VA 1148 – Skeleton Rock, described as shrublands; scrub-heath in the Coolgardie Region</p> <p>VA 1271 – Parker, described as bare areas; claypans</p> <p>VA 1413 – Parker, Moorine Rock, Shrublands; acacia, casuarina & melaleuca thicket.</p> <p>All mapped vegetation associations but VA8 retain approximately more than 30 per cent of the original extent (Government of Western Australia, 2019). VA8 in the Merredin sub-bioregion retains only 14.11% of its original extent, whilst in the Southern Cross sub-bioregion it retains more than 90%. The vegetation association in the Merredin and Southern Cross bio-regions together retains approximately 24.63 of its pre-European extent.</p>
Vegetation condition	<p>Biological surveys conducted by Western Botanical indicate the proposed clearing encompasses vegetation assessed in Pristine to Very Good condition over a range of approximately 113km within 140 different polygons (Western Botanical, 2024a).</p> <p>The full Keighery (1994) condition rating scale is provided in Appendix E. The full survey descriptions and mapping are available in Appendix G.</p>
Climate and landform	<p>The landforms of the application area are characteristic of broad valley floors of the Merredin sub-region of the Avon Wheatbelt and the Southern Cross subregion of the western Coolgardie biogeographic regions.</p> <p>While the climate of the Merredin sub-bioregion is typically Semi-arid warm Mediterranean, the Southern Cross sub-bioregion is characterised by an arid to semi-arid warm Mediterranean climate with a rainfall of 250-300 mm which mainly falls in winter. The average annual rainfall is 292.8 mm as recorded by the Bureau of Meteorology (BoM) at the Southern Cross station.</p>
Soil description	<p>The Study Area is located across three regolith and seven bedrock geological units (DMIRS, 2018a; 2018b). The Study Area intersects 13 soil landscape zones (DPIRD, 2023a), which are dominated by the AC1 atlas system (~40% of the Study Area), DD15 atlas system (~19%) and the Ya28 atlas system (~15%). The majority of the area occurs on gently sloping to gently undulating plateau areas, or uplands (on granites, gneisses, and allied rocks) and undulating sandy plains with small salt lakes or clay pans.</p>
Land degradation risk	<p>Comprising of mostly sands, clay and loamy soils, the application area is prone to wind erosion.</p>
Waterbodies	<p>The desktop assessment and aerial imagery indicated that a few non-perennial watercourses transect the application area. The nearest significant wetland is Lake Cronin, located approximately 32 km south of the Study Area.</p>
Hydrogeography	<p>The application area is located across two hydrological zones; Northern Zone of Ancient Drainage and Southern Cross Zone (majority of Study Area). It is located entirely within the Avon River Basin in the Swan Avon/Yilgarn hydrographic catchment and traverses Lake Julia (northern end of Study Area), Yellowdine (mid-section) and Lake Eva (southern end) hydrographic sub-catchments (DPIRD, 2023a).</p> <p>Groundwater salinities over the application area range predominantly from 14,000 mg/L to 35,000 mg/L (highly saline).</p>
Flora	<p>Surveys over the application area (footprint) identified the occurrence of one (1) Priority1, three (3) Priority2, two (2) Priority 3, and four (4) flora SOI from the application area. Some other conservation significant flora species are outside of the application area but within 50 meters of the proposed clearing area.</p>
Ecological communities	<p>The application area is surrounded by a total of 29,845.35 ha of vegetation mapped as the Wheatbelt Woodlands TEC, Granite outcrop pools with endemic aquatic fauna PEC, and Plant assemblages of the Parker Range System PEC. A vegetation survey over the application area and surrounds identified 4.69 ha of vegetation within the</p>

Characteristic	Details
	application area as the Wheatbelt Woodlands TEC. The application area does not intersect with the other two PEC.
Fauna	Nine fauna of conservation significance have been recorded in the local area (10 km radius from the application area). The highest number and most recent records are of Chuditch and Malleefowl. A fauna survey performed over the application area, however, did not identify any of the conservation significant fauna species (Ecoscape, 2024a)

