Clearing Assessment Report – CPS 818

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2021 Kimberley Material Pits

[Redacted] Area 16

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Contents

Amendments

Report Compilation & Review	Name and Position	Document Revision	Date
Author:	Environment Officer	Draft v1	23/04/2021
Reviewer:	Environment Officer	Draft v1	02/06/2021
Author:	Environment Officer	Final	03/06/2021

1 PURPOSE

The purpose of this Clearing Assessment Report (CAR) is to provide a report detailing the assessment of native vegetation clearing that is proposed to be undertaken using the State-wide Clearing Permit CPS 818 issued to Main Roads Western Australia (Main Roads).

The CAR outlines the key activities associated with the project, the existing environment and an assessment of native vegetation clearing. This assessment provides an evaluation of the vegetation clearing impacts associated with the project using the ten Clearing Principles, and the strategies used to manage vegetation clearing.

2 SCOPE

2.1 Project Scope

Project Name: 2021 Kimberley Material Pits – Investigation Area 16

Project Purpose / Components: Strategic material investigation area (MIA) 16, at SLK [Redacted] along the Great Northern Highway (GNH) requires exploration to source required volumes of material sources (i.e. gravel) under the Kimberley Regional Material Strategy. The MIA covers 895 ha with total clearing required for material investigation up to 5 ha within this boundary.

Investigative works will consist of an initial visual assessment of vegetation and soil surface, followed by test-pitting using a backhoe. Investigation works within the MIA will involve the following activities:

- Surface vegetation clearing that is approximately 3 m wide (width of backhoe blade).
- Excavation of test pits (2 m x 1 m) to a depth of approximately 1 m.
- Collection of soil samples by a materials officer in a support vehicle.
- Backfilling of test pits (some pits may not be immediately backfilled).

Once investigative works are completed, vegetation will be left to regenerate naturally. If the area is confirmed as a material source, gravel pits will be established on an "as needs" basis. Materials will be stockpiled within the approved Project boundary for later removal and use. Access to the investigation area will be obtained via the use of existing disturbed tracks that have been maintained, are in good condition and require no additional clearing.

This CAR covers clearing activities related to material investigation only. Should suitable material be identified, additional approvals will be sought to establish a borrow pit.

The proposed clearing undertaking using CPS 818 is : 5 ha

The proposed temporary clearing undertaking using CPS 818 is: None

Project Location(s): The project area is located on the Great Northern Highway in the Shire of Derby-West Kimberley with the centroid of the material investigation area at the following location:

- [Redacted]

The location of the proposed works and the material investigation area is shown in Figure 1.

2.2 Assessment Report Scope

The assessment area, see Figure 2, is confined to a local area of a 40 km radius, as identified within the Biological Survey completed by Astron (2017).

Figure 1. Project Area [Redacted]

Figure 2. Assessment Area [Redacted]

2.3 Alternatives to clearing

Alternatives to undertaking the clearing, including not implementing the project were considered. Having a reliable supply of road building materials in the regions is essential for maintaining a safe road network. In order to minimise the impacts of clearing, areas of the MIA have been excluded and the clearing envelope has been revised. Further, the scale of clearing has been reduced to a maximum of 5 ha for the purpose of material investigation with additional approvals required for pit development.

2.4 Measures to Avoid, Minimise, Reduce and Manage Project Clearing Impacts

The design and management measures implemented to avoid and minimise the clearing impacts by the project are provided in Table 1. In addition to these measures:

- Clearing areas will be clearly demarcated as part of the initial site visit and prior to the commencement of any clearing.
- No clearing is required in order to access the MIA from the GNH as existing cleared access tracks can be utilised.
- The existing internal tracks within the MIA will be utilised where appropriate.
- The MIA has been revised to exclude an area of 75 ha that has not been surveyed for aboriginal cultural values. This area has been excluded from the clearing envelope.

