



# Clearing Permit Decision Report

## 1. Application details and outcome

### 1.1. Permit application details

<b>Permit number:</b>	CPS 9475/2
<b>Permit type:</b>	Purpose permit
<b>Applicant name:</b>	Main Roads Western Australia
<b>Application received:</b>	14 March 2022
<b>Application area:</b>	500 hectares
<b>Purpose of clearing:</b>	Road upgrades
<b>Method of clearing:</b>	Mechanical clearing
<b>Properties:</b>	Various properties in the locality of Nullagine Marble Bar Road Reserve PIN: 11450438 Marble Bar Road Reserve PIN: 11733777 Marble Bar Road Reserve PIN: 11733778 Marble Bar Road Reserve PIN: 11733779 Marble Bar Road Reserve PIN: 11733780 Marble Bar Road Reserve PIN: 11733781 Marble Bar Road Reserve PIN: 11733782 Marble Bar Road Reserve PIN: 11733783 Marble Bar Road Reserve PIN: 11734470 Marble Bar Road Reserve PIN: 11734863 Marble Bar Road Reserve PIN: 11734864 Marble Bar Road Reserve PIN: 11734865 Marble Bar Road Reserve PIN: 11734866 Marble Bar Road Reserve PIN: 11736120 Marble Bar Road Reserve PIN: 11736121 Marble Bar Road Reserve PIN: 11736122 Marble Bar Road Reserve PIN: 11997700 Bonney Downs-Hillside Road PIN: 11734448 Skull Springs Road Reserve PIN: 11450436 Unnamed Road Reserve PIN: 11734450 Lot 120 on Plan 91989 Lot 171 on Plan 213166 Lot 93 on Plan 220468 De Grey Location 8 Crown Reserve R 11082 Crown Reserve R 12347 Crown Reserve R 12348 Crown Reserve R 13687 Crown Reserve R 13688 Crown Reserve R 18938 Crown Reserve R 2804 Crown Reserve R 32645 Crown Reserve R 3328 Crown Reserve R 9700 Pastoral Lease (LPL N050430) Unallocated Crown Lands
<b>LGA area:</b>	Shire of East Pilbara
<b>Locality:</b>	Nullagine

## 1.2. Description of clearing activities

On 2 February 2022, Clearing Permit (Purpose Permit) CPS 9475/1 was granted to Main Roads Western Australia (Main Roads) to clear up to 500 hectares of native vegetation, within a 755 hectare clearing area, as part of the Marble Bar Road Upgrades Project immediately adjacent to the existing Marble Bar Road for a length of approximately 100 kilometres, in the locality of Nullagine in the Shire of East Pilbara. The purpose of the clearing is to support road upgrades to this section of the Marble Bar Road, including sealing the currently unsealed road and constructing the Nullagine township bypass to facilitate hauling with improved safety.

An application for an amendment to Purpose Permit CPS 9475/1 was received by the Department of Water and Environmental Regulation (DWER) on 14 March 2022. The purpose of the proposed amendment is to reduce and revise the authorised clearing area boundary associated with Purpose Permit CPS 9475/1. Due to a revision to the alignment of the Nullagine bypass, the clearing boundary has been revised and reduced to 701.5 hectares. The revised clearing boundary includes approximately 37.3 hectares that was not included within the CPS 9475/1 authorised clearing area. No additional land parcels are required for the amendment.

The CPS 9475/2 amendment would still allow the clearing of up to 500 hectares of native vegetation within an amended 701.5 hectare clearing area (Section 1.5, Figure 1) to allow for the implementation of refinements to the proposed road alignment around the township of Nullagine (Section 1.5, Figure 2).

## 1.3. Decision on application and key considerations

<b>Decision:</b>	Granted
<b>Decision date:</b>	10 May 2022
<b>Decision area:</b>	Up to 500 hectares of native vegetation as depicted in Section 1.5 (Figure 1).

## 1.4. Reasons for decision

The application to amend Purpose Permit CPS 9475/1 under section 51K of the *Environmental Protection Act 1986* (the EP Act) was received by DWER on 14 March 2022. DWER advertised the application for public comment and one submission was received (Section 1.6 – Table 2).

In making this decision, the Delegated Officer had regard for the CPS 9475/1 Decision Report (DWER 2021c), relevant datasets (Appendix K2), the results of relevant flora, vegetation and fauna surveys (Biota 2021; Pilbara Environmental 2021; WoodGIS 2020), the clearing principles set out in Schedule 5 of the EP Act, and any other matters considered relevant to the assessment. The Delegated Officer also took into consideration the purpose of the clearing to upgrade and seal a public road to improve community safety, including the diversion of heavy vehicles around the Nullagine townsite.

The Delegated Officer has determined that:

- The applicant has suitably demonstrated avoidance and minimisation measures through liaison with native title holders to reduce the overall development footprint, and realign the proposed route of the Nullagine township bypass into an area of native vegetation with the majority in completely degraded to poor condition.
- The impact of proposed clearing on the Priority 1 Wona Land System listed by the Department of Biodiversity, Conservation and Attractions (DBCA) as a Priority Ecological Community (PEC) is unchanged from the CPS 9475/1 assessment;
- The impact of proposed clearing on the Priority 3 Mosquito Land System listed by the DBCA as a PEC is reduced from the CPS 9475/1 assessment;
- The impact of proposed clearing on flora taxa of conservation significance is unchanged from the CPS 9475/1 assessment;
- The impact of proposed clearing on significant fauna habitat and fauna species of conservation significance is unchanged from the CPS 9475/1 assessment;
- The potential impact of proposed clearing on native vegetation associated with watercourses is reduced from the CPS 9475/1 assessment; and
- The risk of weeds impacting native vegetation directly adjacent to the application area is unchanged from the CPS 9475/1 assessment.

In determining to grant a clearing permit subject to conditions, the Delegated Officer found that the revised alignment proposed, and associated decrease in the overall clearing boundary, is not likely to lead to an unacceptable risk to the environment. The Delegated Officer decided to grant an amended clearing permit. Permit CPS 9475/2 has been amended to:

- revise the alignment of the authorised clearing area around the township of Nullagine with a subsequent reduction of the clearing area boundary from 755 hectare to 701.5 hectares.

The Delegated Officer noted that PECs and Priority flora will be impacted by the proposed clearing. It is considered that the loss of the vegetation associated with the PECs and Priority flora as a result of the clearing will not impact the conservation status of the communities and taxa present, and will not significantly impact their local or regional occurrence. All clearing permit conditions stipulated in CPS 9475/1 have been maintained, including to:

- avoid, minimise and reduce the impacts and extent of clearing;
- implement weed control measures to minimise the risk of introduction and spread of weeds into adjacent native vegetation;
- avoid clearing riparian vegetation where practicable;
- where a watercourse is impacted, maintain the existing surface flow by use of appropriate culverts;
- undertake slow, progressive, one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity; and
- undertake pre-clearance surveys for the Greater Bilby and Brush-tailed Mulgara by qualified personnel, and implement appropriate relocation programs if and when required.

The assessment is consistent with that undertaken for clearing permit CPS 9475/1, and can be found within Decision Report CPS 9475/1 (DWER 2021c).