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 8 – Moorine Rock	408,033.92	100,508.51	24.63	15,353.72	3.76
VA 128 – Parker, Moorine Rock	226,517.10	206,890.08	91.34	39,053.86	17.24
VA 1068 - Parker	268,863.66	142,053.32	52.83	16,789.89	6.24
VA 1148 – Skeleton Rock	254,948.74	252,792.55	99.15	43,670.03	17.13
VA 1271 - Parker	888.52	843.19	94.90	-	-
VA 1413 – Parker, Moorine Rock	1,607,887.83	1,216,656.61	75.67	205,781.97	12.80
Local area					
10km radius	185,294.1892	117,339.0494	63.33	-	-
*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 H.1), and biological survey information (*Western Botanical*, 2023a, 2023b, 2023c, 2024a, *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	Cons Status	Not in Clearing permit application	CPS 10049/1	CPS 10197/1	CPS 10265/1	CPS 10544/1	Total pop.	Impact	
								CPS 10544/1	Cumulative
<i>Grevillea lissopleura</i>	P1	5,636	74	0	0	86	5,796	1.48	2.8%
<i>Acacia asepala</i>	P2	24,901	98	0	82	103	25,184	0.41	1.1%
<i>Acacia concolorans</i>	P2	4,727	0	0	3	3	4,733	0.06	0.1%
<i>Eutaxia lasiocalyx</i>	P2	186,458	42	4	1	4	186,509	0.00	0.0%
<i>Eucalyptus urna subsp. xesta</i>	P3	2,796	38	0	6	8	2,848	0.28	1.8%
<i>Teucrium diabolicum</i>	P3	77,599	0	0	0	4	77,603	0.01	0.0%

<i>Grevillea comosa</i> ms (P.M. Olde 91/14, 7 Sep 1991)	SOI	18,001	246	0	99	140	18,486	0.76	2.6%
<i>Grevillea</i> sp. aff. <i>huegelii</i> Marvel Loch. P.M. Olde 91/44 NSW782729	SOI	498	0	0	10	6	514	1.17	3.1%
<i>Phebalium</i> sp. Parker Range Rd (broad leaved variant)	SOI	1,658	4	0	0	4	1,666	0.24	0.5%
<i>Phebalium</i> sp. Parker Range Road (G. Cockerton & B. Loudon WB40838)	SOI	6,723	179	11	1	3	6,917		2.8%
T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority									

B.4. Fauna analysis table

Species name	Conservation status	Suitable habitat features ? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Daphnia jollyi</i> (a water flea (inland south west))	P1	N	N	1.31	6	Y
<i>Dasyurus geoffroyi</i> (chuditch, western quoll)	Y	Y	Y	2.01	91	Y
<i>Idiosoma castellum</i> (tree-stem trapdoor spider)	Y	Y	Y	6.83	1	Y
<i>Leipoa ocellata</i> (malleefowl)	Y	Y	Y	0.45	66	Y
<i>Notamacropus irma</i> (western brush wallaby)	Y	Y	Y	1.51	8	Y
<i>Parartemia contracta</i> (a brine shrimp (Wheatbelt))	N	N	N	6.68	4	Y
<i>Paroplocephalus atriceps</i> (Lake Cronin snake)	P3	Y	Y	0.17	1	Y
<i>Phascogale calura</i> (red-tailed phascogale, kenngoos)	CD	Y	Y	2.61	1	Y
<i>Platycercus icterotis xanthogenys</i> (western rosella (inland))	P4	Y	Y	6.53	1	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 within 10 km radius)	In actual clearing area (CPS 10544/1)	Actual clearing in other applications (CPS 10049/1, and 10265/1)	Clearing undue CPS 10544/1	Cumulative impact of all clearing areas
Eucalypt woodlands of the Western Australian Wheatbelt	P 3	CR	Y	Y	301	0	3,471.16	0.4	0	0.00001	0.0001
Plant assemblages of the Parker Range System	P3	NA	Y	Y	3	0	33, 944.56	0	3.47	0	0.006

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

Appendix D. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
<p>Principle (a): <i>"Native vegetation should not be cleared if it comprises a high level of biodiversity."</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared contains locally and regionally significant flora, PEC, and potential habitat for conservation significant fauna; and is adjacent to a TEC. However, impacts are not likely to be significant.</p>	May be at variance	Yes <i>Refer to Section 3.2.2, above.</i>
<p>Principle (b): <i>"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna."</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared 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 3.2.3, above.</i>
<p>Principle (c): <i>"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared does not contain threatened flora species.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p>Principle (d): <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 application area traverses patches of native vegetation mapped as the Wheatbelt Woodlands TEC. Approximately 0.4 ha of the vegetation proposed to be cleared is identified as containing vegetation that meets the characteristics criteria for the TEC.</p>	At variance	Yes <i>Refer to Section 3.2.2, above.</i>

