MRDH Stage 4 Geotechnical Investigation - Native Vegetation Clearing Referral Application Supporting Document

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Main Roads Western Australia

Manuwarra Red Dog Highway – Stage 4
15 December 2022

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A	LB	12/12/22	J Morrell	For Review
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Acronyms and abbreviations

Acronym / Abbreviation	Definition
AHIS	Aboriginal Heritage Inquiry System
ASM	Mixed *Acacia* Shrubland fauna habitat
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DWER	Department of Water and Environmental Regulation
ha	Hectares
IBRA	Interim Biogeographic Regionalisation for Australia
km	Kilometres
m	Meters
Main Roads	Main Roads Western Australia
MDE	Eucalyptus fringed major drainage lines and associated tributaries fauna habitat
MRDH	Manuwarra Red Dog Highway
PDWSA	Public Drinking Water Source Area

1. Introduction

1.1 Purpose and Scope

This document has been prepared to support a Native Vegetation Clearing Referral for geotechnical investigation associated with the Manuwarra Red Dog Highway (MRDH). The purpose of this document is to provide supporting information to the Department of Water and Environmental Regulation (DWER) in the format of an assessment against the four-criterion that detailed in 'Guideline: Native vegetation clearing referrals' (DWER, 2021).

Main Roads Western Australia (Main Roads) is proposing to undertake geotechnical investigations along the first 10 km of the MRDH Stage 4 alignment, commencing at the intersection of Stage 4 with the Roebourne-Wittenoom Road (Figure1-1).

1.2 Proposed Clearing

A total of 6.52 ha is proposed to be cleared. Clearing will be undertaken for the following:

- **Geotechnical Sampling Locations:** Approximately 0.3 ha will be cleared at each sampling location to provide for drill pads at borehole sampling locations, excavation of trenches at test pit sampling locations, laydown areas, vehicle and machinery turnaround and stockpiling/windrowing of cleared vegetation and topsoil.
- **Access tracks**: to allow for safe access to the sampling locations access tracks will be cleared to a maximum with of 6 m. Cleared vegetation and topsoil will be stockpiled in windrows along the edge of the access track (within the 6 m cleared area). A maximum of 5.58 ha will be cleared for access tracks.

Surveys have been undertaken of the full extent of the MRDH Stage 4 corridor by Biota (2021), which includes the area of the geotechnical investigations. The results of the surveys have informed this supporting information document.

Clearing and sampling locations have been planned to avoid drainage lines and the *Eucalyptus fringed major drainage lines and associated tributaries* (MDE) fauna habitat, which has been identified as potential dispersal habitat for the Northern Quoll. The access tracks cross one man-made drainage channel (Figure 1-2; Map 3) and a minor drainage line (Figure 1-2; Map 5). Access across the minor drainage line will make use of an existing cleared area along a recently installed fence line. Clearing requirements by vegetation association and fauna habitat type are provided in Table 1-1 and Table 1-2 respectively and shown on Figure 1-2 and Figure 1-3.

Table 1-1. Proposed Clearing by Vegetation Association

Code	Vegetation Description	Area (ha)
C2	*Acacia xiphophylla* low woodland over *Triodia epactia* very open hummock grassland over *Eragrostis xerophila* scattered tussock grasses	0.65
F3	*Corymbia hamersleyana* low open woodland over mixed *Acacia* shrubland over *Triodia epactia* hummock grassland	5.00
C1	*Eriachne benthamii*, *Eragrostis xerophila*, *Astrebla elymoides* very open tussock grassland over *Cynodon convergens* very open bunch grassland	0.63
	Cleared / Disturbed	0.24
Total		6.52

Table 1-2. Proposed clearing by Fauna habitat type

Code	Habitat Description	Area (ha)
ASCC	*Acacia xiphophylla* shrublands over cracking clay	1.28
ASM	Mixed *Acacia* shrublands	5.00
	Cleared / Disturbed	0.24
Total		6.52