Table 1. Measures undertaken to Avoid, Minimise, Reduce and Manage the Project Clearing Impacts

Design or Management Measure	Discussion and Justification
Preferential use of existing cleared areas for access tracks, construction storage and stockpiling	Existing access tracks and previously cleared areas are present within the MIA. These areas will be utilised for access in preference to clearing native vegetation for this purpose.
Avoidance	Environmental and heritage values have been surveyed and mapped within the MIA. To minimise impacts to heritage values, an area that has not been surveyed for aboriginal heritage has been excised and the clearing envelope revised.

2.5 Approved Policies and Planning Instruments

The clearing of native vegetation in Western Australia is regulated under the *Environmental Protection Act 1986* (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 1.3), Main Roads has also had regard to the below instruments.

Other Legislation of relevance for assessment of clearing and planning/other matters

- *Biodiversity Conservation Act 2016* (WA) (BC Act);
- *Conservation and Land Management Act* 1984 (WA) (CALM Act);
- *Country Areas Water Supply Act 1947* (WA) (CAWS Act);
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act);
- *Planning and Development Act 2005* (WA) (P&D Act);
- *Soil and Land Conservation Act 1945* (WA);
- *Rights in Water and Irrigation Act 1914* (WA) (RIWI Act);
- *Aboriginal Heritage Act 1972* (WA); and
- *Town Planning and Development Act 1928*.

Other Relevant policies and guidance documents:

- Environmental Offsets Policy (Government of Western Australia, 2011);
- Environmental Offsets Guidelines (Government of Western Australia, 2014);
- A guide to the assessment of applications to clear native vegetation (Government of Western Australia, 2014)
- Procedure: Native vegetation clearing permits (Government of Western Australia, 2019);
- Technical guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA, 2016);
- Technical guidance – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (EPA, 2020);
- Approved conservation advice under section 266B of the EPBC Act for threatened flora/fauna/vegetation communities;
- Approved Recovery Plans for threatened species; and
- Strategic advice – EPA.

3 SUMMARY OF SURVEYS

3.1 Biological Survey Summary

A Detailed Flora, Vegetation and Level 1 (now Basic) Fauna Assessment was conducted in July and August 2017 by Astron Environmental Services (Astron). The assessment was of a survey area that included 43 material investigation areas along the Great Northern Highway and Victoria Highway, including MIA 16 (Astron, 2017). The results of the survey are presented across two reports, only the report relevant to MIA 16 has been used for this assessment.

Within MIA 16, the biological survey identified:

- Seven Priority Flora species with the potential to occur: *Corymbia pedimontana* (P1); *Heliotropium geocharis* (P1); *Heliotropium parviantrum* (P1); *Cucumis* sp. Bastion Range (A.A. Mitchell et al. AAM 10710) (P1); *Hibiscus calcicola* (P2); *Goodenia byrnesii* (P3); *Nymphoides beaglensis* (P3).
- Four vegetation types, all of which are locally common and were not representative of any regionally known Threatened or Priority Ecological Community (TEC / PEC).
- Vegetation in Good to Very Good condition.
- Three fauna habitats (Non-cracking Clay Pan, Mixed Woodland Plain and Cracking Clay Pan). All fauna habitats were rated as of low to moderate value for conservation significant fauna. All fauna habitats are common and widespread.

4 VEGETATION DETAILS

4.1 Project Site Vegetation Description

The MIA is located in the Dampierland Biogeographic Regionalisation of Australia (IBRA) region. The Dampierland IBRA region is characterised by extensive plains, ranges and gorges with acacia thickets and areas of grassland and savanna (Bastin, 2008). IBRA regions are further classified into sub-regions with the MIA located in the Fitzroy Trough subregion. The Fitzroy Trough sub-region (Graham, 2001) has four key components, including:

- Sandstones with Pindan supporting hummock grasslands;
- Quaternary marine deposits on coastal plains, with mangal, samphire supporting *Sporobolus* spp. grasslands, *Melaleuca alsophila* low forests, and *Spinifex* spp. and *Crotalaria* spp. strand communities;
- Alluvial plains supporting tree savannahs of ribbon grass (*Chrysopogon* spp.), bluegrass (*Dichanthium* spp.) and Mitchell grass (*Astrebla* spp.) with riparian forests along drainage lines; and
- Limestones with sparse tree steppe over spinifex hummock grasses (*Triodia intermedia* and T. *wiseana*).