## 1.5. Site maps

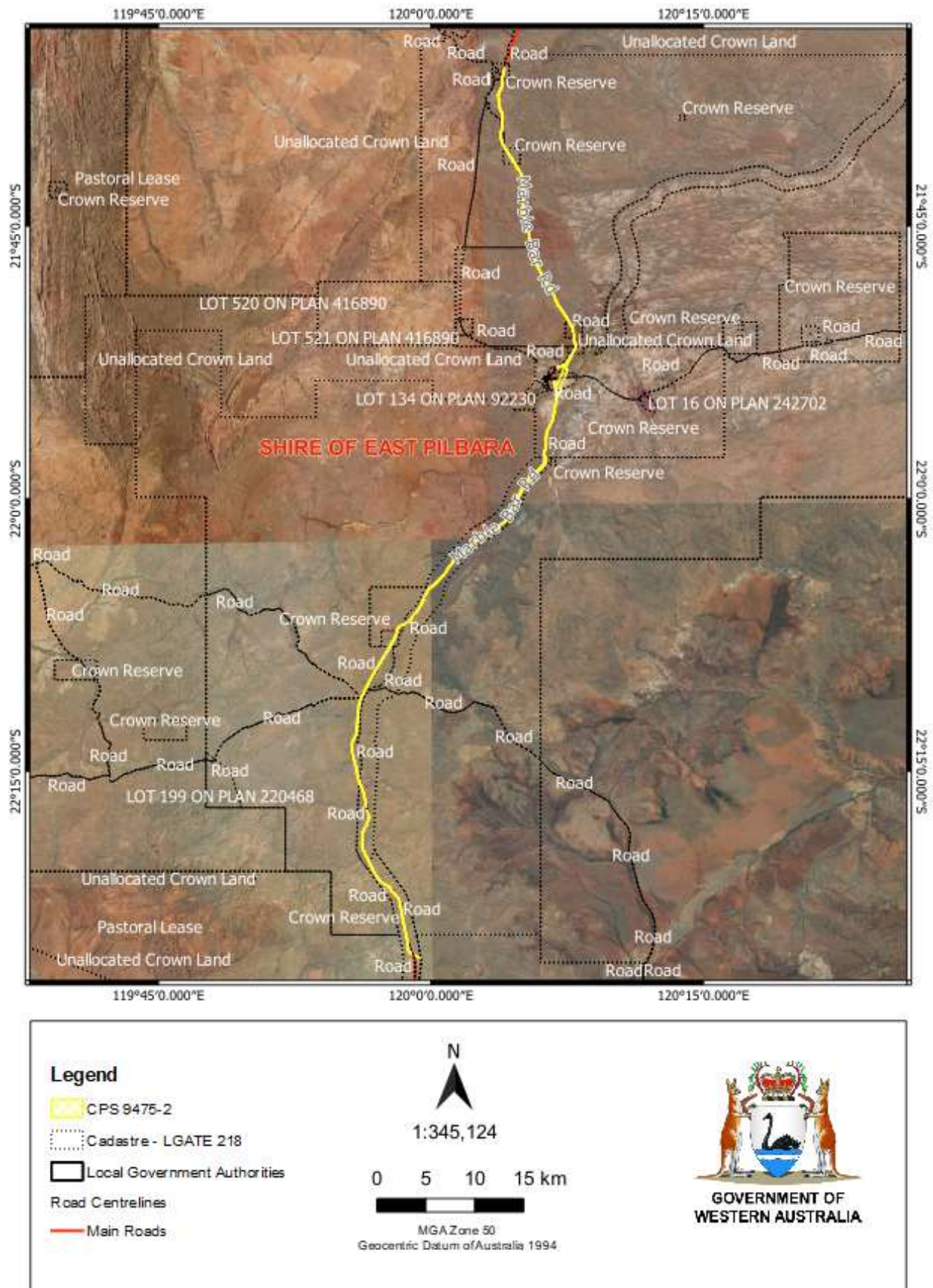
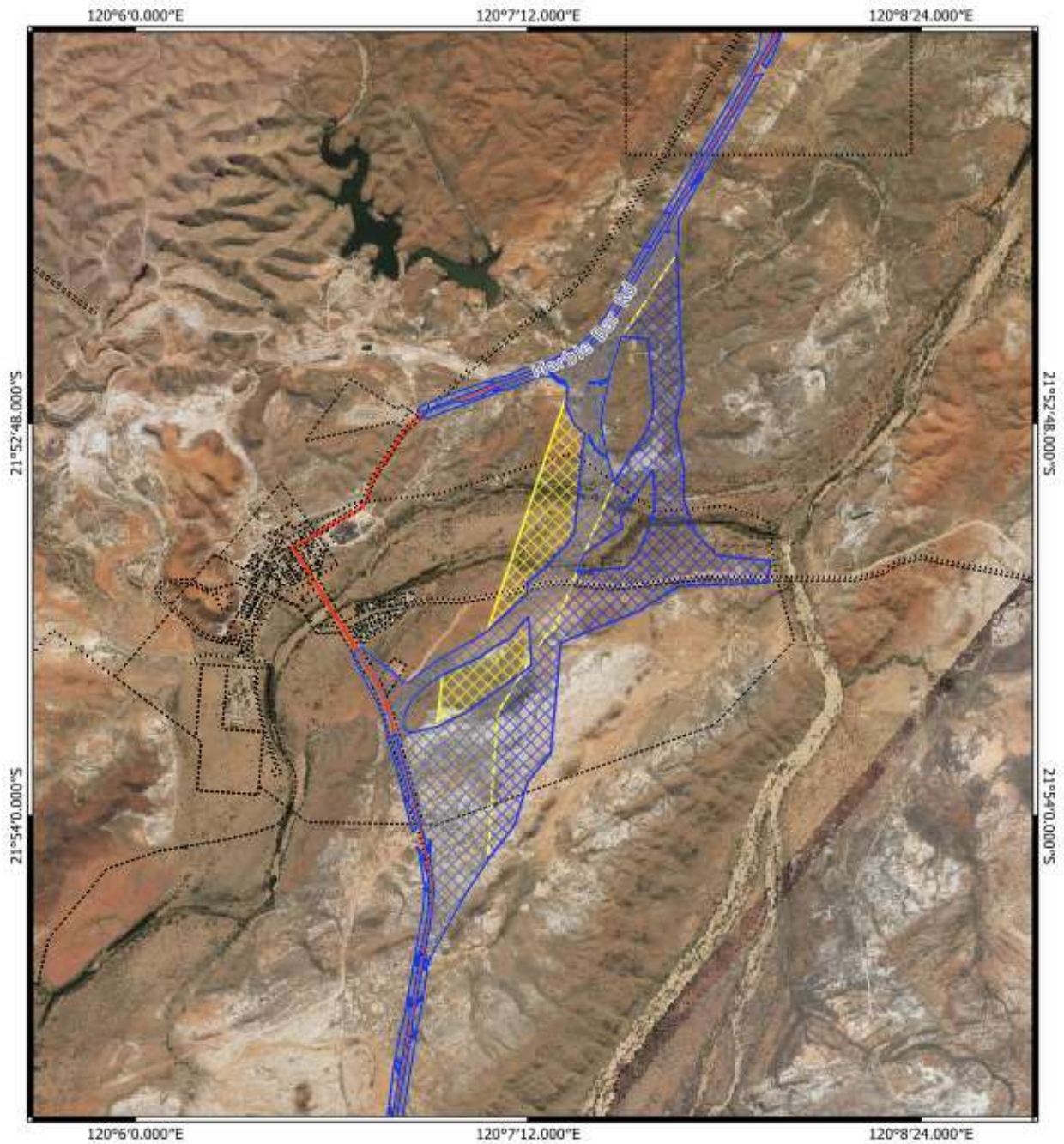


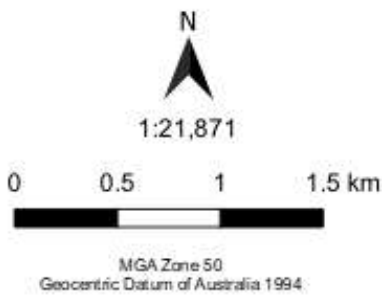
Figure 1: Map (total) of the revised clearing boundary. The areas crosshatched yellow indicate the areas within which authorised clearing can occur under the granted clearing permit.





**Legend**

-  CPS 9475-2
-  CPS 9475-1
-  Cadastre - LGATE 218
-  Local Government Authorities
-  Road Centrelines
-  Main Roads



**GOVERNMENT OF  
WESTERN AUSTRALIA**

**Figure 2: Deviation between the amended clearing boundary (CPS 9475/2 - yellow) and the original clearing boundary (CPS 9475/1 - blue)**

## 1.6. Assessment

Ongoing stakeholder consultation by Main Roads with native title holders has resulted in refinements to the preferred alignment of the Marble Bar Road upgrade project around the Nullagine townsite (Section 1.5, Figure 2) (Main Roads 2022a). This has allowed Main Roads to decrease the amendment application boundary overall, however, additional areas are required to avoid sensitive areas (Main Roads 2022a).

Approximately 90.8 hectares has been removed from the CPS 9475/1 authorised clearing area, and approximately 37.3 hectares has been added to the revised clearing boundary that was not previously assessed under CPS 9475/1.

The 37.3 hectare area above was considered by the primary biological survey undertaken by Biota Environmental Sciences (Biota 2021), a targeted flora survey undertaken by Pilbara Environmental (Pilbara Environmental 2021) and an additional survey that covered the proposed Nullagine bypass undertaken by WoodGIS Environmental Assessment and Management (WoodGIS 2020).

The CPS 9475/1 assessment against the ten clearing principles identified that the impacts of the proposed clearing present a potential risk to the biological values of significant ecological communities, significant flora, significant fauna habitat, native vegetation associated with a watercourse, and land and water resources (DWER 2021).

### Significant ecological communities

Of the 37.3 hectares not assessed under CPS 9475/1, over 50 per cent of the area consists of cleared areas, or native vegetation in a completely degraded to poor condition (Biota 2021) (Section 1.7: **Figure A**). Forty-nine percent of the area is in good to excellent condition.

Two PECs listed by the DBCA (DBCA 2020) have been mapped over the revised clearing boundary:

- Four plant assemblages of the Wona Land System (previously 'Cracking clays of the Chichester and Mungaroo Range') (Wona Land System); and
- Stony saline clay plains of the Mosquito Land System (Mosquito Land System).

The Wona Land System is listed by the DBCA as a Priority 1 PEC and the Mosquito Land System is listed by the DBCA as a Priority 3 PEC.

Vegetation units representative of the Wona Land System have not been identified or mapped within the 37.3 hectare area not assessed under CPS 9475/1, and the proposed amendment does not change identified impacts to the Wona Land System.

Vegetation unit P1 (Biota 2021) and Vegetation unit 4a (WoodGis 2020) correspond with the stony saline clay plains of the Mosquito Land System. Of the 37.3 hectare area not assessed under CPS 9475/1, approximately 5.3 hectares of these vegetation units have been mapped (Section 1.7: **Figure C**). Approximately 28.6 hectares of these units occur in the area no longer required under the amended application area CPS 9475/2 (Section 1.7: **Figure D**). The revised clearing boundary contains approximately 23.3 hectares less native vegetation representing the Mosquito Land System than the authorised CPS 9475/1 clearing permit, and the proposed amendment does not increase identified impacts to the Wona Land System.

### Significant flora

Eight Priority flora taxa have been recorded within the amended application area CPS 9475/2, four of which have been recorded in the vicinity of the area not assessed under CPS 9475/1 (Table 1) (Section 1.7: **Figure E**).

Two records of the Priority 1 taxa *Acacia aphanoclada* are located within the area not assessed under CPS 9475/1 (Table 1), and 93 records from 57 locations are located within the area no longer required under the proposed amendment (Table 1) (Section 1.7: **Figure F**). No other records of significant flora taxa are recorded within the amendment application area not assessed under CPS 9475/1 (Table 1) (Section 1.7: **Figure F**).

Eight records from six locations of the Priority 1 taxa *Atriplex spinulosa* are located within the area no longer required under the proposed amendment. None are recorded within the amendment area not assessed under CPS 9475/1 (Table 1) (Section 1.7: **Figure G**).

Over 170 records from 56 locations of the Priority 1 taxa *Solanum* sp. Mosquito Creek are located within the area no longer required under the proposed amendment. None are recorded within the amendment area not assessed under CPS 9475/1 (Table 1) (Section 1.7: **Figure H**).

The proposed amendment has resulted in fewer records of Priority flora taxa within the revised clearing boundary (Table 1), and the vegetation units and vegetation condition within the 34.7 hectares of the revised clearing boundary not previously assessed under CPS 9475/1 do not represent an increased risk of Priority flora taxa occurring.