Assessment against the clearing principles	Variance level	Is further consideration required?
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 all but one (VA8) mapped native vegetation association in the bioregion and the local area is consistent with the national objectives and targets for biodiversity conservation in Australia.</p>	May be at variance	Yes Refer to Section 3.2.1, above.
<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>Parts of the road alignment traverse the Wockallary Nature Reserve in the northern section and a small portion of the Jilbadji Nature Reserve. However, the proposed clearing area on these sections are mostly contained within the road reserve which is excluded from the respective reserves. A part of the realignment area intersects an area measuring approximately 0.5 ha. Impact on the environmental values of the conservation areas is unlikely to be significant.</p>	May be at variance	Yes <i>Refer to Section 3.2.5, above.</i>
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>	May be at variance	Yes <i>Refer to Section 3.2.4, above</i>
<p><u>Principle (g):</u> <i>"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."</i></p> <p><u>Assessment:</u></p> <p>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</p>	Not likely to be at variance	Yes

Assessment against the clearing principles	Variance level	Is further consideration required?
indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding.		

Appendix E. Vegetation condition rating scale

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

Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from 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 F. Offset calculator value justification

Calculation	Score (Area)	Rationale
Conservation significance		
Description	0.4 ha of vegetation identified as the Eucalypt Woodlands of Western Australian Wheatbelt TEC in Excellent to Very Good (Keighery, 1994)	The proposed clearing will remove 0.4 ha of vegetation identified as the TEC.
Type of environmental value	Ecological Community	

Calculation	Score (Area)	Rationale
Conservation significance of environmental value	Threatened Ecological Community – Critically Endangered	The Eucalypt Woodlands of the Western Australian Wheatbelt is listed as Critically Endangered (Threatened) under the EPBC Act. This conservation significance is used for the offset calculation.
Landscape-level value impacted	yes/no	
Significant impact		
Description	Loss of 0.4 ha of vegetation identified as the Eucalypt Woodlands of Western Australian Wheatbelt TEC in Excellent to Very Good (Keighery, 1994)	
Significant impact (hectares) / Type of feature	0.40	0.4 ha of vegetation proposed to be cleared is identified as the Eucalypt Woodlands of the Western Australian Wheatbelt TEC. The identification is based on a detailed survey as recommended by DBCA and with reference to the EPBC Conservation Advice for the Woodlands of the WA Wheatbelt TEC.
Quality (scale) / Number	8	The TEC impacted is in Excellent to Very Good condition
Rehabilitation credit		
N/A	N/A	No revegetation or rehabilitation action is proposed
Offset		
Description	acquisition, protection and management of part of Lot property containing the TEC and placing it under a conservation covenant under the Soil and Land Conservation Act 1945	The proposed offset comprise of an acquisition of part of Lot 366 on Deposited Plan 203231 – Morrison Road, Shire of Westonia. The site will be secured in perpetuity under a conservation covenant.
Proposed offset (area in hectares)	4.56	The extent of land containing the TEC required as an offset to counterbalance the SRI.
Current quality of offset site	8	The vegetation is in Pristine to Excellent condition but it is not located within the local area of the impact site (20 km radius). The score is assigned for high quality vegetation.
Future quality WITHOUT offset (scale) / Future number WITHOUT offset	8	The ecological benefit is expected to be realised immediately after the property is acquired and secured under a conservation covenant. No impacts to the site currently that is likely to decrease in vegetation condition.
Future quality WITH offset (scale) / Future number WITH offset	8	The offset does not include revegetation or rehabilitation actions that the vegetation condition after offset is not expected to improve.
Time until ecological benefit (years)	2	The ecological benefit is expected to be realised immediately after the property is acquired and secured under a conservation covenant.
Confidence in offset result (%)	0.9	The confidence in the result of offset, including the land acquisition and placing it under a conservation covenant within the time frame is high.