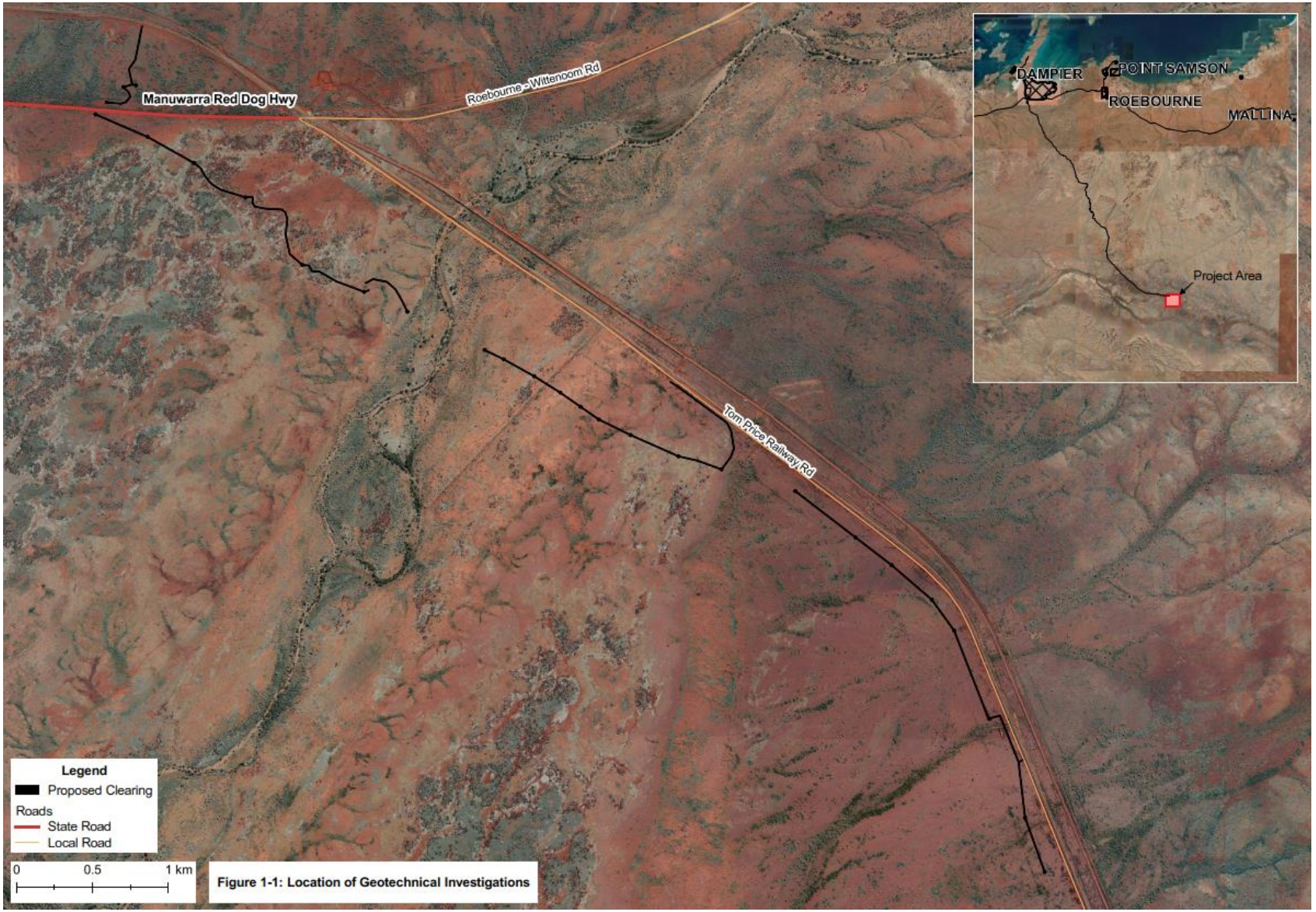

Figure 1-1: Location of Geotechnical Investigations

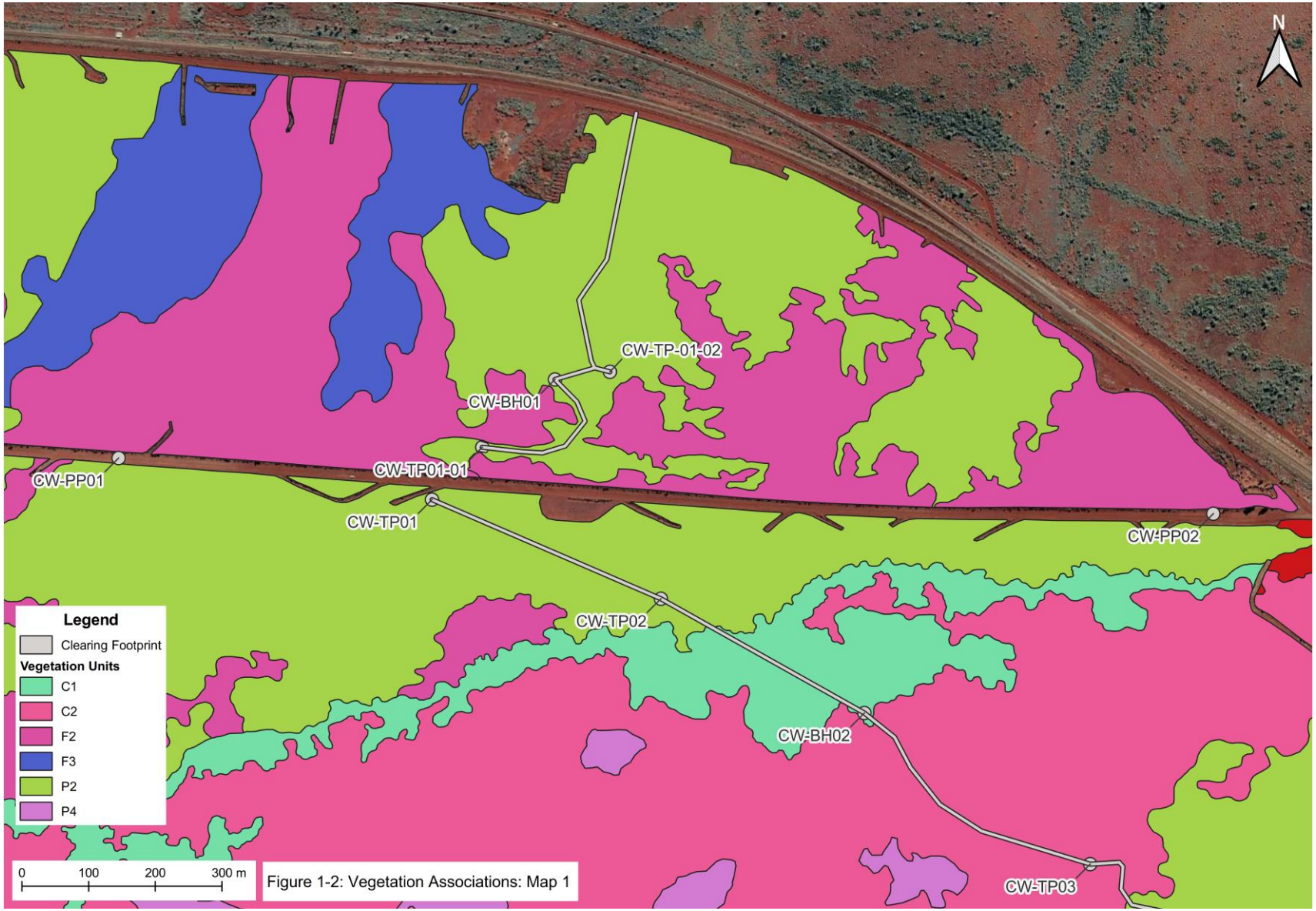

Figure 1-2: Vegetation Associations: Map 1

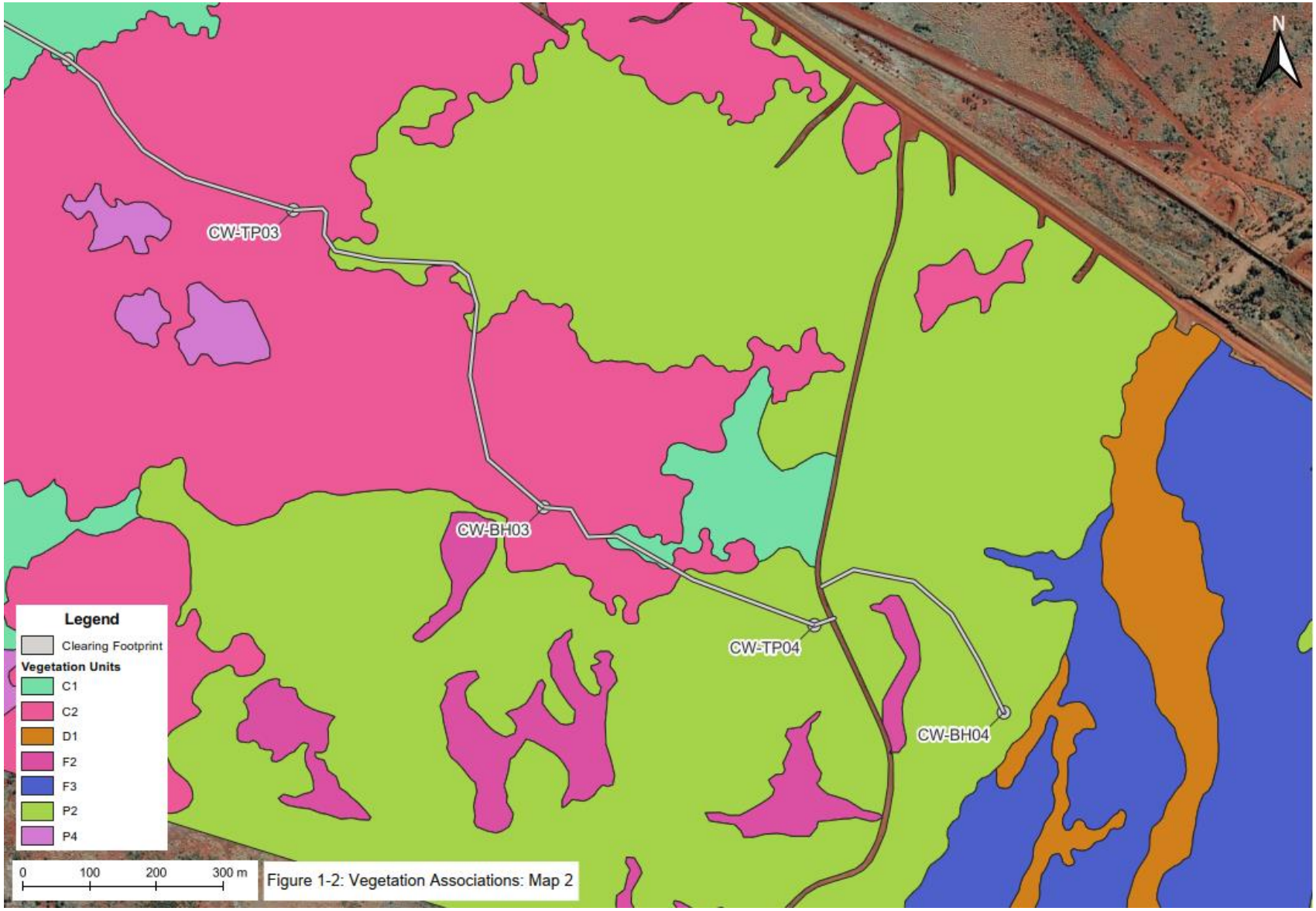

Figure 1-2: Vegetation Associations: Map 2

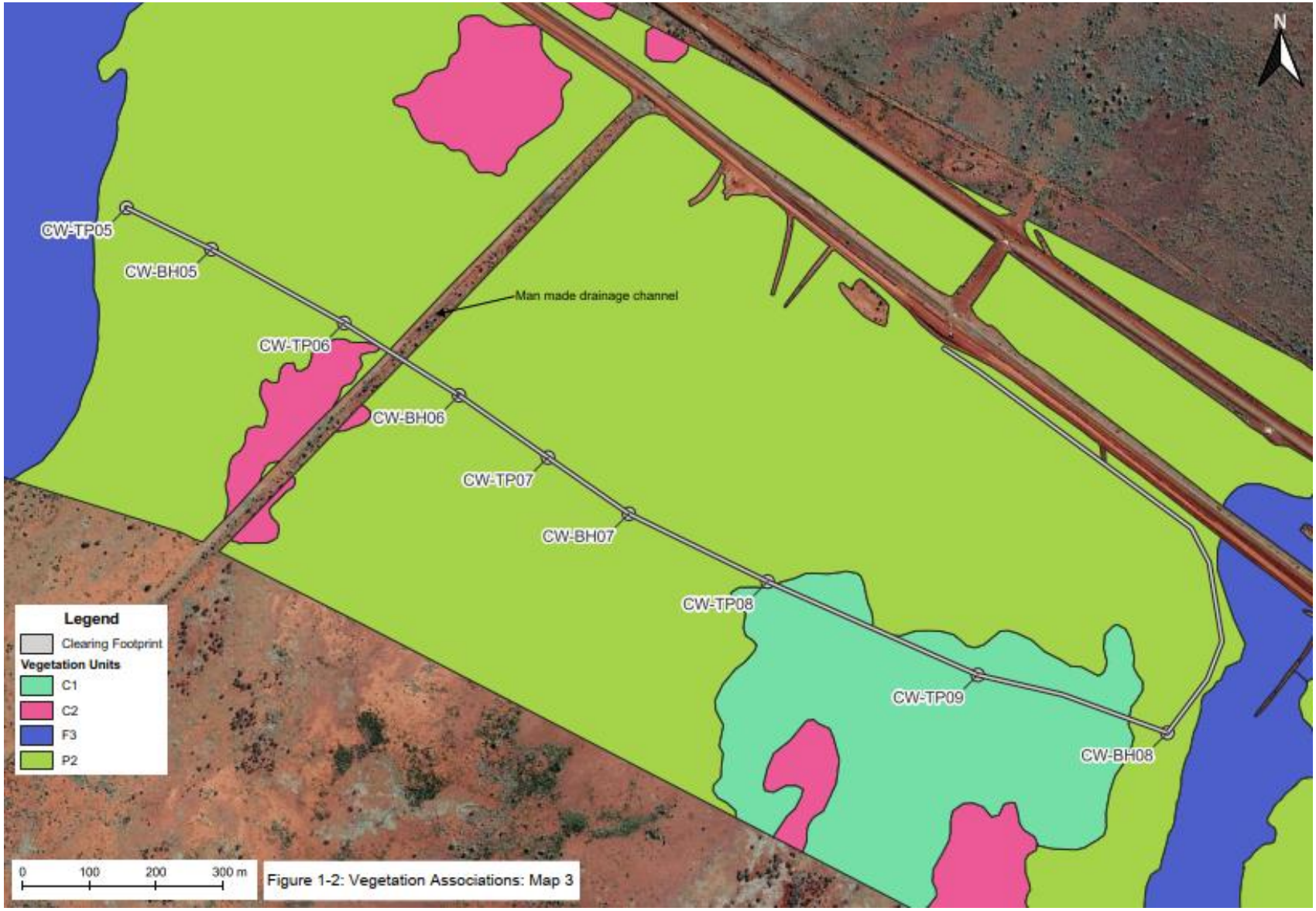

Figure 1-2: Vegetation Associations: Map 3

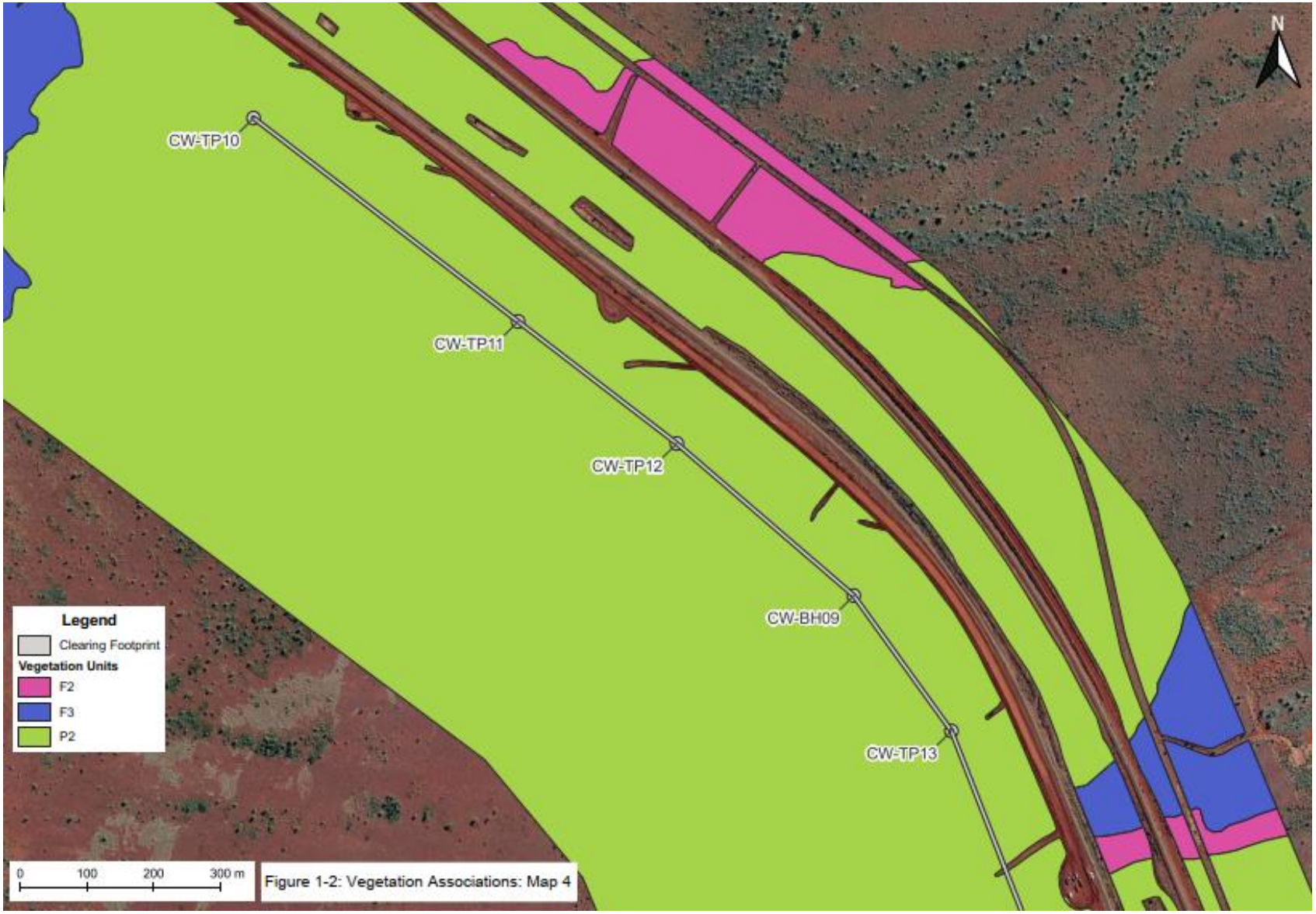

Figure 1-2: Vegetation Associations: Map 4

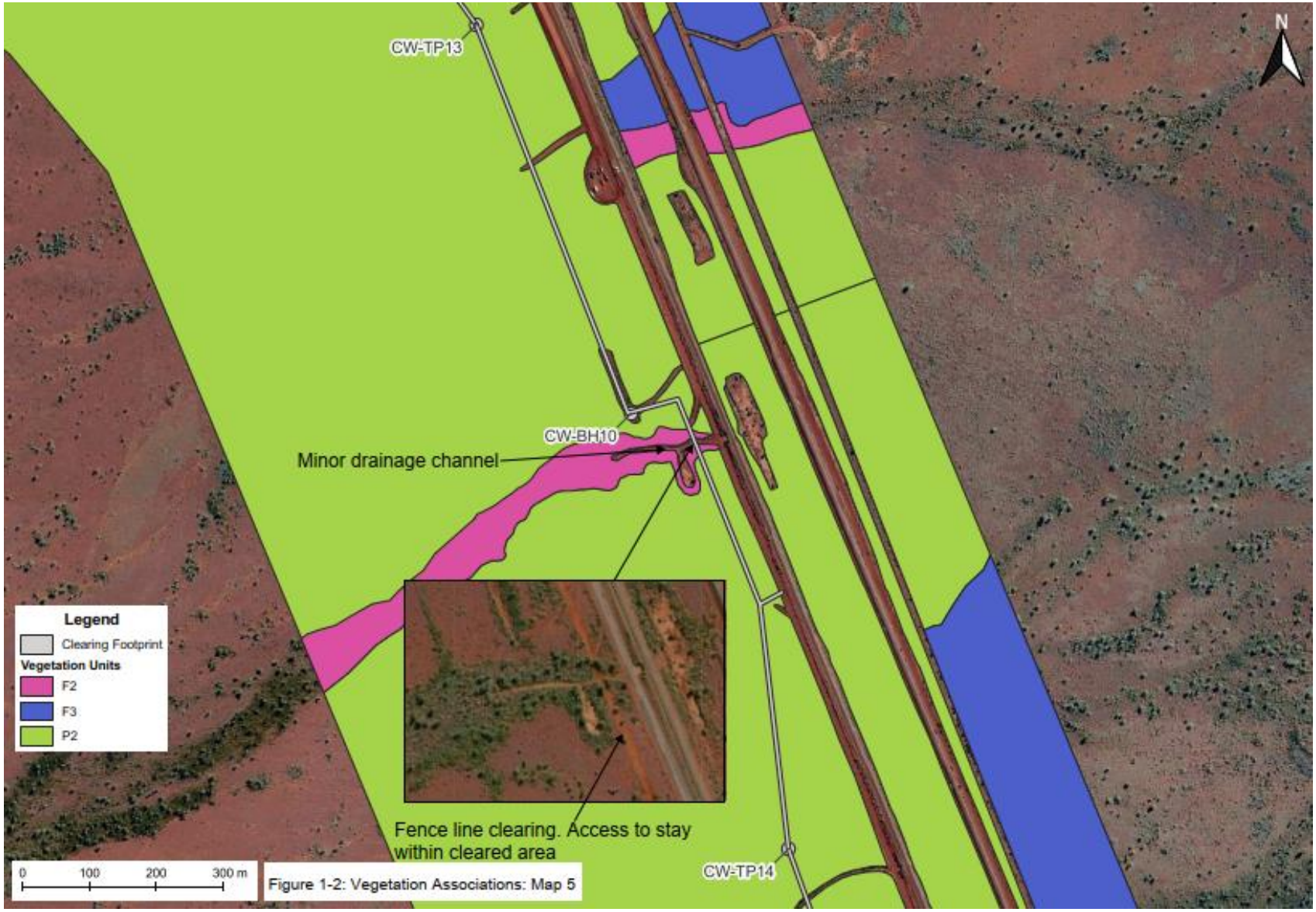

Figure 1-2: Vegetation Associations: Map 5

Figure 1-2: Vegetation Associations: Map 6

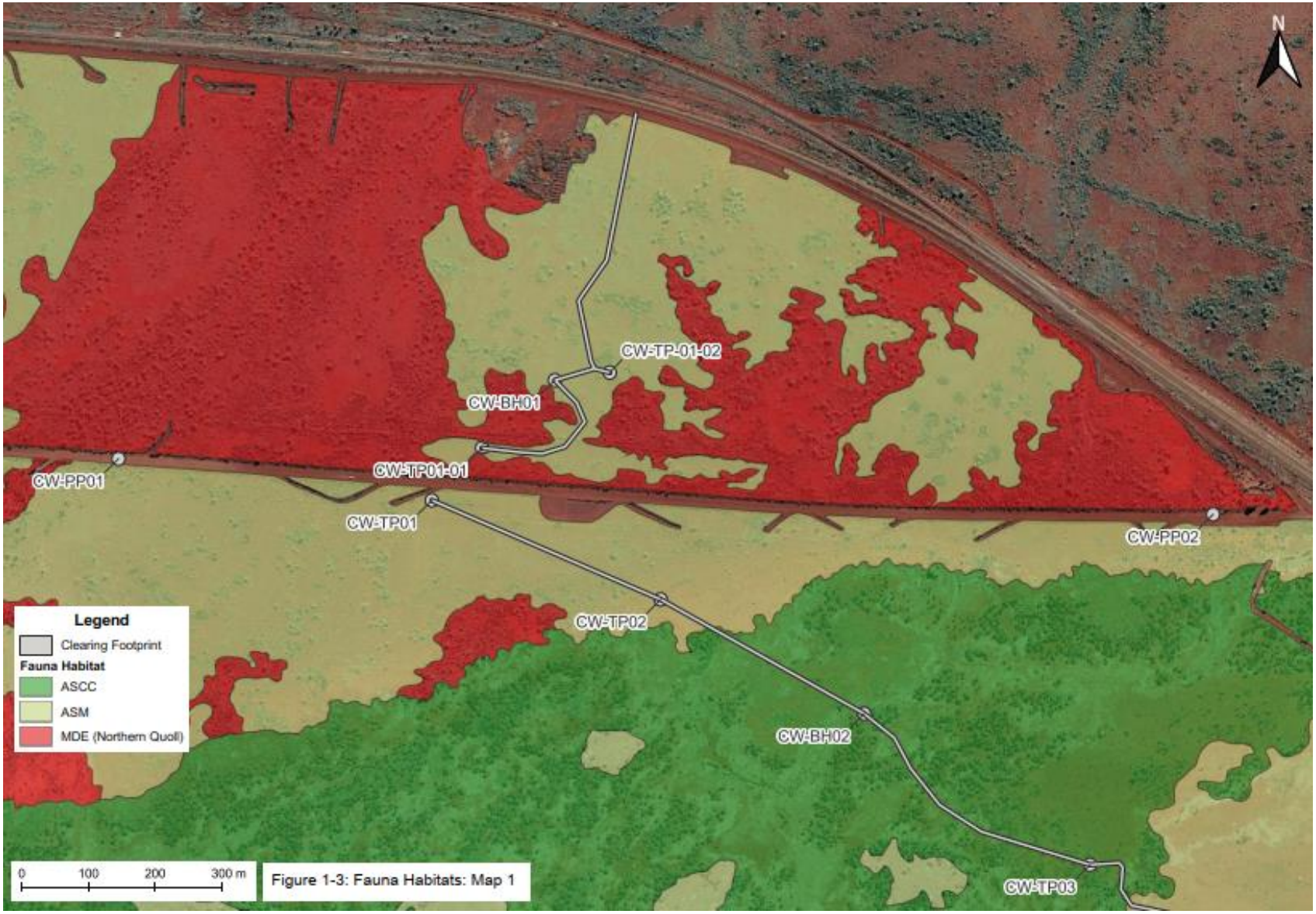

Figure 1-3: Fauna Habitats: Map 1

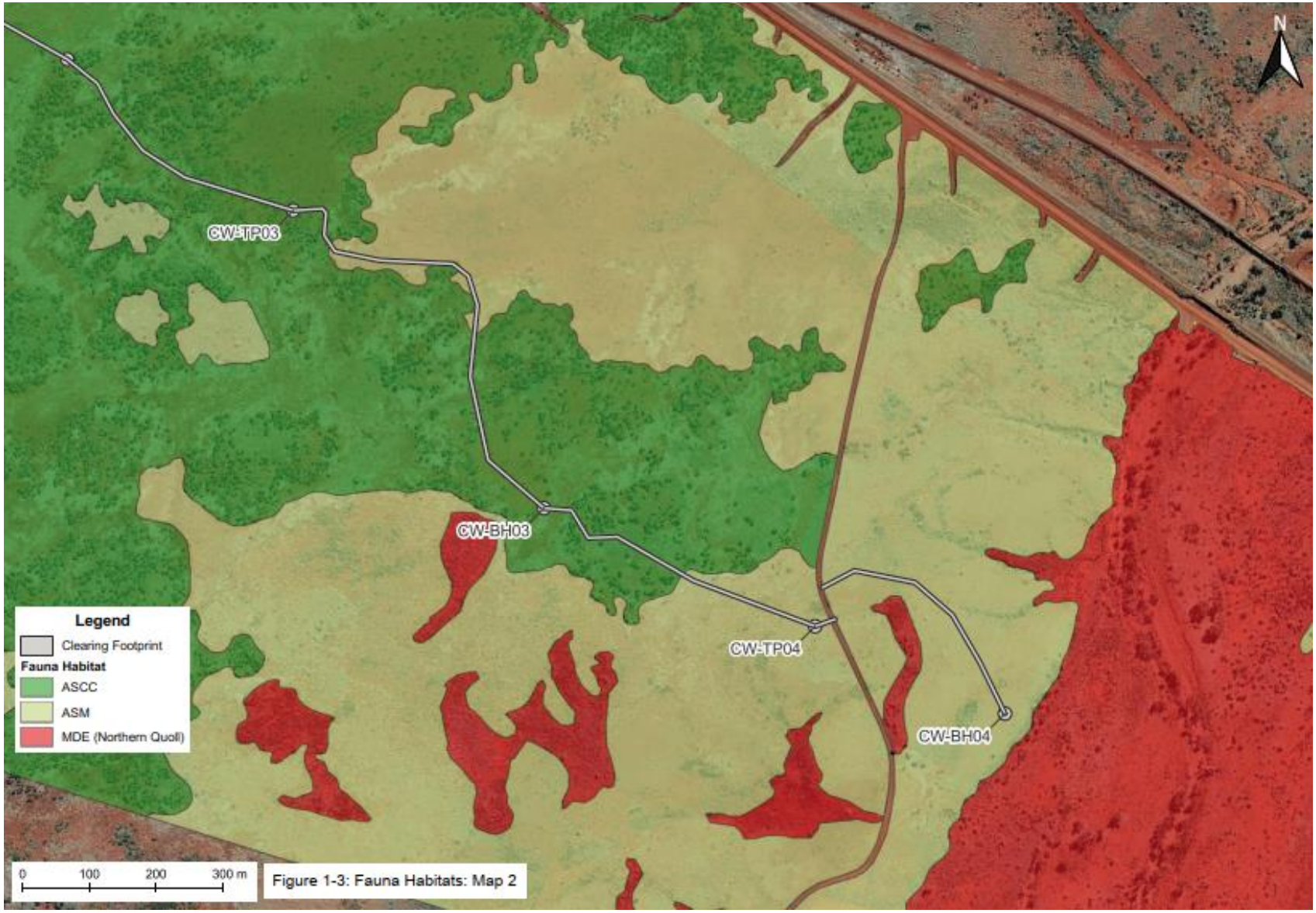

Figure 1-3: Fauna Habitats: Map 2

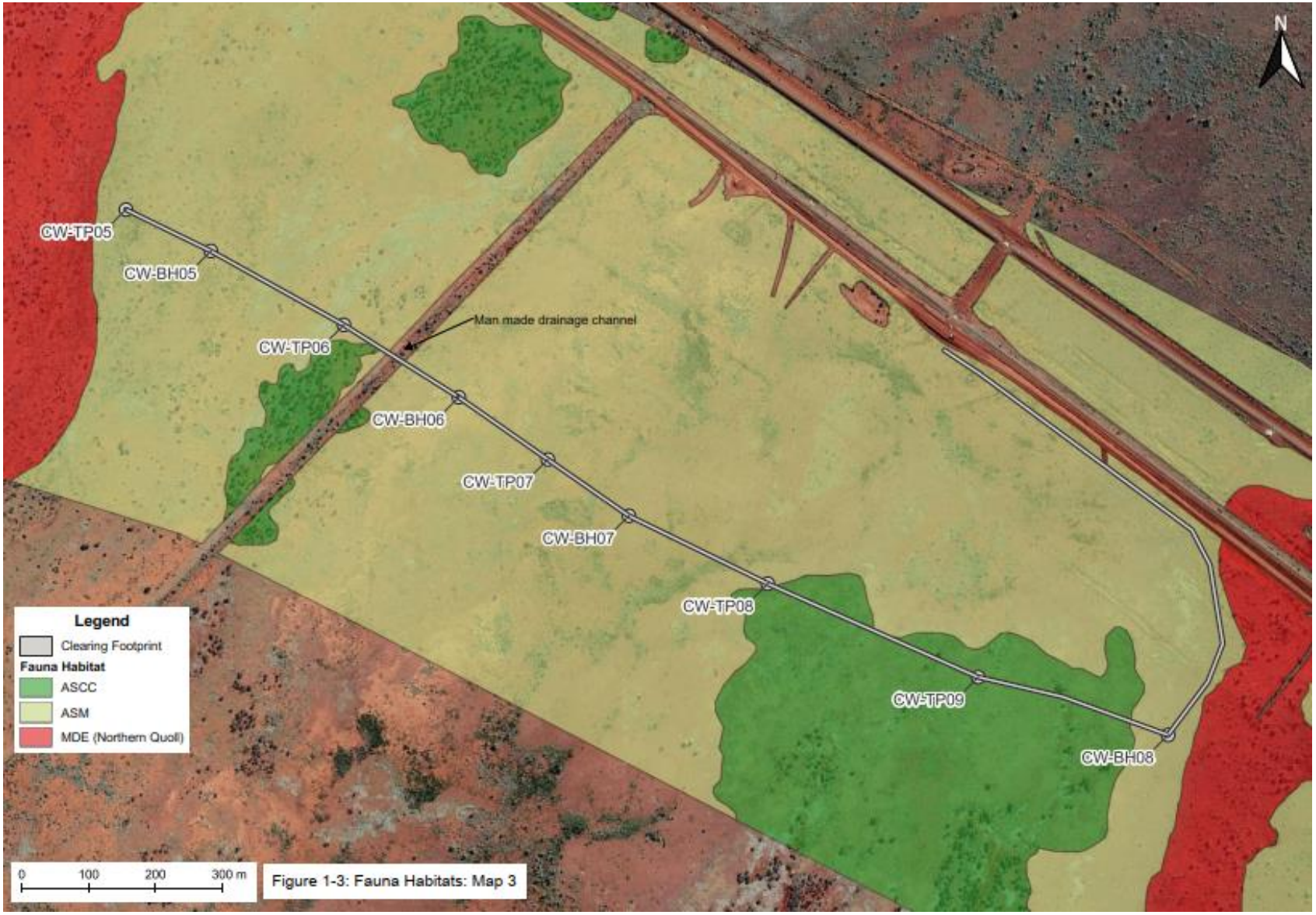

Figure 1-3: Fauna Habitats: Map 3

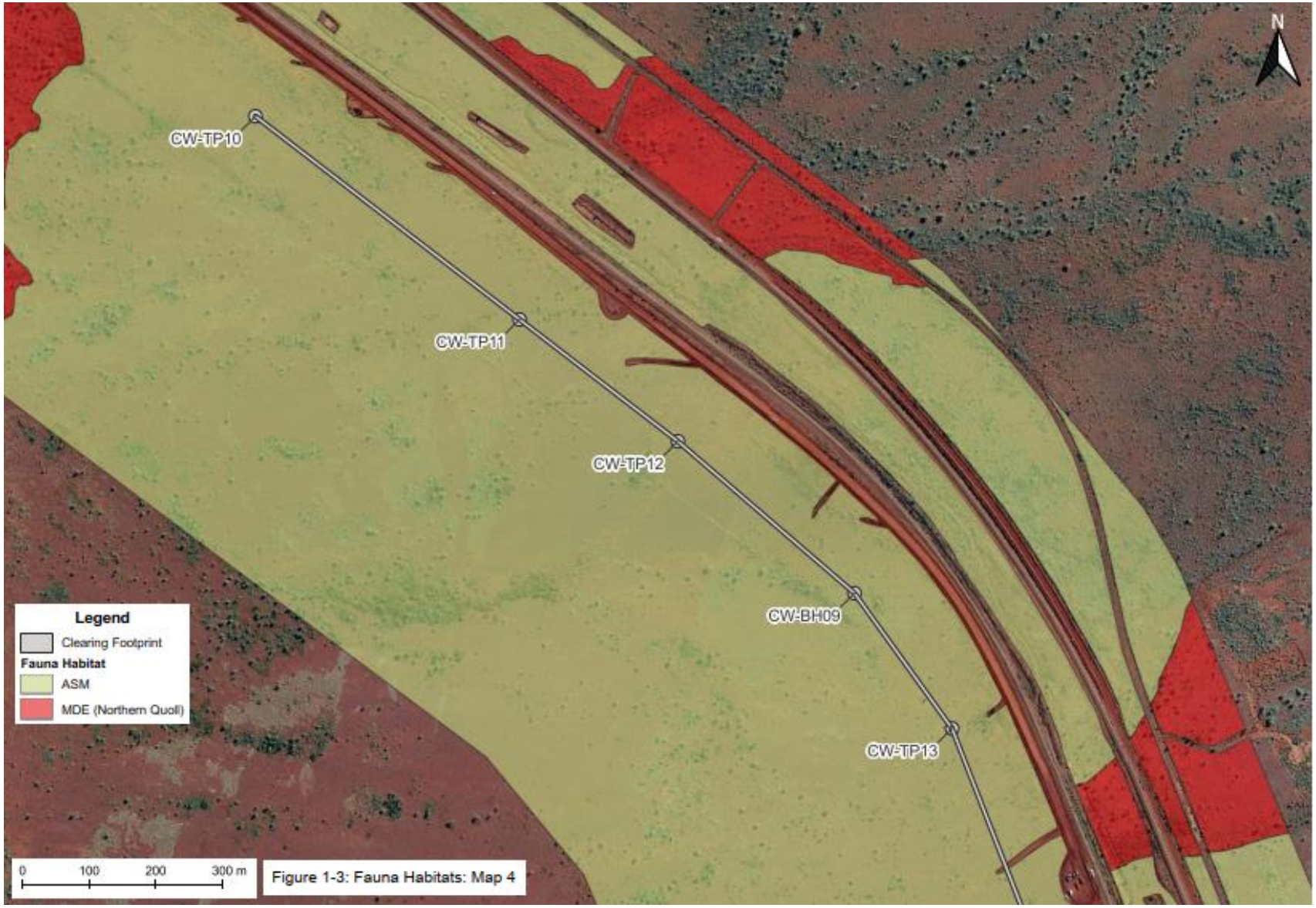

Figure 1-3: Fauna Habitats: Map 4

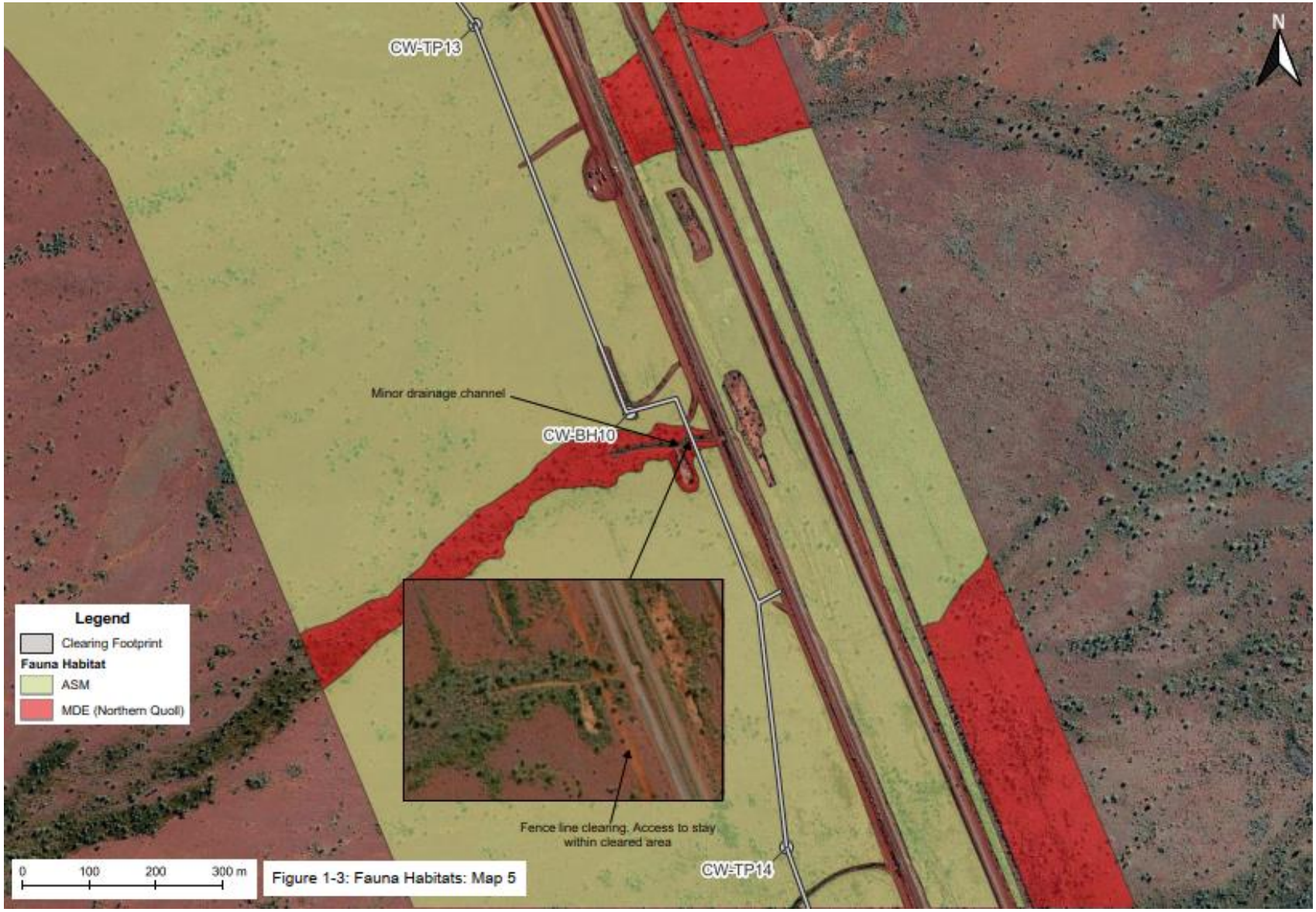