**Table 1: Relevant Priority flora taxa records**

Taxon	Status	Records within the area not assessed under CPS 9475/1		Records within the area no longer required under the amended area CPS 9475/2	
		Records	Locations	Records	Locations
<i>Acacia aphanoclada</i>	P1	2	2	93	57
<i>Atriplex spinulosa</i>	P1	-	-	8	6
<i>Solanum</i> sp. Mosquito Creek	P1	-	-	174	56
<i>Ipomoea racemigera</i>	P2	-	-	-	-
<b>TOTAL</b>				<b>275</b>	<b>119</b>

**Significant fauna habitat**

The fauna habitats mapped over the revised clearing boundary not assessed under CPS 9475/1 (**Figure I**) do not represent any habitats not identified or assessed under the authorised CPS 9475/1 clearing permit, and no records of any fauna of conservation significance have been made within this area. Historical records of the Threatened (VU) Greater Bilby (*Macrotis lagotis*) (bilby) have been made within the vicinity of the amended application area. Prospective bilby habitat has been described and mapped over the amendment area by Biota (2021). Within the area not assessed under CPS 9475/1 ninety per cent has been mapped as low prospective bilby habitat, with ten per cent mapped as moderate prospective bilby habitat (Section1.7: **Figure J**). No high prospective bilby habitat has been mapped over the area not assessed under CPS 9475/1 (Section1.7: **Figure J**). In consideration of the fauna habitats present, and their condition, the proposed amendment does not represent an increased risk to the identified fauna species of conservation significance likely to occur over the CPS 9475/2 application area.

**Native vegetation associated with a watercourse**

The Nullagine River bisects the area not assessed under CPS 9475/1 (Section1.7: **Figure B**), supporting native vegetation in very poor to poor condition (Section1.7: **Figure A**). Vegetation units mapped and described by WoodGIS (2020) that represent native vegetation associated with a watercourse include units 1a, 2a and 2b. Of the 37.3 hectare area not assessed under CPS 9475/1 approximately 14 hectares of these vegetation units occur. Approximately 33.5 hectares of these units occur in the area no longer required under the revised clearing boundary. The revised clearing boundary contains approximately 19.5 hectares less native vegetation associated with a watercourse than the authorised CPS 9475/1 clearing permit and, in consideration of the vegetation units occurring and their condition (**Figure A**), the proposed amendment does not increase identified impacts to native vegetation associated with a watercourse.

**Land and water resources**

The area around Nullagine Township is located within a Public Drinking Water Source Area (PDWSA). A small proportion of the CPS 9475/1 authorised clearing boundary (that is shared with the revised clearing boundary) intersects a Wellhead Protection Zone (WHPZ) for a drinking water supply production bore within the Nullagine Water Reserve (DWER 2021a) (Section1.7: **Figure K**). The area not assessed under CPS 9475/1 is not located within any Wellhead Protection Zone (Section1.7: **Figure K**), and the proposed amendment does not increase potential impacts to the quality of surface or underground water.

The area not assessed under CPS 9475/1 has been mapped as the Mosquito Land System and the River Land System (Vreeswyk *et al.* 2004). In consideration of the vegetation condition, and Land Systems that were previously assessed under CPS 9475/1, the proposed amendment does not increase the risk of wind or water erosion over the revised clearing boundary.

A portion of the amendment application area intersects Crown Reserve 2804 incorporating the Nullagine Landfill (Section1.7: **Figure L**). The landfill is classified as 'possibly contaminated - investigation required' under the *Contaminated Sites Act 2003*, and the current Marble Bar road is within 50 metres of the landfill (Section1.7: **Figure L**). Risks to contaminated sites were assessed under application CPS 9475/1, that also intersected Crown Reserve 2804 incorporating the Nullagine Landfill (Section1.7: **Figure L**). DWER's science and planning team (DWER 2021b) has no objection to the proposed clearing on Crown Reserve 2804 provided that an environmental management plan is prepared for any proposed works, including management measures for the possible interception of landfilled materials. Main Roads (2021) advised that whilst the application area intersects Reserve 2804, Main Roads technical guidance states that roads cannot be built over geotechnically incompetent ground, which includes landfills and former landfills. Main Roads (2021) confirmed that the proposed clearing and construction will not disturb the landfill, and operations will not interfere with any potential contamination. Main Roads has established a Community Reference Group (CRG) and stakeholder consultation with the Shire of East Pilbara is ongoing in relation

to the Nullagine Landfill. In consideration of the amendment application area, and advice obtained, the proposed amendment does not increase potential impacts to land or water resources.

### Public submissions

DWER advertised the CPS 9475/1 amendment application for public comment and one submission was received. Responses to the comments received are provided in Table 2 below.

**Table 2: Summary of public submission comments**

Summary of comments	Consideration of comment
<p>The clearing area should be modified to reduce the amount of native vegetation cleared.</p> <ul style="list-style-type: none"> <li>Why does 500 hectares of vegetation need to be cleared when there is an existing road alignment.</li> </ul> <p>The permit holder provides no reason or justification.</p> <ul style="list-style-type: none"> <li>Why is the road not following the same alignment?</li> </ul>	<p>The design of the upgraded road follow the existing alignment except where required for the Nullagine township bypass or smaller areas where the existing alignment is unsuitable due to engineering considerations.</p> <p>Avoidance and mitigation measures provided by the applicant are summarised in Section 3.1 of the CPS 9475/1 Decision Report. Factors influencing the avoidance and minimisation of clearing include the requirement to widen and seal the road, to widen corners but avoid moving utilities, and to improve sight lines. The vast majority of the approximately 100 kilometres of existing alignment has been utilised. Approximately three kilometres of deviation (or three per cent of the upgrade length) is required for the Nullagine township bypass to allow for hauling and improved safety. The Marble Bar Road upgrade includes provision for the carting of Iron Ore from The McPhee mine site (Atlas Iron Pty Ltd) to the Roy Hill mine site (Hancock Prospecting Pty Ltd), essentially from one end of the clearing area boundary to the other (Main Roads 2022b). The carting will involve 60 metre Quad Road Trains, at over 200 movements per day. This level of usage is not acceptable to the people of Nullagine and the Shire of East Pilbara is fully supportive of the Nullagine bypass (Main Roads 2022b).</p> <p>An additional approximately two kilometres (or two per cent of the upgrade length) in three areas of the southern section also deviate from the existing alignment as they are deficient in the horizontal geometry necessary to accommodate the serviceability of the road required (Main Roads 2022b).</p> <p>Where any new alignment deviates from the old road, redundant areas will be either handed over to local stakeholders or they will be rehabilitated in accordance with MRWA standard practices including the ripping of compacted surfaces.</p> <p>Purpose Permit CPS 9475/1 was granted to the permit holder to clear up to 500 hectares of native vegetation, within a 755 hectare clearing area. The CPS 9475/2 amendment reduces the clearing area boundary to 701.5 hectares. The amended CPS 9475/2 realignment route for the Nullagine township bypass (<b>Figure 2</b>) reduces the clearing area boundary required and incorporates an area of native vegetation with the majority in completely degraded to poor condition. Impacts to PECs, Priority flora, significant fauna habitat, and fauna species of conservation significance are either unchanged or reduced from the CPS 9475/1 assessment.</p> <p>Initial clearing was calculated at an early stage based on a 30 metre offset from the construction design footprint to allow for horizontal changes within the application area. The actual clearing is based on a 10 metre bitumen seal on a 10 metre formation width (Main Roads 2022b). The extent will be three metre offsets from the final design footprint and therefore reduce the actual clearing required (Main Roads 2022b). Although Main Roads does not intend to use the whole clearing limit Main Roads requires the flexibility of the increased limit (Main Roads 2022b). A permit condition to avoid, minimise, and reduce the amount of native vegetation cleared is included in the permit and, Main Roads will report the actual clearing undertaken annually.</p>
<p>Approval processes allocate no value to native vegetation.</p> <ul style="list-style-type: none"> <li>Government attitude and policy does not allocate value to native vegetation, unique</li> </ul>	<p>The proposed clearing has been assessed against each of the ten clearing principles as set out in Schedule 5 of the EP Act; Principles (a) to (j). These are assessed and discussed in Section 3.2 and Appendix E of the CPS 9475/1 Decision Report. The clearing principles include an assessment of</p>



Summary of comments	Consideration of comment
<p>biodiversity, or natural heritage.</p>	<p>native vegetation, Principles (a) to (j), unique biodiversity, Principle (a), and natural heritage, Principles (a) to (f) and Principle (h).</p>
<p>Government attitude and policy are susceptible to the <i>shifting-baseline syndrome</i>.</p> <ul style="list-style-type: none"> <li>Each generation defines normal by what it experiences, not knowing what once was. Knowledge is lost over time because people and governments don't perceive the changes occurring. By continuing to reference against the current situation, the cumulative magnitude is rarely recognised and too often the proposed impact is considered acceptable.</li> </ul> <p>Approval will continue the collapse of our unique ecosystems and biodiversity.</p> <ul style="list-style-type: none"> <li>Many small clearings over years will result in all native vegetation on freehold land becoming cleared or irreversibly degraded. It's a death-by-a-thousand-cuts.</li> </ul>	<p>Native vegetation clearing is referenced against pre-European vegetation extents as described and mapped by Shepherd <i>et al.</i> (2001). That is, assessed against the extent of the described native vegetation associations prior to any clearing occurring. Data is presented in Appendix C.2 of the CPS 9475/1 Decision Report, and assessed and discussed in Appendix E under Principle (e).</p> <p>The cumulative impact of Clearing Permit CPS 9475/1 and CPS 9475/2 within the local area has been considered in the assessment by utilising best available information to calculate potential impacts to mapped remnant vegetation extent, vegetation associations, significant ecological communities, conservation significant flora and fauna, significant habitat, and in consideration of other granted clearing permits within the local area.</p> <p>The proposed clearing is on leasehold tenure in the extensive landuse zone, as opposed to the intensive landuse zone. That is, outside of the easternmost extent of land cleared for agricultural purposes within predominantly freehold tenure. Over 99 per cent of remnant vegetation is retained in the local area of a 40 kilometre radius of the clearing area (Appendix C.2 and Appendix E of the CPS 9475/1 Decision Report).</p> <p><b>Reference cited:</b> 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. (Now the Department of Primary Industries and Regional Development)</p>
<p>Approval will evoke direct and indirect impacts on our biodiversity.</p> <ul style="list-style-type: none"> <li>Direct, cumulative, offsite, cryptic, and secondary impacts and interactions between them will extend beyond the clearing area. Impacts are difficult to predict and will very likely be underestimated and inadequately managed.</li> </ul>	<p>Direct, cumulative, indirect, offsite and secondary impacts have been considered within the CPS 9475/1 Decision Report. Section 3-2-1, Section 3-2-2, Section 3-2-3 and Section 3-2-4 discuss indirect, downstream and offsite secondary impacts associated with the proposed clearing including the potential penetration of weeds into adjacent native vegetation, habitat, and riparian areas; potential altered hydrology that could impact adjacent PECs, Priority flora populations and watercourses; and downstream sedimentation that could impact watercourses, riparian vegetation and habitat. These sections discuss drainage design and construction management at watercourse crossings, as well as drainage modelling that indicates either the maintenance of existing hydrology, or the reinstatement of surface water hydrology closer to natural models. Conditions have been applied to the permit to: implement weed control measures to minimise the risk of introduction and spread of weeds into adjacent native vegetation; maintain existing surface water flows; and avoid the clearing of riparian vegetation where practicable.</p>
<p>Flora and fauna reports don't draw conclusions.</p> <ul style="list-style-type: none"> <li>Reports list species that could be found at a particular site, or recorded during a snapshot survey. There is no independence, the reports provide no context, and there is no interpretation of data. It is left to the reader (and the public) to draw conclusions.</li> </ul>	<p>Relevant flora and fauna reports have been provided via the Index of Biodiversity Surveys for Assessments (IBSA) portal. IBSA captures and consolidates data contained in biodiversity survey reports that support assessments under the EP Act. IBSA Submissions undertake checks to ensure the completeness of data packages prior to acceptance, and submitters must ensure data packages are complete before submission is possible. Information and data (including GIS data) are interpreted and analysed during the assessment process and potential impacts and conclusions are stated in the Decision Report (see 'conclusions' under sub-headings in Section 3.2 of the CPS 9475/1 Decision Report).</p>