Calculation	Score (Area)	Rationale
Duration of offset implementation (maximum 20 years)	20.00	The maximum offset period is used for the calculation.
Time until offset site secured (years)	1.00	Time required to finalise the acquisition of property and its placement under a conservation covenant.
Risk of future loss WITHOUT offset (%)	15.0%	The property is currently zoned rural without any immediate plan for development or change in zoning. The risk of loss is considered medium.
Risk of future loss WITH offset (%)	5%	Placing the property under a conservation covenant will secure it in perpetuity, reducing the risk of loss to low.

Appendix G. Biological surveys information excerpts

To support the application for a clearing permit CPS 10544/1, the applicant commissioned Western Botanical and Ecoscape to perform the following surveys:

- Western Botanical (2024a) *Detailed Flora and Vegetation Assessment of Threatened Ecological Communities of the Proposed Moorine Rock to Mount Holland Logistics Road Supporting Proposed Clearing Permit*. Consultant's report to Shire of Yilgarn and Covalent Lithium Pty Ltd, Report Ref WB1027
- Western Botanical (2024b) *Western Botanical (2024b) Review of Conservation Values of portion of Warralakin Lot 366 as a Potential Offset Package*. Consultant's report prepared for Covalent Lithium Pty Ltd. Report reference WB1028.
- Ecoscape (Australia) Pty Ltd (2024) *Covalent Logistics Road Terrestrial Vertebrate Fauna Survey*, prepared for Covalent Lithium'.
- Ecoscape (Australia) Pty Ltd (2024) *Warralakin Lot 366 Terrestrial Vertebrate Fauna Survey*, prepared for Covalent Lithium'.

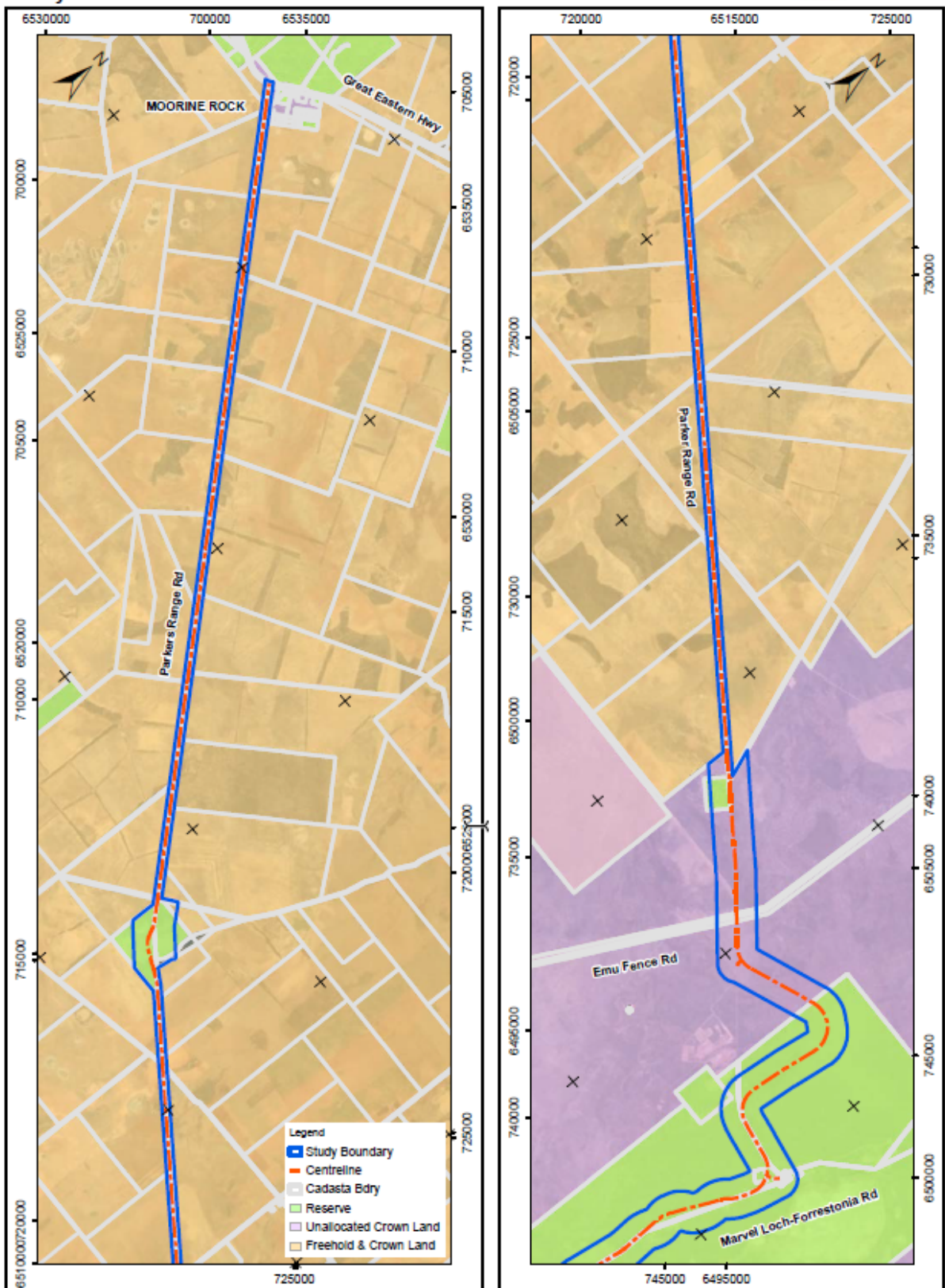
The above-mentioned surveys were conducted following a series of surveys previously undertaken to assess the road project and alignment in its entirety and in conjunction with the previously approved CPS 10049/1, CPS 10197/1, and CPS 10265/1. Multiple field surveys on a fortnightly basis were undertaken for the purpose.