Figure 1-3: Fauna Habitats: Map 5

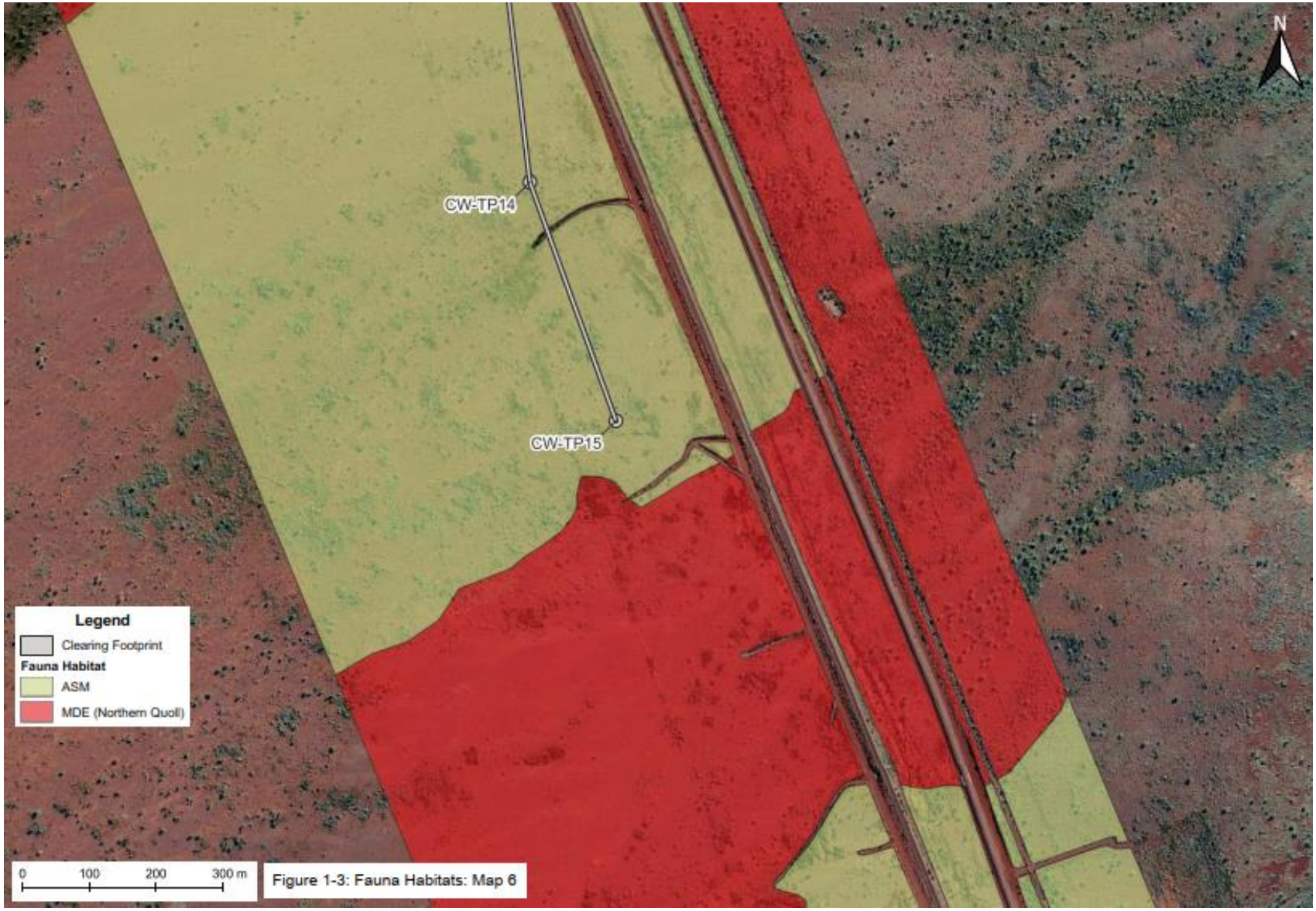

Figure 1-3: Fauna Habitats: Map 6

Vegetation and Habitat Descriptions

Code	Vegetation Association Description
C1	*Eriachne benthamii, Eragrostis xerophila, Astrebla elymoides* very open tussock grassland over *Cynodon convergens* very open bunch grassland.
C2	*Acacia xiphophylla* low woodland over *Triodia epactia* very open hummock grassland over *Eragrostis xerophila* scattered tussock grasses.
D1	*Eucalyptus victrix (E. camaldulensis* subsp. *refulgens)* woodland over *Melaleuca glomerata* tall open shrubland over *Triodia epactia* scattered hummock grasses over mixed tussock grasses and sedges.
F2	*Corymbia hamersleyana* low woodland over mixed *Acacia* tall open shrubland over *Triodia wiseana, (T. epactia)* open hummock grassland.
F3	*Corymbia hamersleyana* low open woodland over mixed *Acacia* open shrubland over *Triodia epactia* very open hummock grassland with *Chrysopogon fallax* very open tussock grassland.