1.7. Figures A to L

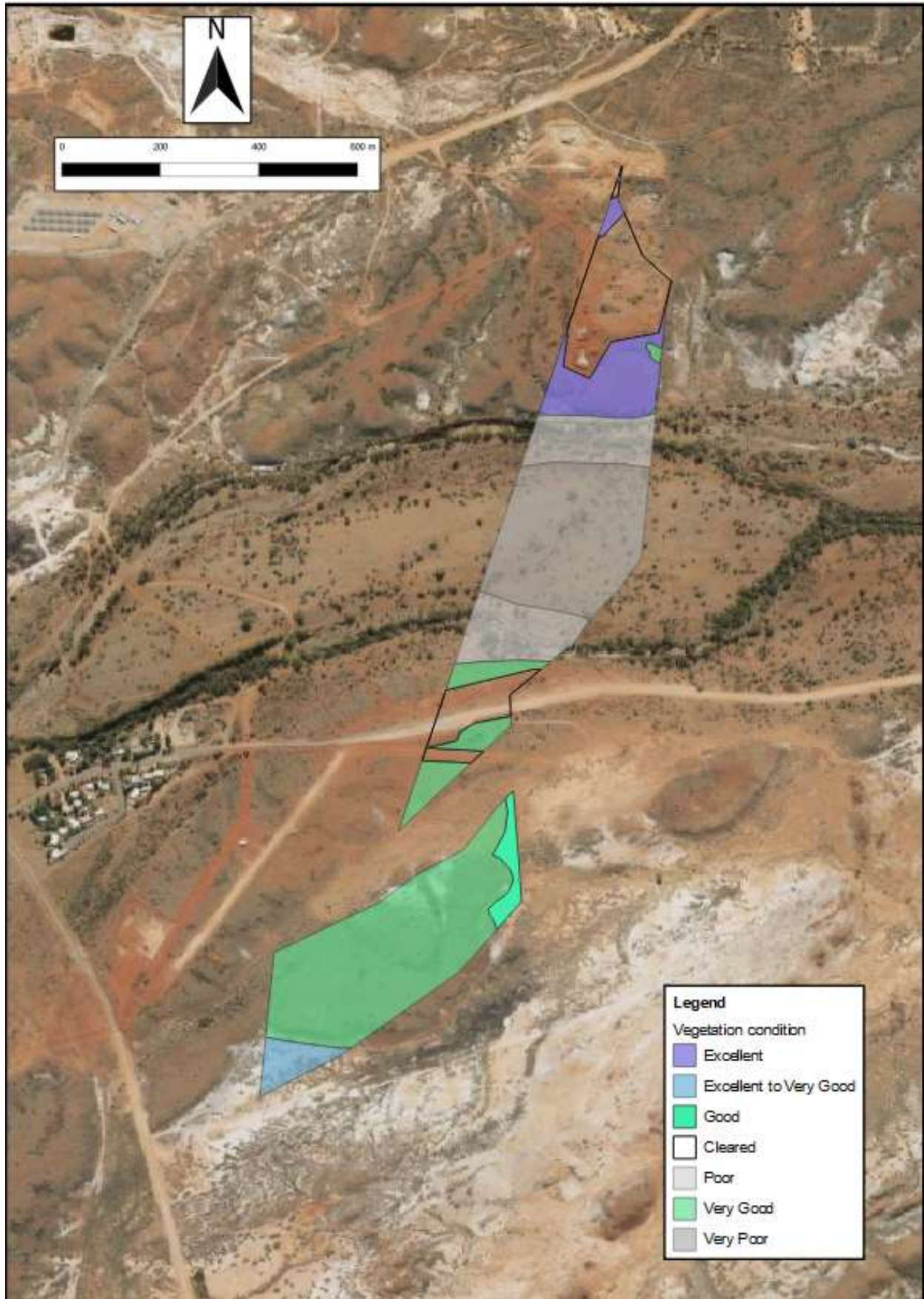
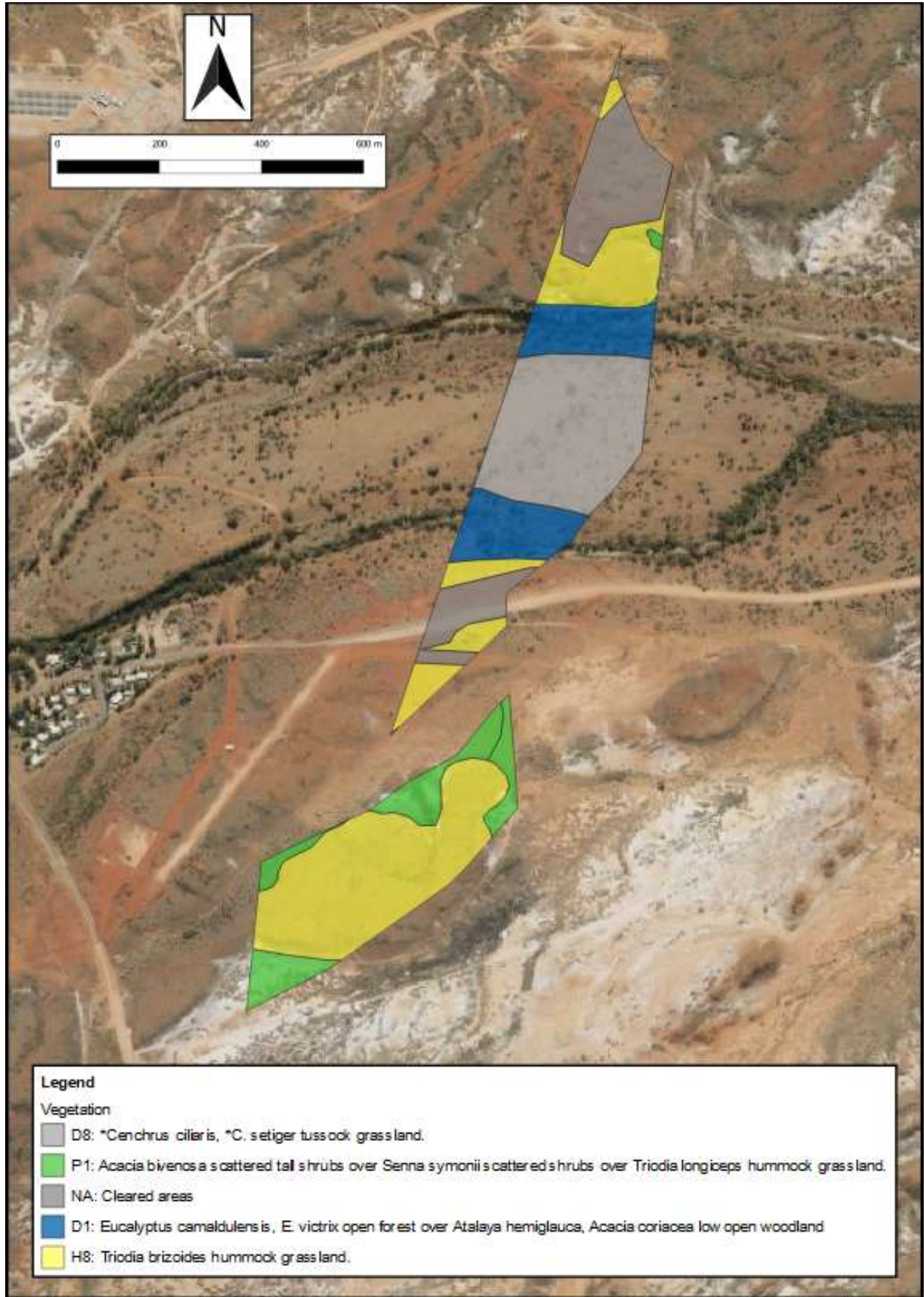