To date, survey effort has included:

- 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:
 - 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.
 - 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.
- Surveys were redirected to other areas (potential borrow pits) from 29th August to 18th September 2022, reported separately by Western Botanical.

The Western Botanical (2024a) survey was targeted specifically to assess the potential impacts on the Threatened Ecological Communities near to the road construction project area. The study area of the survey is depicted in the following figure.

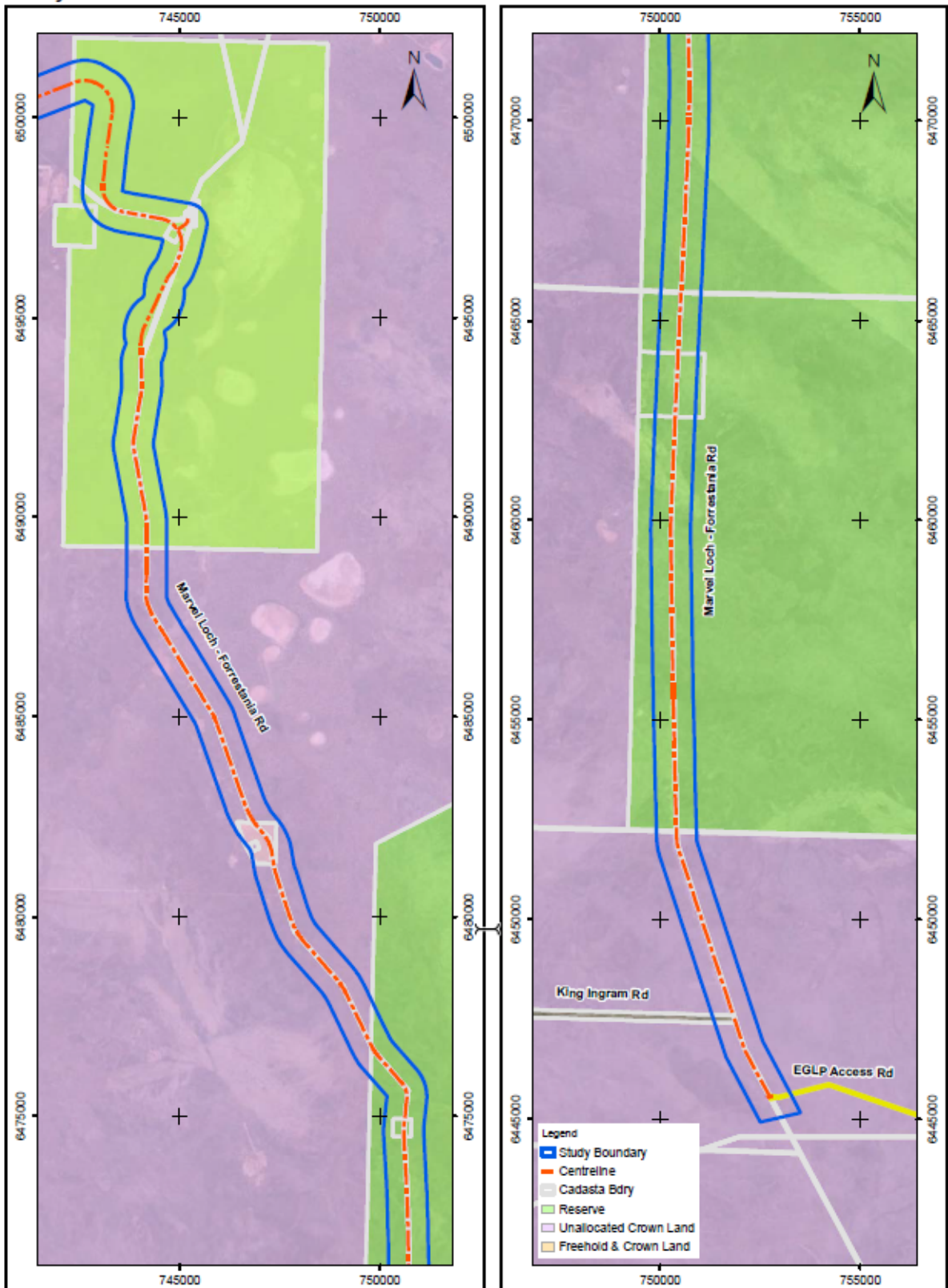
Earl Grey Lithium Project
Parkers Range Rd and Marvel Loch-Forrestonia Rd Upgrade
Study Area - Sheet 1 of 2