P2	*Corymbia hamersleyana* low open woodland over mixed *Acacia* shrubland over *Triodia epactia* hummock grassland.
P4	*Corymbia hamersleyana* scattered low trees over *Triodia epactia, (T. wiseana)* open hummock grassland and *Eulalia aurea* scattered tussock grasses.
P7	*Triodia wiseana* hummock grassland with *Eriachne flaccida* scattered tussock grasses.

Code	Fauna Habitat Description
ASCC	*Acacia xiphophylla* shrublands over cracking clay
ASM	Mixed *Acacia* shrublands
MDE	Eucalyptus fringed major drainage lines and associated tributaries

2. Clearing Referral Criteria

The following sub-sections address the four criteria specified in 'Guideline: Native vegetation clearing referrals' (DWER, 2021), as relevant to the Geotechnical Investigations and associated proposed clearing of native vegetation.

2.1 Criterion 1

Criterion 1: The area proposed to be cleared is small relative to the total remaining vegetation.

Consideration given to the size of the proposed area to be cleared:

- relative to the total remaining vegetation in the region where the proposed clearing is located, and
- relative to the total remaining vegetation of the ecological community that the vegetation proposed to be cleared forms a part of.

Threshold	Justification	Threshold Met?
The extent of proposed clearing for each referral - If more than 5 ha is proposed to be cleared (or more than 10 ha if north of the 26° South latitude line), a permit is required.	The proposed clearing is located north of the 26° South latitude line and therefore the 10 ha threshold applies. A total of 6.52 ha of native vegetation (i.e. <10 ha) is proposed to be cleared within the proposed alignment.	No