Figure A: Area not assessed under CPS 9475/1 – Vegetation condition





**Figure B: Area not assessed under CPS 9475/1 – Vegetation units (Biota 2020)**



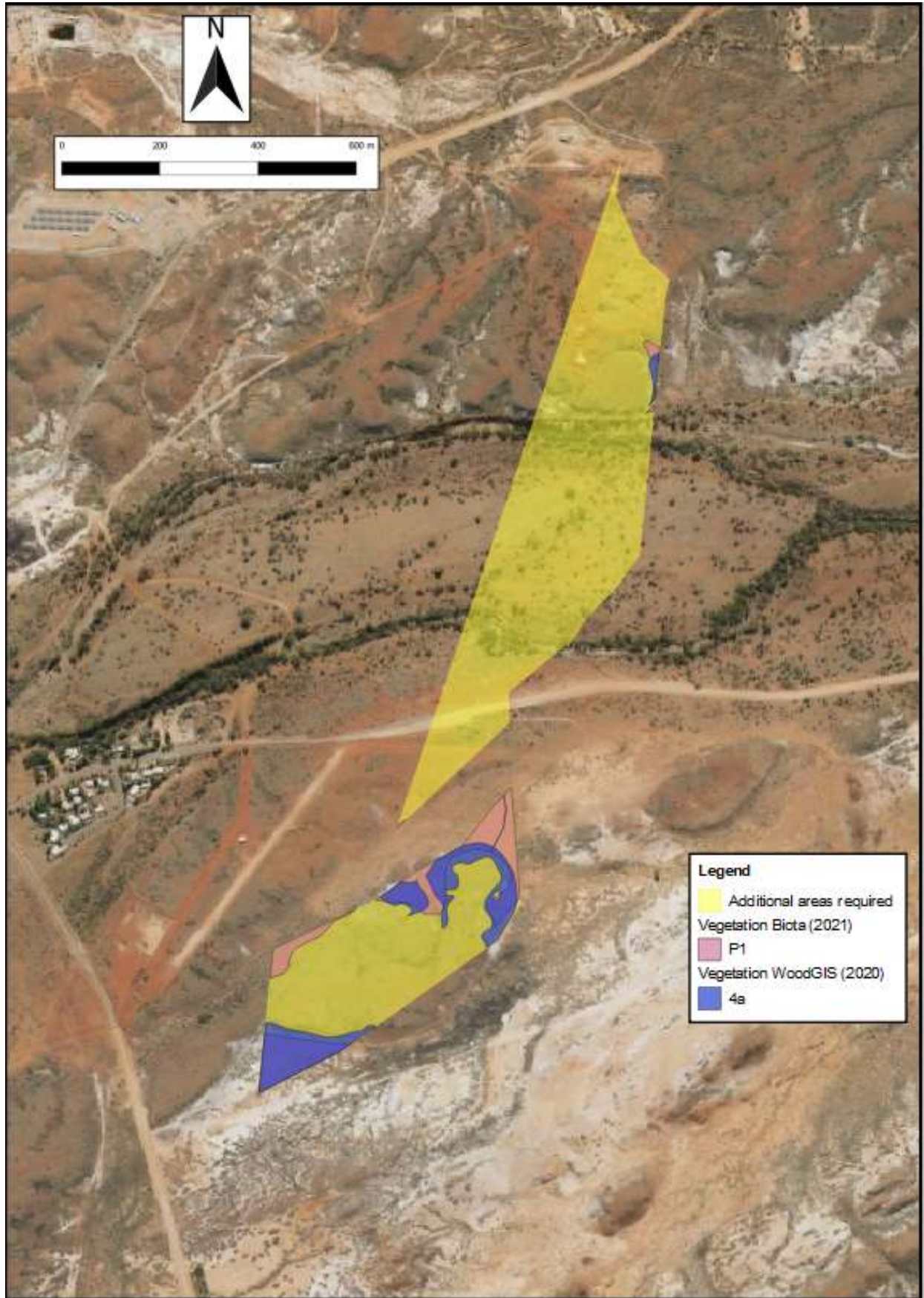


Figure C: Area not assessed under CPS 9475/1 – Vegetation representing the Priority 3 Mosquito Land System



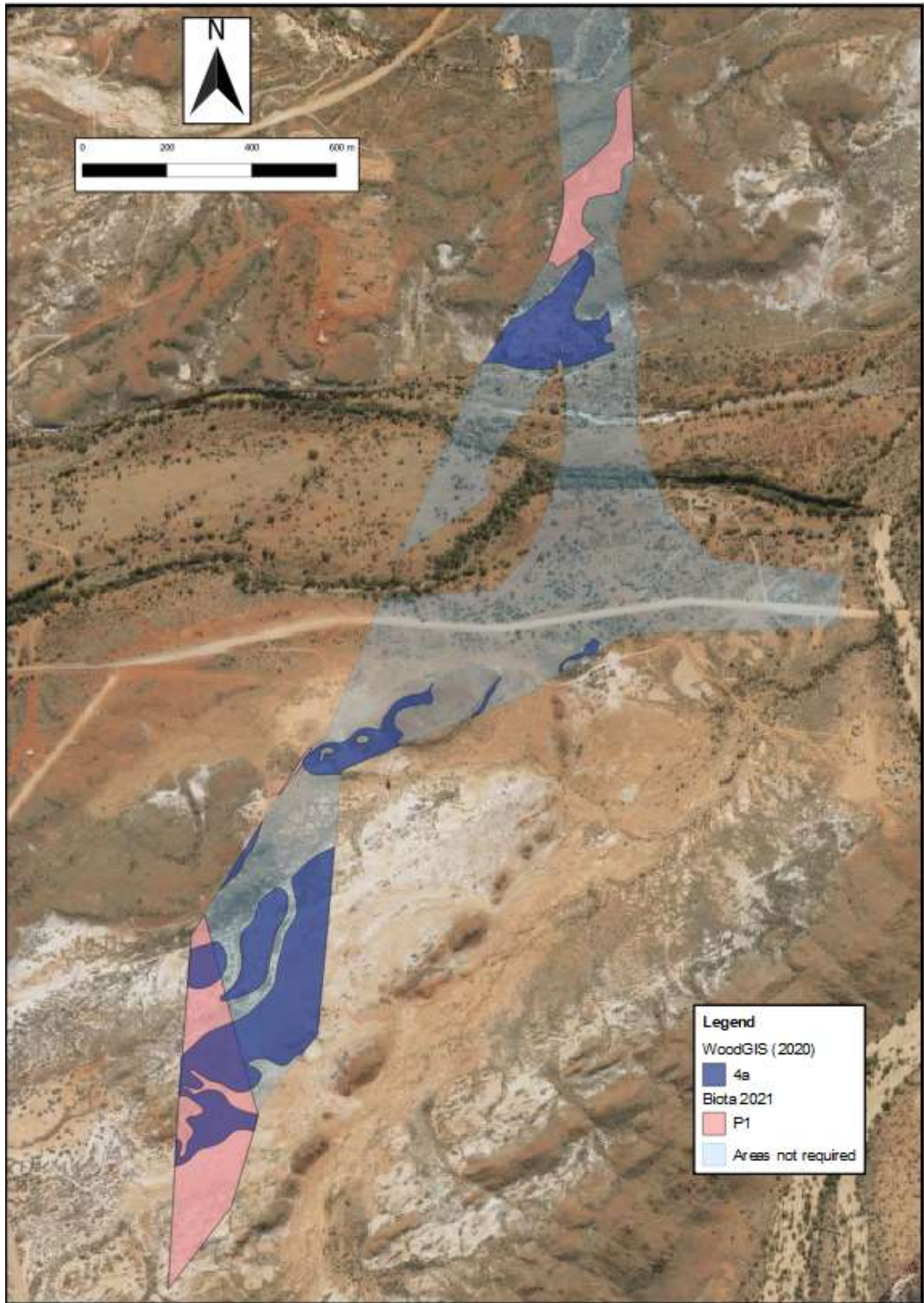


Figure D: Area no longer required - Vegetation representing the Priority 3 Mosquito Land System



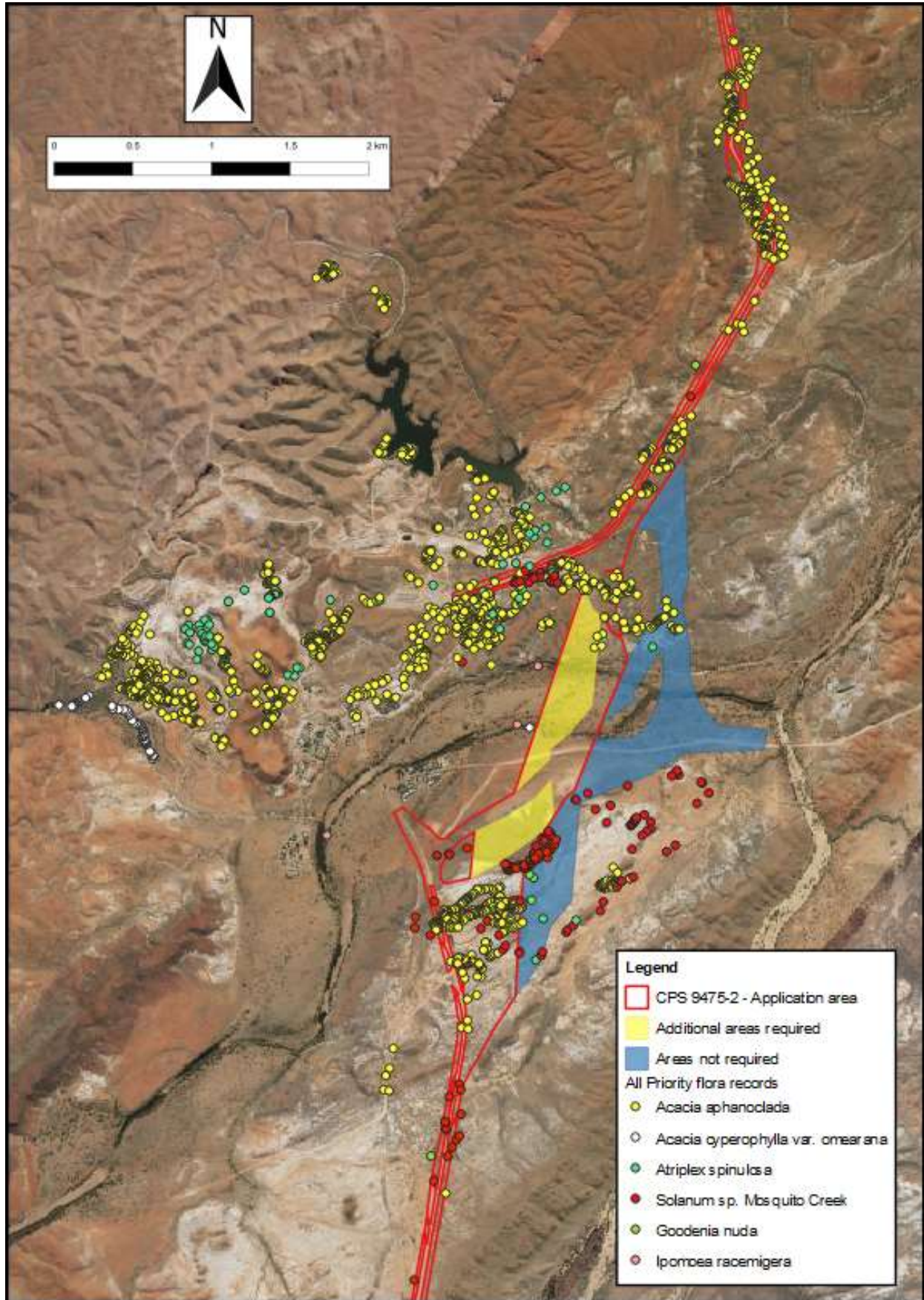


Figure E: Priority flora records in the vicinity of the revised clearing boundary