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 MGA94 zone 50
 Source: Roads_MRWA, Cadasta: Landgate

0 3km

Earl Grey Lithium Project
Parkers Range Rd and Marvel Loch-Forrestonia Rd Upgrade
Study Area - Sheet 2 of 2






Drawn: CAD Resources (08 9246 3242), Date: Mar 2023, CAD Ref: a2765_MR_MTH_31_02_02, Rev: A
 Scale 1125,000, A4, Projection MGA94 zone 50
 Source: Roads_MRWA, Cadasta: Landgate

Figure 10. Study area of the *Detailed Flora and Vegetation Assessment of Threatened Ecological Communities of the Proposed Moorine Rock to Mount Holland Logistics Road Supporting Proposed Clearing Permit Western Botanical (2024a)*.

The Fauna Survey (Ecoscape, 2024)

The identified fauna habitats are described as follows:

Habitat type	Description	Photograph
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>	

Surveys over the proposed offset site

The applicant commission Western Botanical and Ecoscape to perform a biological survey over Lot 366 Warralakin to assess the suitability of the property as an offset site associated with the clearing permit application.

Vegetation types and conditions over the proposed offset site.

The proposed offset site contains native vegetation in Pristine and Excellent conditions and identified patches of the Eucalypt Woodlands of the Western Australian Wheatbelt TEC, as depicted in Figure 11 and 12 below. The survey concludes the following:

- Lot 366 contains 19.22 ha of the TEC, which is approximately 7% of the Study area.
- The condition of almost all vegetation units assessed across the Study area during the February survey was Pristine or Excellent. Minor sections of Vegetation Units E1 and E2 outside the fenced area of Lot 366 were assessed as Good due to the impact of stock grazing. Minor areas of Vegetation Units S4, E1 and E2 along fencelines on the western side of Lot 366 were assessed as Degraded due to historic impacts such as clearing and stock grazing