Threshold for remaining extent of that native vegetation association or complex in the relevant IBRA bioregion - If less than 30% of that native vegetation association or complex is remaining within the relevant IBRA bioregion, a permit is required.	The proposed geotechnical investigations are located in the Chichester sub-region of the Pilbara bioregion, as defined by the Interim Biogeographic Regionalisation for Australia (IBRA) Version 7 (DCCEEW, 2021). A review of the pre-European Vegetation dataset (DPIRD-006) shows the area of the geotechnical investigation has been mapped as Vegetation Association 607. The Department of Biodiversity, Conservation and Attractions Native Vegetation Statistics (Government of WA, 2019) indicates that the remaining extent of this vegetation unit within the Pilbara bioregion is 120,599.81 ha or 99.84% of its original extent. This is above the 30% threshold for the relevant bioregion.	No
Threshold for remaining native vegetation surrounding the boundary of the proposed clearing - If less than 30% native vegetation is remaining within a 10 km buffer of the proposed clearing, a permit is required.	A visual inspection of the aerial imagery for the proposed alignment and 10 km surrounds indicates that there is more than 30% of native vegetation remaining in this buffer. Surrounding land uses are primarily limited to grazing of stock and transportation corridors (road and rail).	No

2.2 Criterion 2

Criterion 2: There are no known or likely significant environmental values within the area

Includes consideration into the potential impacts of clearing on environmental values within the area, including:

- biological values (e.g. flora, fauna, ecological communities)
- conservation values (e.g. impact to ecological linkages, conservation areas, heritage values
- land and water resource values (e.g. wetlands and watercourses, water resources, land and soil quality.