The MIA occurs within Vegetation Association 64, described as 'grasslands, tall bunch grass savanna low tree; baobabs (*Adansonia gregorii*), bauhinia & beefwood (*Grevillea striata* over ribbon grass)', and, Vegetation Association 699 described as 'shrublands, pindan, *Acacia eropoda* shrubland with scattered low bloodwood over soft curly spinifex' (Shepherd, Beeston, & Hopkins, 2002). Table 2 and Table 3 provide a summary of the Pre-European Vegetation Associations within the project area and the remaining extent. The Pre-European Vegetation Associations of the project area are presented in Figure 3.

Table 2. Summary of Project Area's Mapped Pre-European Vegetation Associations

Pre-European Vegetation Association(s)	Clearing Description	Vegetation Condition	Comments
Vegetation Association 64, North Fitzroy Plains –'grasslands, tall bunch grass savanna low tree; baobabs (*Adansonia gregorii*), bauhinia & beefwood (*Grevillea striata* over ribbon grass)' (Government of Western Australia, 2019).	Clearing of up to 5 ha for material investigation.	Good to very good except along previously disturbed areas (Astron, 2017).	Vegetation description and condition determined from Astron Vegetation Survey completed in July and August 2017.
Vegetation Association 699, North Fitzroy Plains –' shrublands, pindan, *Acacia eropoda* shrubland with scattered low bloodwood over soft curly spinifex' (Government of Western Australia, 2019).			

Table 3. Pre-European Vegetation Representation

Pre-European Vegetation Association	Scale	Pre–European (ha)	Current Extent (ha)	% Remaining	% Remaining in DBCA reserves
Veg Assoc No. 64 – North Fitzroy Plains	**Statewide**	434,783.66	434,560.88	99.95	0
	IBRA Bioregion Dampierland	434,783.66	434,560.88	99.95	0
	IBRA Sub-region Fitzroy Trough	410,085.60	409,862.82	99.95	0
	Local Government Authority Shire of Derby-West Kimberley	427,578.09	427,355.31	99.95	0
Veg Assoc No. 699 – North Fitzroy Plains	**Statewide**	1,986,450.04	1,984,438.78	99.9	0.47
	IBRA Bioregion Dampierland	1,797,649.63	1,795,879.24	99.9	0.52
	IBRA Sub-region Fitzroy Trough	180,118.58	179,963.88	99.91	0
	Local Government Authority Shire of Derby-West Kimberley	357,807.33	357,647.24	99.96	0

Four vegetation types were mapped within the MIA (Table 4). None of these were deemed to correlate to a Threatened or Priority Ecological Community (Astron, 2017).

Astron rated vegetation condition throughout the entire MIA as Good to Very Good (Astron, 2017). Figure 4 presents the local vegetation types and Figure 5 shows vegetation condition.

The four vegetation types in the MIA are described as providing three habitat types for terrestrial fauna; Cracking Clay Plain, Non-cracking Clay Plain and Mixed Woodland Plain, all of which were deemed to be common in a local and regional context.

Table 4. Vegetation types mapped in the MIA (Astron, 2017)