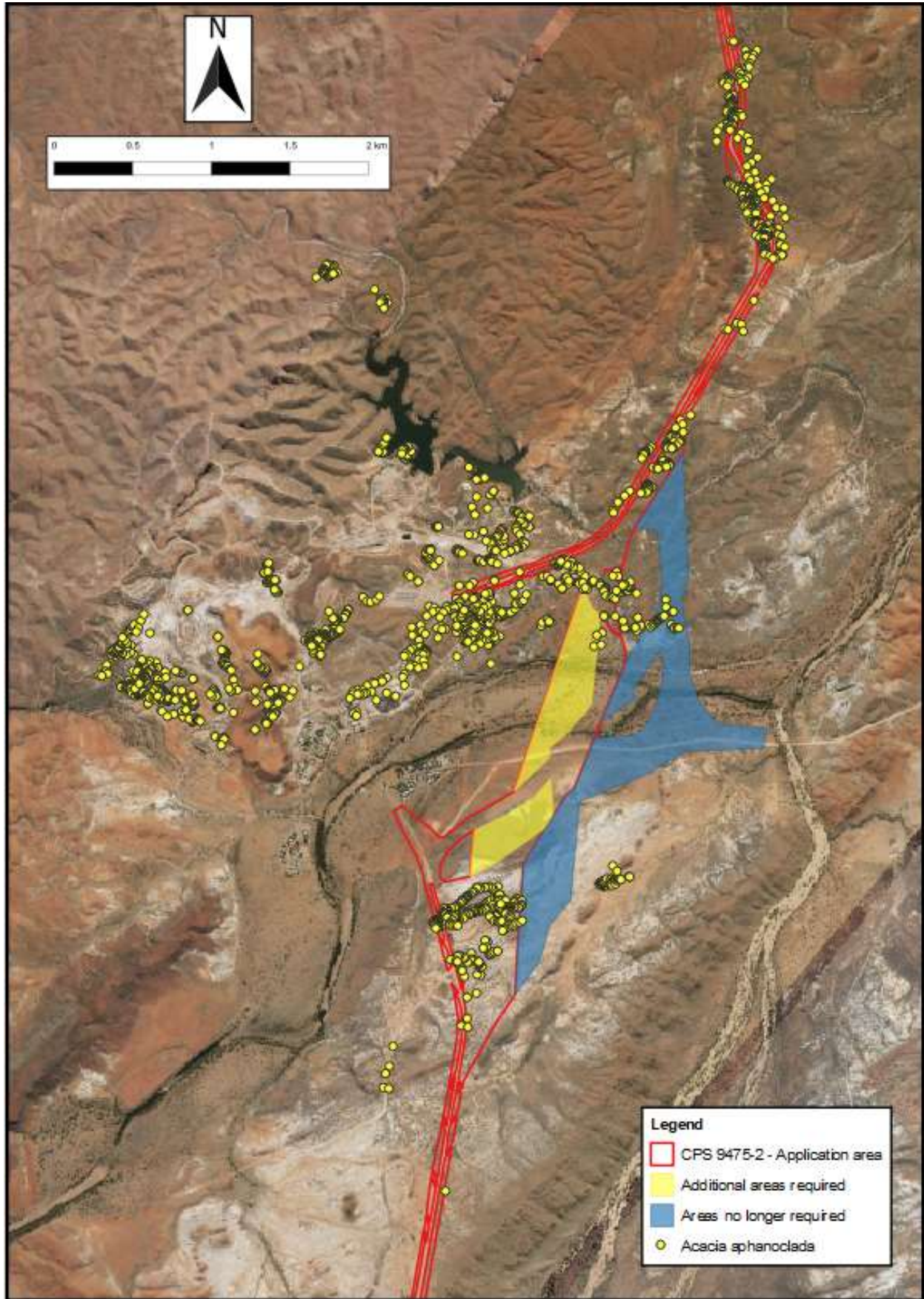


Figure F: *Acacia aphanoclada* (P1) records in the vicinity of the revised clearing boundary



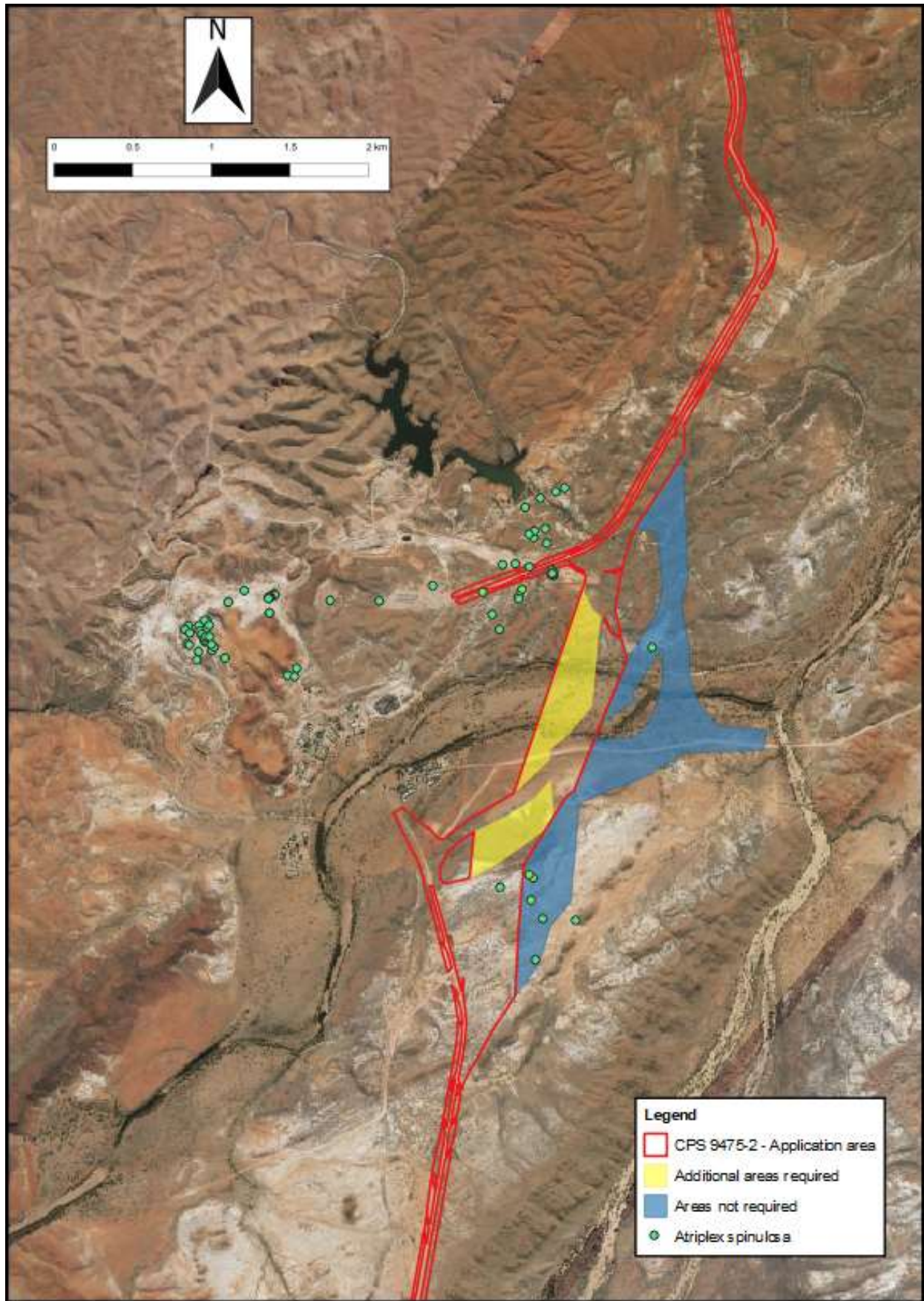


Figure G: *Atriplex spinulosa* (P1) records in the vicinity of the revised clearing boundary