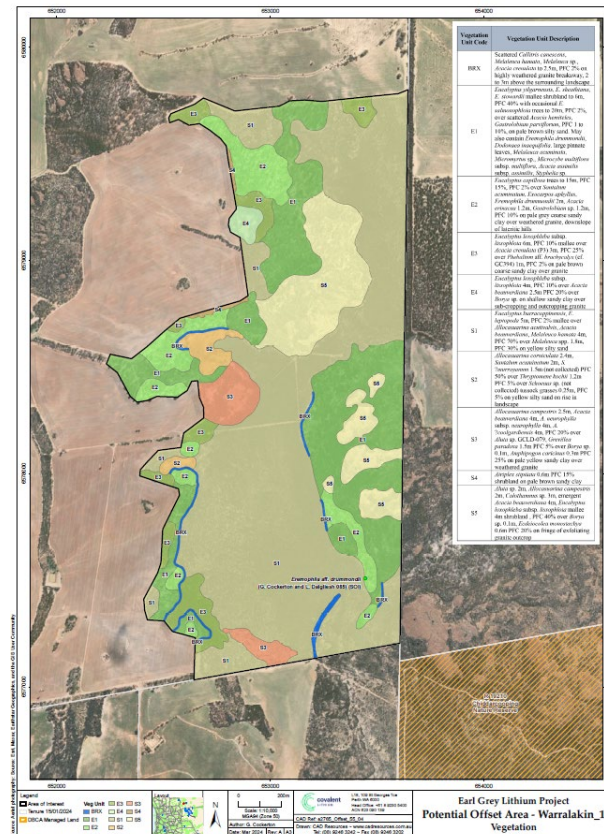


Figure 11. Vegetation units occurring within the proposed offset site (Western Botanical, 2024b)

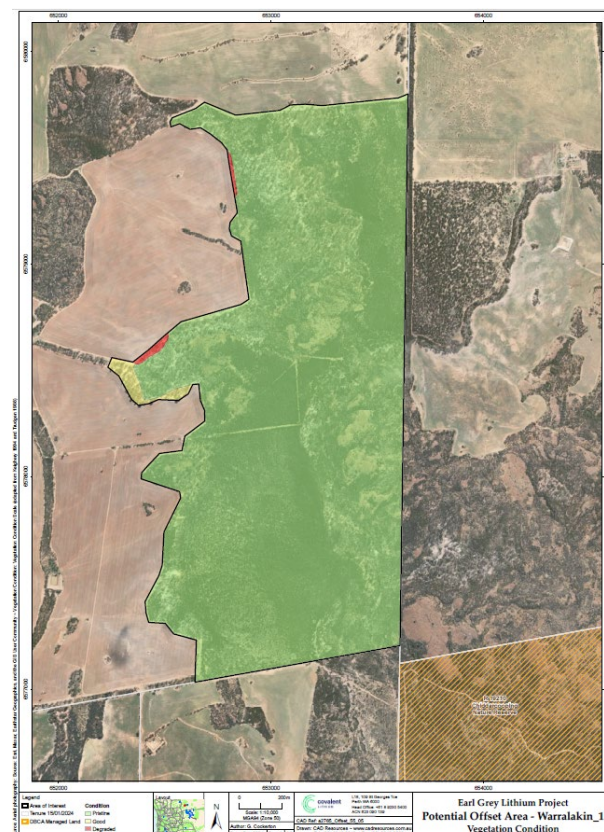


Figure 12. Vegetation conditions within the proposed offset site (Western Botanical, 2024b)

Appendix H. Sources of information

H.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)

H.2. References

Commonwealth of Australia (2001) *National Objectives and Targets for Biodiversity Conservation 2001-2005*, Canberra.

Covalent Lithium (2024a). *Composite Flora Data for CPS 10544/1 as of 24 June 2024*. Received 5 June 2024. DWER Ref: DEWERDT974520)