Vegetation Unit	Description	Condition	Extent in MIA (ha)
HG02	*Andersonia gregorii* scattered trees over *Triodia wiseana* open hummock grassland.	Very Good	370.4
WT03	*Erythrophleum chlorostachys, Eucalyptus camaldulensis* subsp. *obtusa* and *Bauhinia cunninghamii* open woodland over *Acacia eriopoda* tall open shrubland over *Chrysopogon pallidus* closed tussock grassland.	Very Good	197.1
TG10	*Acacia holosericea, Acacia ancistrocarpa* and *Acacia eriopoda* tall open shrubland over *Carissa lanceolata* scattered shrubs over *Sehima nervosum* and *Chrysopogon pallidus* closed tussock grassland	Very Good	213.7
GLD06	*Carissa lanceolata* scattered shrubs over *Flemingia pauciflora* scattered low shrubs over *Eragrostis tenellula*, *Aristida latifolia* and *Dichanthium fecundum* grassland with *Cyperus blakeanus* very open sedgeland and *Stemodia tephropelina* scattered herbs	Good	76.2

Figure 3. Pre-European Vegetation Associations within MIA 16 [Redacted]

Figure 4. Vegetation Types within MIA 16 (Astron, 2017) [Redacted]

Figure 5. Vegetation Condition within MIA 16 (Astron, 2017) [Redacted]

5 ASSESSMENT AGAINST THE TEN CLEARING PRINCIPLES

In assessing whether the Project's proposed clearing is likely to have a significant impact on the environment, the Project was assessed against the Ten Clearing Principles (*Environmental Protection Act 1986*, Schedule 5).

Each principle has been assessed in accordance with DWER's 'A Guide to the Assessment of Applications to Clear Native Vegetation' (Government of Western Australia, 2014) and other relevant CPS Decision Reports prepared by DWER.

The proposed clearing is not likely to be at variance with the 10 Clearing Principles.

(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

Comments	**Proposed clearing is not likely to be at variance to this Principle**
	The MIA covers 895 ha and the proposed activity will involve the clearing of up to 5 ha of native vegetation within the 895 ha envelope. In July 2017, Astron completed a Detailed Flora and Vegetation and Level 1 (now Basic) Fauna Assessment of this MIA. Four vegetation associations have been mapped by Astron within this MIA, these being: • **HG02:** *Andersonia gregorii* scattered trees over *Triodia wiseana* open hummock grassland. • **WT03:** *Erythrophleum chlorostachys, Eucalyptus camaldulensis subsp. obtusa* and *Bauhinia cunninghamii* open woodland over *Acacia eriopoda* tall open shrubland over *Chrysopogon pallidus* closed tussock grassland. • **TG10:** *Acacia holosericea, Acacia ancistrocarpa and Acacia eriopoda tall open shrubland over Carissa lanceolata scattered shrubs over Sehima nervosum and Chrysopogon pallidus closed tussock grassland.* • **GLD06:** *Carissa lanceolata* scattered shrubs over *Flemingia pauciflora* scattered low shrubs over *Eragrostis tenellula*, *Aristida latifolia* and *Dichanthium fecundum* grassland with *Cyperus blakeanus* very open sedgeland and *Stemodia tephropelina* scattered herbs. Astron rated vegetation condition as good to very good (Astron, 2017). The vegetation associations were deemed to be common and widespread, not representing a known TEC or PEC (Astron, 2017). No Priority Flora species were recorded during the 2017 survey within the MIA. The desktop database search identified an additional four Priority Flora taxa which have been recorded from within a 40km radius of the Project and have the potential to occur within the MIA based on the likelihood of occurrence completed by Astron (2017). These species include: • *Corymbia pedimontana* (P1); • *Cucumis sp.* Bastion Range (A.A. Mitchell et al. AAM 10710) (P1*);* • *Heliotropium geocharis* (P1); • *Heliotropium parviantrum* (P1); • *Hibiscus calcicola* (P2); • *Goodenia byrnesii* (P3); and • *Nymphoides beaglensis* (P3). Considering the vegetation types are locally and regionally common, the proposed clearing of isolated patches of vegetation (up to 5 ha in total across a 895 ha site) for