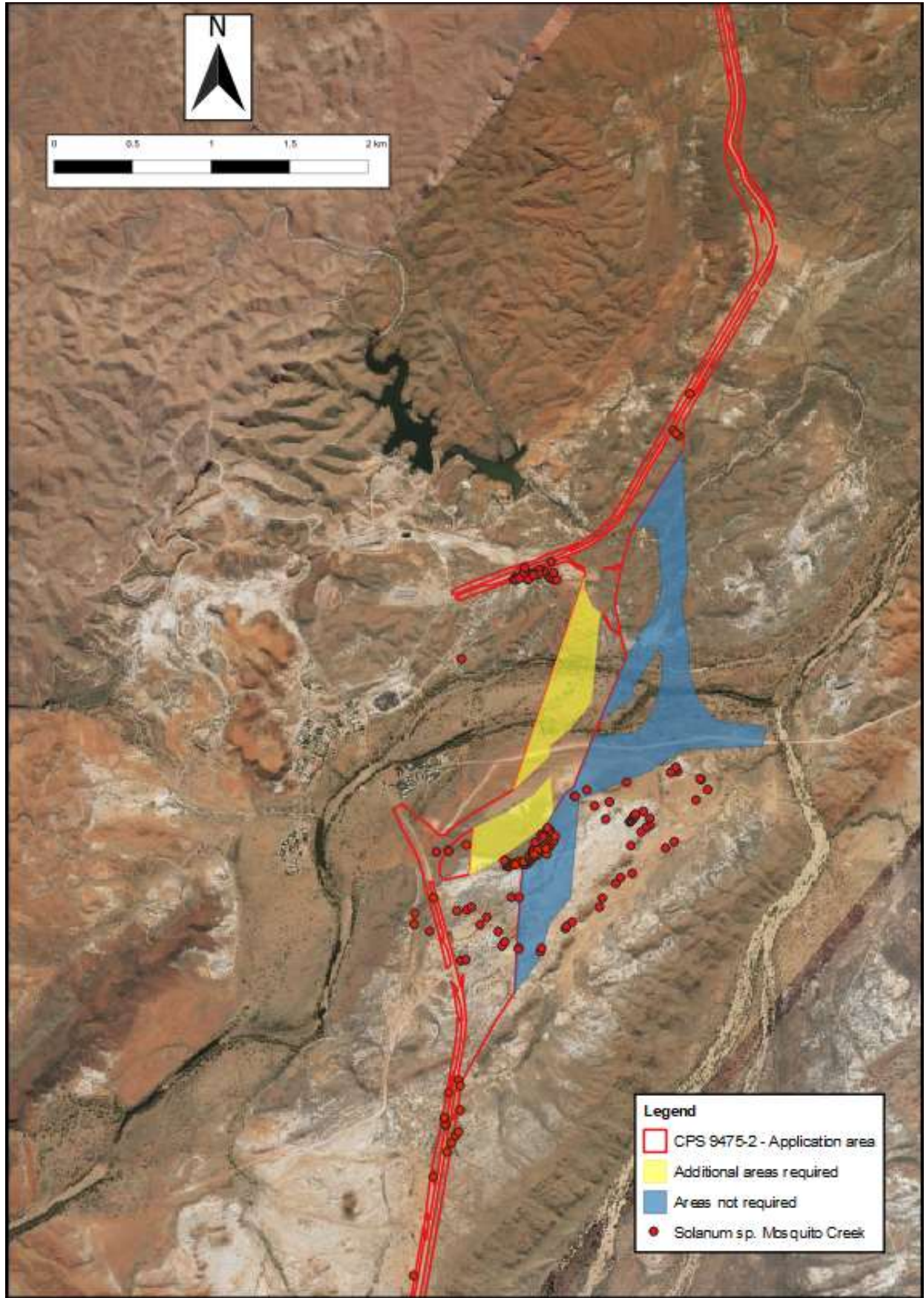


Figure H: *Solanum* sp. Mosquito Creek (P1) records in the vicinity of the revised clearing boundary



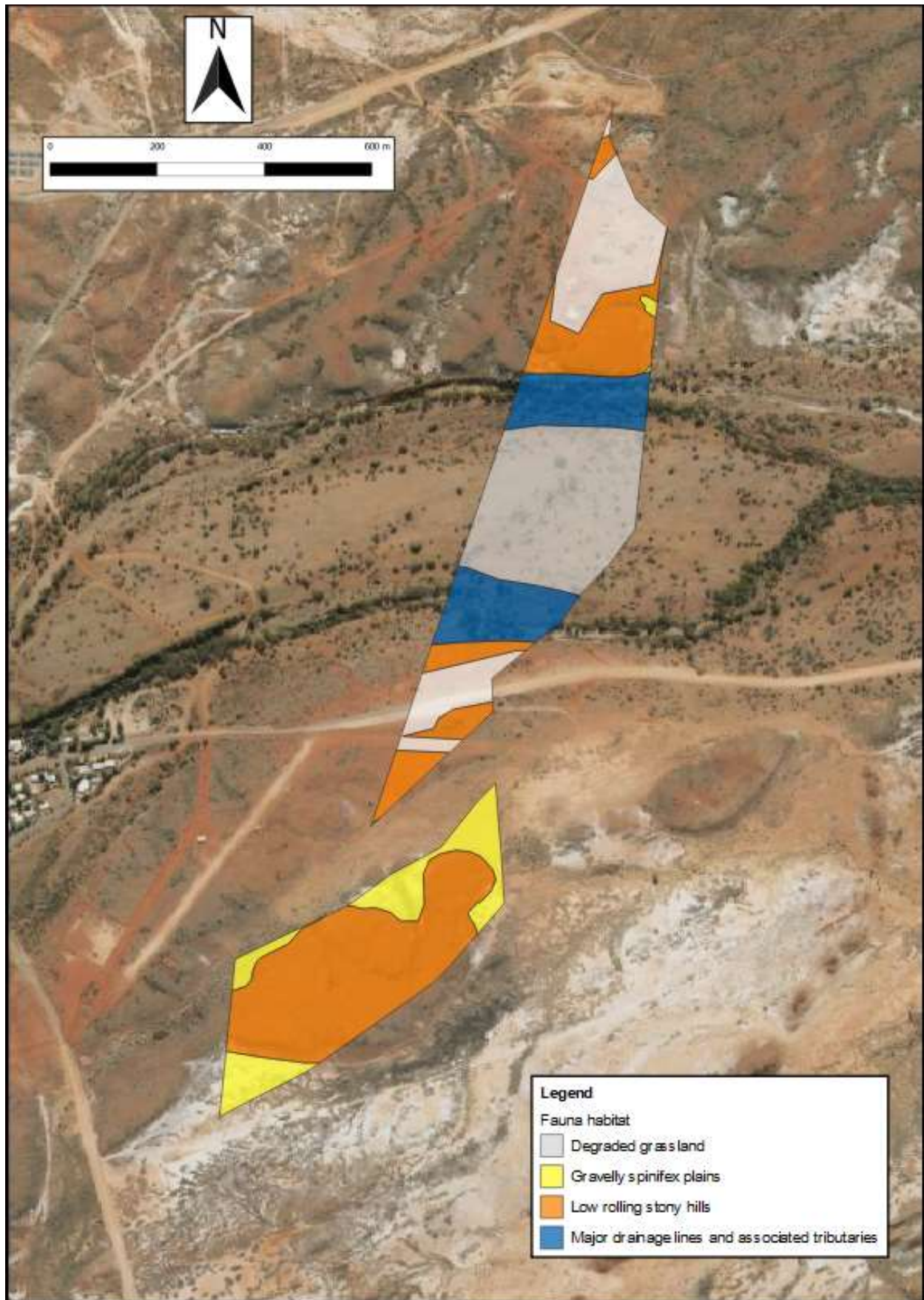


Figure I: Area not assessed under CPS 9475/1 – Fauna habitats



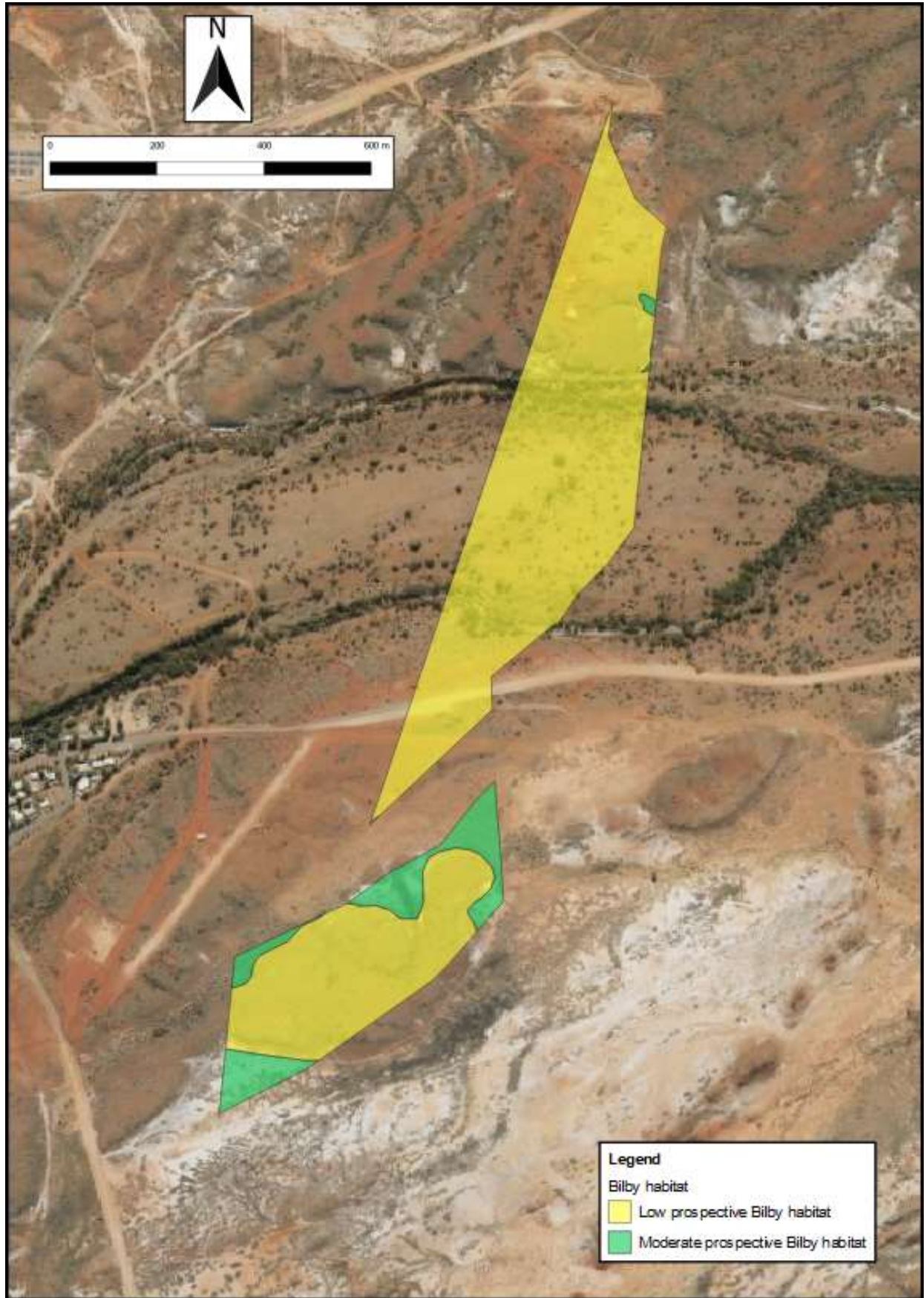
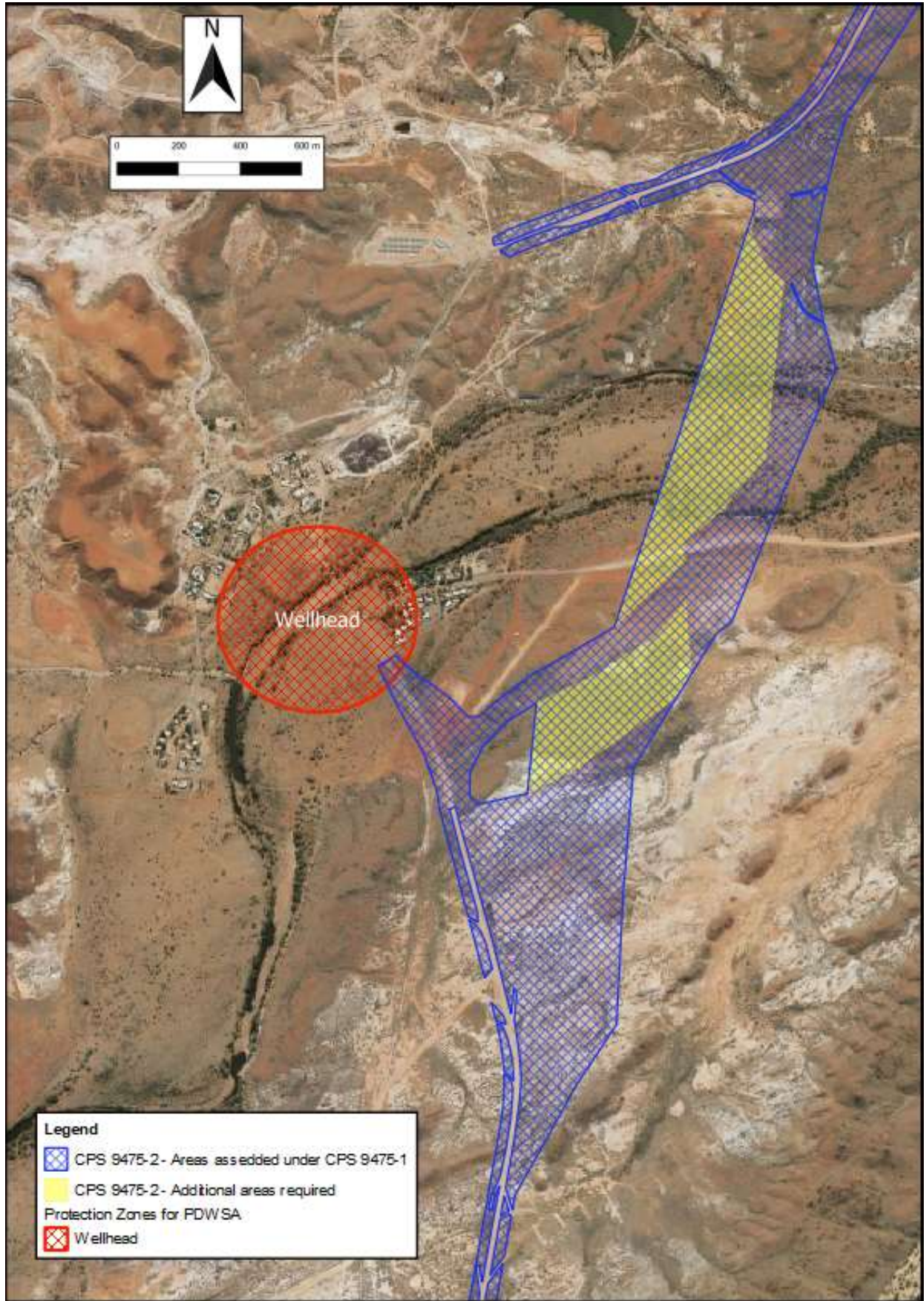