- Covalent Lithium (2024b). *Response to DWER request for further information for CPS 10544/1*. Received 5 July 2024. DWER Ref: DEWERDT974511,
- Covalent Lithium (2024c). *Revised Native Vegetation Clearing Permit (NVCP) application CPS 10544/1 supporting document. Response to DWER request for further information for CPS 10544/1*. Received 5 July 2024. DWER Ref: DEWERDT974512,
- Covalent Lithium (2024d). *Revised Offset Application for Native Vegetation Clearing Permit (NVCP) application CPS 10544/1 supporting document. Response to DWER request for further information for CPS 10544/1*. Received 5 July 2024. DWER Ref: DEWERDT974513.
- Department of Biodiversity, Conservation and Attractions (DBCA) (2023a) *Species and Communities Branch TEC/flora advice for clearing permit application CPS 10049/1*, received 28 July 2023. Department of Biodiversity, Conservation and Attractions, Western Australia (DWER Ref: DEWERDT829121).
- Department of Biodiversity, Conservation and Attractions (DBCA) (2023b) *Species and Communities Branch further advice on PEC and flora for clearing permit application CPS 10049/1*, received 10 November 2023. Department of Biodiversity, Conservation and Attractions, Western Australia (DWER Ref: DEWERDT870143).
- Department of Biodiversity, Conservation and Attractions (DBCA) (2023c) *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: DEWERDT840252).
- Department of Biodiversity, Conservation and Attractions (DBCA) (2023d) *Species and Communities Branch TEC/flora advice for clearing permit application CPS 10265/1*, received 27 September 2023. Department of Biodiversity, Conservation and Attractions, Western Australia (DWER Ref: DEWERDT840252).
- Department of Biodiversity, Conservation and Attractions (DBCA) Parks and Wildlife Service (2023e). *Authority for proposed clearing – Marvel Loch – Forrestania Road in Djibaldji Nature Reserve (C24049)*, Shire of Yilgarn. Dated 15 March, 2023. DWER Ref: DEWERDT914816.
- 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 2010 survey-guidelines-bats.pdf](file:///X:/02%20References/Commonwealth/Guidelines/DEWHA%2010%20survey-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 June 2024).
- 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 CPS 10049/1. Decision Report*. Dated 29 November 2024. Department of Water and Environmental Regulation, Western Australia (DWER Ref: DEWERDT871074).
- Department of Water and Environmental Regulation (DWER) (2023b) *Clearing Permit CPS 10197/1. Decision Report*. Dated 6 December 2023. Department of Water and Environmental Regulation, Western Australia (DWER Ref: DEWERDT876122).

- Department of Water and Environmental Regulation (DWER) (2023b) *Clearing Permit CPS 10197/1. Decision Report*. Department of Water and Environmental Regulation, Western Australia (DWER Ref: DWERDT878597).
- Department of Water and Environmental Regulation (DWER) (2024) *Clearing Permit Application CPS 10544/1. Request for further information*. Department of Water and Environmental Regulation, Western Australia (DWER Ref: DWERDT969168).
- Department of Water and Environmental Regulation (DWER) – Contaminated Sites branch (2024). *Contaminated Sites Advice for Clearing Permit Application CPS 10544/1*. Received 5 June 2024. DWER Reference DWERDT974484
- Ecoscape (Australia) Pty Ltd (2024) *Covalent Logistics Road Terrestrial Vertebrate Fauna Survey*, prepared for Covalent Lithium. Fremantle. Dated January 2024. DWER Reference: DWERDT946627
- Ecoscape (Australia) Pty Ltd (2024) *Warralakin Lot 366 Terrestrial Vertebrate Fauna Survey*, prepared for Covalent Lithium'. DWER Reference: DWERDT946631
- 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 South West Vegetation Complex Statistics. Current as of March 2019*. WA Department of Biodiversity, Conservation and Attractions, Perth, <https://catalogue.data.wa.gov.au/dataset/dbca>
- 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>
- Heddl, 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.
- 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.
- Shah, B. (2006) *Conservation of Carnaby's Black-Cockatoo on the Swan Coastal Plain, Western Australia*. December 2006. Carnaby's Black-Cockatoo Recovery Project. Birds Australia, Western Australia.

- 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.
- Shire of Yilgarn (2023). *Appointment of Covalent Lithium as authorised representative of the Shire of Yilgarn for Clearing permit Applications*. Received 8 May 2023. DWER Ref: DWERDT775386.
- Shire of Yilgarn (2024). *Application and supporting documents for Clearing permit Application CPS 10544/1*. Received 1 March 2024. DWER Ref: DWERDT914978.
- 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 June 2024)
- 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 10265*. Prepared for: Covalent Lithium Pty. Ltd. and Shire of Yilgarn Report Ref: WB1003. Dated June 2023. DWER Reference: DWERDT871965
- Western Botanical (2024a). *Detailed Flora and Vegetation Assessment of Threatened Ecological Communities of the Proposed Moorine Rock to Mount Holland. Supporting Clearing Permit CPS 10544/1*. Prepared for Covalent Lithium Pty. Ltd. and Shire of Yilgarn Report Ref: WB1027. Dated March 2024. DWER Reference: DWERDT946628)
- Western Botanical (2024b) *Western Botanical (2024b) Review of Conservation Values of portion of Warralakin Lot 366 as a Potential Offset Package*. Consultant's report prepared for Covalent Lithium Pty Ltd. Report reference WB1028. DWER Reference DWERDT946632