	material investigations only is not expected to have a significant impact on any of these Priority Flora species if they were present. Three fauna habitats have been mapped in the MIA; Non-cracking Clay Plain, Cracking Clay Plain and Mixed Woodland Plain (Astron, 2017). The Non-Cracking Clay Plain may be partially inundated during the wet season, providing wetland habitat for some migratory bird species (Astron, 2017). Works are proposed for the dry season and are unlikely to cause a significant impact to this habitat type. The Mixed Woodland Plain habitat was considered of moderate value to terrestrial fauna and may provide foraging habitat for conservation significant species including the Grey Falcon, Peregrine Falcon and several bats (bare rumped sheathtail-bat (*Saccolaimus saccolaimus nudicluniatus,* VU, P3), yellow-lipped cave bat (*Vespadelus douglasorum,* P2), ghost bat (*Macroderma gigas,* VU, S3) and orange leaf-nosed bat (*Rhinonicteris aurantia),* P4).) (Astron, 2017). All fauna habitats are common and widespread outside of the MIA (Astron, 2017). Impacts to these habitats or conservation significant fauna species are likely to be minimal particularly given the low impact nature of works and small clearing footprint proposed. The proposed clearing is for low impact geotechnical investigations to clear a maximum of 5 ha within the 895 ha envelope and is not anticipated to result in significant impacts to biodiversity. Should a material pit be proposed for development from the results of the geotechnical investigations, additional environmental approvals will be required for the development of the pit. Based on the above, the project is not likely to be at variance to this Principle.
Methodology	Astron Environmental Services, Detailed Flora and Vegetation and Level 1 Fauna Assessment (Astron, 2017) EPA Technical Guidance (EPA, 2020; EPA, 2016) NatureMap accessed 22/4/2021 (NatureMap, 2021) Protected Matters Search Tool accessed 22/4/2021 (DAWE, 2021) Main Roads GIS Shapefiles DBCA Threatened Flora, Threatened Fauna, PEC/TEC shapefiles

(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

Comments	**Proposed clearing is not likely to be at variance to this Principle**
	A desktop assessment has been completed with a 40km search radius of the MIA utilising NatureMap and the Astron Survey Report (2017). This identified 6 conservation significant terrestrial fauna species, 1 aquatic species and 8 migratory bird species records from within the search radius and included: • Spotted Skink (*Ctenotus uber* subsp. *johnstonei*) P2 • Le Lievre Ridge camaenid land snail *(Westraltrachia lievreana)* P2 • Camaenid land snail - Ninety Seven Mile Creek (*Westraltrachia subtila*) P2 • Gouldian Finch (*Erythrura gouldiae*) P4, EN – EPBC Act • Northern Short-tailed Mouse (*Leggadina lakedownensis*) P4 • Orange Leaf-nosed Bat (*Rhinonicteris aurantia*) P4 • Migratory birds including Fork-tailed Swift (*Apus pacificus*), Common Sandpiper (*Actitis hypoleucos*), Sharp-tailed Sandpiper (*Calidris acuminata*), Oriental Plover (*Charadrius veredus*), Gull-billed Tern (*Gelochelidon nilotica*), Black-tailed Godwit (*Limosa limosa*), Glossy Ibis (*Plegadis falcinellus*) and Wood Sandpiper (*Tringa glareola*).