Environmental Value	Description
Significant Fauna & Fauna Habitat	Biota (2021) undertook a survey of the full extent of the MRDH Stage 4 Corridor. No conservation significant fauna were recorded from the area of the geotechnical investigations. The closest records of conservation significant fauna to the geotechnical investigations are: ▪ Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia* Pilbara form): 19.5 km south of the southern extent of the geotechnical investigations. Potential foraging habitat for this species in the vicinity of the geotechnical investigations is the *Eucalyptus fringed major drainage lines and*

Criterion 2: There are no known or likely significant environmental values within the area	
	associated tributaries (MDE) fauna habitat, however, given the distance to this record it is unlikely that the species will be found within the area of the geotechnical investigations. No caves or roosting habitat for the species are located within the proposed clearing area. ▪ Western Pebble-mound Mouse (*Pseudomys chapmani)*: 37.5 km south. Potential habitat for this species is the Mixed *Acacia* shrublands (ASM) fauna habitat. No active or historic mounds were recorded from the area of the geotechnical investigations during the targeted searches for the species. ▪ Ghost Bat (*Macroderma gigas*): 53 km south. Given this distance to the records of this species it is unlikely that the species will be present within the area of the geotechnical investigations. The MDE fauna habitat could provide foraging habitat for this species. No caves or roosting habitat for the species are located within the proposed clearing area. ▪ The MDE fauna habitat was identified as potential dispersal habitat for the Northern Quoll (*Dasyurus hallucatus*). The proposed clearing has been designed to avoid the MDE habitat type. No caves or suitable denning habitat for this species are located in the proposed clearing area. ▪ Large trees within the MDE habitat type may provide breeding habitat for the Grey Falcon (*Falco hypoleucos*). The Grey falcon is a transient, highly mobile avian species, no impacts to this species or its preferred habitat are anticipated. Clearing of the MDE habitat has been avoided. No impacts to conservation significant habitat are anticipated.
Significant ecological linkage	The area of the geotechnical investigations has not been identified as a significant ecological linkage.
Mapped ecological community	There are no Threatened or Priority Ecological Communities within the area of the geotechnical investigations or the access tracks.
Significant Flora	Conservation significant flora recorded by Biota (2021) within the survey area included 21 Priority listed species. No records of conservation listed flora are located within the area of the geotechnical investigation, including the access tracks.
Mapped wetland	There are no Internationally Important (Ramsar) Wetlands, Nationally Important Wetlands or wetlands classified as 'conservation category' or 'resource enhancement' within the area of the geotechnical investigations.
Mapped watercourses	The access track for the geotechnical investigations crosses a man-made drainage channel (Figure 1-2: Map 3) and a minor drainage line (Figure 1-2: Map 5). No clearing of the minor drainage line will be required as access will make use of an area that was recently cleared (by the underlying landholder) for installation of a fence line and associated firebreak
Water resources	The geotechnical investigations are within the Priority 1 area of the Millstream Water Reserve Public Drinking Water Source Area (PDWSA). Given the small overall area of clearing required no impacts to the water resource are anticipated in association with the clearing activities. Maximum sampling depths are not anticipated to intersect the drinking water resource. Use of chemicals and hydrocarbons (including refuelling) will be managed through standard Main Roads management requirements and the Contractor's Environmental Management Plan. This includes provision of appropriately stocked spill kits during sampling activities and use of drip trays during refuelling Water will be abstracted from existing Rio Tinto bores for dust suppression during clearing works, subject to agreement between Main Roads WA and Rio Tinto, and licencing requirements currently in place.
Land and soil quality	The small amount of clearing required is not anticipated to have a significant effect on the quality of the land or soil at the site, or the surrounding areas. The area to be cleared is part of a topographically flat location and the clearing is unlikely to result in or increase erosion of the site. The Atlas of Australian Acid Sulfate Soils (ASRIS, 2013) identifies the area of the geotechnical investigations as having a low to extremely low probability of acid sulfate soils occurring. Acid sulfate soils are more likely associated with major drainage lines in this area. A search of the DWER Contaminated Sites Database (DWER, 2021) indicated that there are no known contaminated sites within the area of the Geotechnical investigations.
Conservation Reserves	There are no conservation reserves within or immediately adjacent to the proposed alignment. The nearest conservation reserve is the Millstream-Chichester National Park, approximately 14 km to the north of the geotechnical investigations.

Criterion 2: There are no known or likely significant environmental values within the area	
Heritage-related values and native title matters	A search of the Aboriginal Heritage Inquiry System (AHIS) was undertaken for a 500 m buffer around the proposed clearing footprint. No registered or lodged sites were returned from the search. Aboriginal heritage surveys of the MRDH corridor have been undertaken, including for the area of the geotechnical investigations. All sites identified in these surveys have been avoided by the sampling locations and access tracks. There are no historic (non-Aboriginal) heritage places or values within or near to the area of the geotechnical investigations.

2.3 Criterion 3

Criterion 3: The state of scientific knowledge of native vegetation within the region is adequate

If the available information is not adequate, and additional information is required, a permit is highly likely to be required.

Justification

The Pilbara region has been extensively surveyed and there are numerous spatial datasets and literature available regarding the environmental sensitivities and values of the region. These information references have been used in addressing Criterion 1 and 2 above.

Biota (2021) undertook a survey of the full extent of the 112km MRDH Stage 4 corridor, including the geotechnical survey locations with the northern 10km of this corridor. The survey was informed by a comprehensive review of available desktop information (such as relevant existing studies) within the wider Pilbara area. The methodology of the desktop review and field survey is provided in sections 4.2 and 4.3 of Biota (2021). In section 4.6, Survey Limitations Biota (2021) states: "Extensive previous survey work has been undertaken in the region and contextual information was readily available". Accordingly, It is considered that adequate information is available regarding the state of scientific knowledge of native vegetation within the Pilbara region.

2.4 Criterion 4

Criterion 4: Conditions will not be required to manage environmental impacts

As much as practicable, avoid and minimise environmental impacts to the area while planning clearing activity. Clearing activities that are likely to require conditions to minimise, mitigate, offset, or otherwise manage effects on the environment are highly likely to need a permit.

Justification

Due to the limited clearing of native vegetation proposed to be undertaken for geotechnical investigations and the low environmental impacts (as detailed in Section 2.2), conditions are not considered to be required to manage environment impacts associated with the proposed clearing of native vegetation.

The following management measures will be in place for the geotechnical investigations:

- Cleared vegetation will be stockpiled at the edge of the clearing area, with topsoil windrowed in separate stockpiles.
- The area to be cleared will be clearly marked on the ground. Any variations to the clearing area will be reviewed by Main Roads to confirm there is no change to the potential environmental impacts and risks from the clearing.
- Use of existing cleared areas will be prioritised over clearing new areas for access tracks and at sampling locations.
- All site personnel will undergo an environmental induction to understand the environmental sensitivities of the area and their responsibilities in relation to vegetation clearing and environmental management.
- No clearing of the MDE habitat unit will occur.

3. Conclusion

An assessment against the four criteria set out in DWER (2021) has been undertaken for the clearing required for the geotechnical investigations. The proposed clearing is considered to have very low potential environmental impacts as it satisfies the four criteria outlined in DWER (2021). The clearing does not trigger any thresholds identified in Criterion 1 and there are no anticipated impacts to significant environmental values. Standard Main Roads environmental management measures, such as those detailed under Criterion 4, are sufficient to manage the potential environmental impacts of the required clearing.

4. References

Biota Environmental Sciences (Biota), 2021. *Manuwarra Red Dog Highway Stage 4 Biological Survey.* Report prepared for Main Roads Western Australia by Biota Environmental Sciences, Western Australia.

Department of Climate Change, Energy, the Environment and Water (DCCEEW), 2021. *Australia's bioregions – maps*. Available from <https://www.dcceew.gov.au/environment/land/nrs/science/ibra/australias-bioregions-maps> Accessed 7 December 2022.

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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, Perth. Available from <https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics>

ASRIS, 2013. ASRIS - Australian Soil Resource Information System. Atlas of Australian Sulfate Soils. Available from <http://www.asris.csiro.au>. Accessed December 2022