Figure J: Area not assessed under CPS 9475/1 – Greater Bilby (Bilby) habitat





**Figure K: Wellhead Protection Zone in the vicinity of the revised clearing boundary**



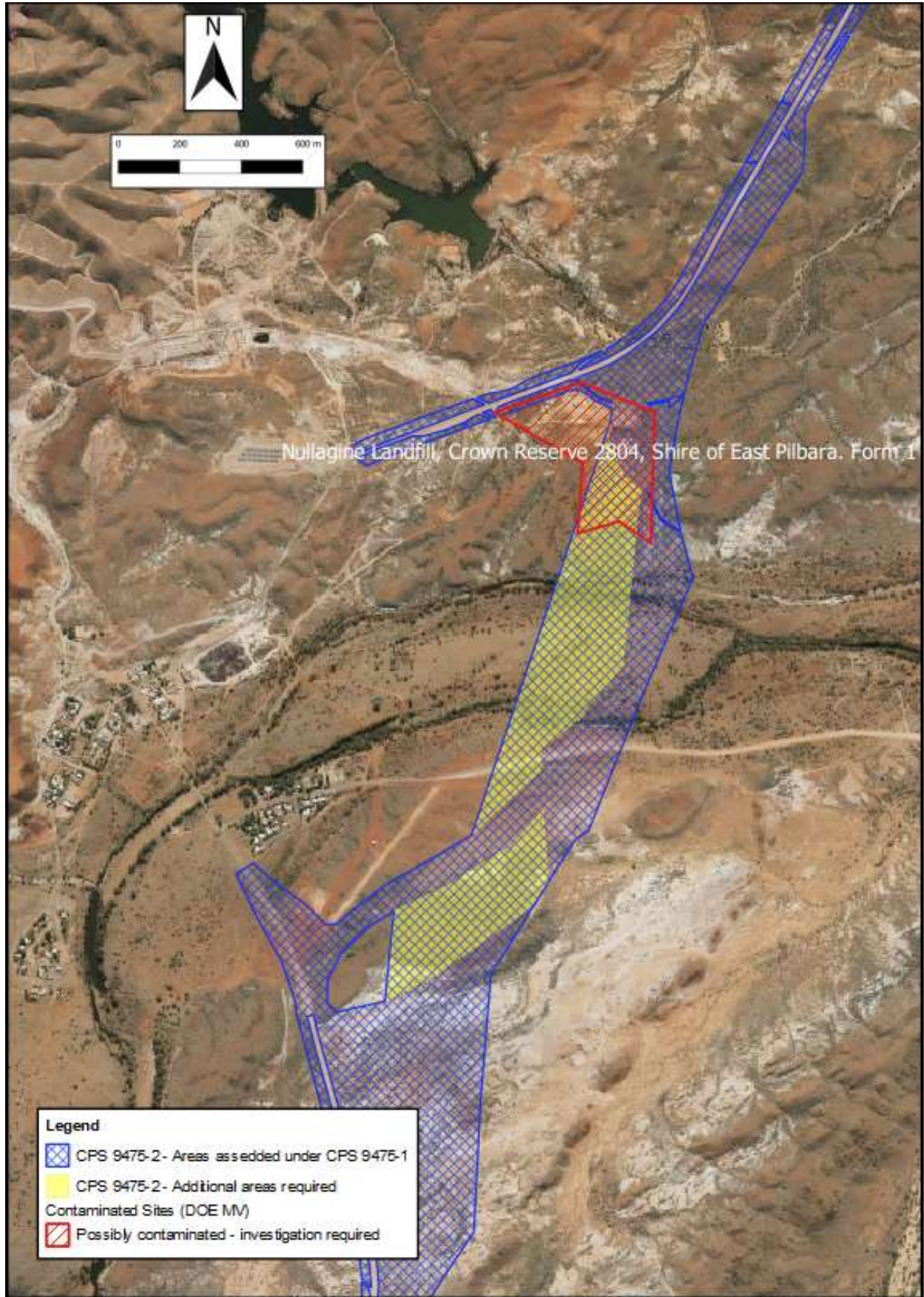


Figure L: Possibly contaminated sites in the vicinity of the revised clearing boundary (Nullagine Landfill)

## Appendix K: References and databases

### K.1 References

- Biota Environmental Sciences (Biota) (2021) Marble Bar Road Upgrades – SLK 97 – 179. Biological Survey. Prepared for Main Road Western Australia. March 2021. Biota Environmental Sciences Pty Ltd. Level 1, 228 Carr Place. Leederville, Western Australia, 6007. (DWER Ref: A2059990)
- Department of Biodiversity, Conservation and Attractions (DBCA) (2020). Priority Ecological Communities for Western Australia, Version 30. Species and Communities Branch, Department of Biodiversity, Conservation and Attractions, 28 July 2020.
- Department of Water and Environmental Regulation (DWER) (2021a) Advice received from DWER - Water Source Protection Planning team regarding potential requirements for proposed clearing associated with CPS 9475/1 in respect to Public Drinking Water Source Area (PDWSA), received on the 5 November 2021 (DWER Ref A2060917)
- Department of Water and Environmental Regulation (DWER) (2021b) Advice received from DWER - Contaminated Sites Science and Planning team regarding potential requirements for proposed clearing associated with CPS 9475/1 in respect to sites contaminated under the *Contaminated Sites Act 2003*, received on the 23 November 2021 (DWER Ref A2067616)
- Department of Water and Environmental Regulation (DWER) (2021c) CPS 9475/1 Decision Report available at: <https://ftp.dwer.wa.gov.au/permit/9475/Permit/>
- Main Road Western Australia (Main Roads) (2021) CPS 9475/1 - Supporting Information - Marble Bar Road Upgrades 2021 (DWER Ref: A2060222; A2077724; A2078906; A2070782; DWERDT576767).
- Main Road Western Australia (Main Roads) (2022a) CPS 9475/2 - Supporting Information – Proposed Amendment; Marble Bar Road Upgrades. March 2022 (DWERDT576767).
- Main Road Western Australia (Main Roads) (2022b) CPS 9475/2 – Responses to requests for further information – Proposed Amendment; Marble Bar Road Upgrades received by the Department of Water and Environmental Regulation (DWER) on 29 March 2022 (DWERDT583499) and 22 April 2022 (DWERDT594034).
- Pilbara Environmental Pty. Ltd. (Pilbara Environmental) (2021) Marble Bar Road Targeted Flora Survey. Prepared for Main Roads WA by Pilbara Environmental Pty. Ltd. October 2021 (DWER Ref: A2060241).
- van Vreeswyk, A M, Leighton, K A, Payne, A L, and Hennig, P. (2004), An inventory and condition survey of the Pilbara region, Western Australia. Department of Primary Industries and Regional Development, Western Australia, Perth. Technical Bulletin 92.
- WoodGIS (2020) Flora and Vegetation Survey of the Beaton's Creek, unpublished report by WoodGIS Environmental Assessment and Management for Novo Resources Corp (DWER Ref: A2060227).

### K.2 GIS databases

Publicly available GIS Databases used (sourced from [www.data.wa.gov.au](http://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)
- Pre-European Vegetation Statistics
- Remnant Vegetation, All Areas
- Native Vegetation Extent (DPIRD-005)
- Public Drinking Water Source Areas (DWER-033)
- Ramsar Sites (DBCA-010)
- 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:

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