	Astron (2017) completed a likelihood of occurrence assessment for conservation significant fauna identified from the desktop assessment as part of their report and determined the following: • Spotted Skink (*Ctenotus uber* subsp. *johnstonei*) – Moderate likelihood in the MIA. • Le Lievre Ridge camaenid land snail *(Westraltrachia lievreana)* – Low likelihood of occurrence in the MIA. Land snail strongly correlated to areas of topographic relief and limestone outcrops (Slatyer, Ponder, Rosauer, & Davis, 2007), which are not present in the MIA. Astron did not record land snails during the survey. • Camaenid land snail - Ninety Seven Mile Creek (*Westraltrachia subtila*) – Low likelihood of occurrence in the MIA. Land snail strongly correlated to areas of topographic relief and limestone outcrops (Slatyer, Ponder, Rosauer, & Davis, 2007), which are not present in the MIA. Astron did not record land snails during the survey. • Gouldian Finch (*Erythrura gouldiae*) – May utilise the Mixed Woodland Plain habitat that provides foraging value but this habitat type is considered marginal and of moderate value only. • Northern Short-tailed Mouse (*Leggadina lakedownensis*) – May utilise Non-Cracking Clayplain and Cracking Clayplain habitats in the MIA but these are considered of low to moderate value. • Orange Leaf-nosed Bat (*Rhinonicteris aurantia*) – Likely to utilise Mixed Woodland Plain habitat that provides foraging value. One aquatic species and eight migratory bird species were also identified from the desktop assessment. The Non-Cracking Clay Pan may be partially inundated during the wet season, providing wetland habitat for some migratory bird species (Astron, 2017). However, as works are proposed for the dry season they are unlikely to cause a significant impact to this habitat type. All fauna habitats are common and widespread outside of the MIA (Astron, 2017). Impacts to these habitats or conservation significant fauna species are likely to be minimal particularly given the small clearing footprint proposed. Astron did not record any threatened or priority fauna in MIA 16 during the 2017 biological survey (Astron, 2017). The proposed clearing is for low impact geotechnical investigations, and will clear a maximum of 5 ha within a 895 ha envelope and is not anticipated to result in significant impacts to fauna or fauna habitat. Should a material pit be proposed for development from the results of the geotechnical investigations additional environmental approvals will be required for the development of the pit. Using the information above, the fauna habitat values within MIA 16 are not unique to the area nor do they solely support species of conservation significance. Therefore, the proposed clearing is not likely to be at variance to this Principle.
Methodology	Astron Environmental Services, Detailed Flora and Vegetation and Level 1 Fauna Assessment (Astron, 2017) EPA Technical Guidance (EPA, 2020; EPA, 2016) NatureMap accessed 22/4/2021 (NatureMap, 2021) Protected Matters Search Tool accessed 22/4/2021 (DAWE, 2021) Main Roads GIS Shapefiles DBCA Threatened Flora, Threatened Fauna, PEC/TEC shapefiles

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

Comments	Proposal is not at variance to this Principle
	The desktop database searches did not identify known records of declared rare flora taxa from within a 40 km radius of the Project area. The biological survey completed by Astron did not record any Threatened Flora from within the MIA. The proposed activities relate to low impact clearing in a small footprint (5 ha) for material investigation, should suitable material be identified additional approvals will be sought for the establishment of a borrow pit. As such, the proposed clearing for material investigation is not at variance to this Principle.
Methodology	Astron Environmental Services, Detailed Flora and Vegetation and Level 1 Fauna Assessment (Astron, 2017) EPA Technical Guidance (EPA, 2016) NatureMap accessed 22/4/2021 (NatureMap, 2021) Protected Matters Search Tool accessed 22/4/2021 (DAWE, 2021) Florabase (WA Herbarium, 1998-) Main Roads GIS Shapefiles DBCA Threatened Flora, Fauna, PEC/TEC shapefiles

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

Comments	Proposed clearing is not at variance to this Principle
	The desktop assessment did not identify a known extent of a Threatened Ecological Community (TEC) within a 40 km radius of the Project. None of the vegetation communities recorded during the flora and vegetation survey completed by Astron were deemed representative of any known TEC (Astron, 2017). As such, the proposed clearing is not at variance to this Principle.
Methodology	Astron Environmental Services, Detailed Flora and Vegetation and Level 1 Fauna Assessment (Astron, 2017) EPA Technical Guidance (EPA, 2016) NatureMap accessed 22/4/2021 (NatureMap, 2021) Protected Matters Search Tool accessed 22/4/2021 (DAWE, 2021) Main Roads GIS Shapefiles DBCA Threatened Flora, Fauna, PEC/TEC shapefiles

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Comments	Proposed clearing is not at variance to this Principle

The MIA occurs within Vegetation Association 64 described as 'grasslands, tall bunch grass savanna low tree; baobabs (*Adansonia gregorii*), bauhinia & beefwood (*Grevillea striata* over ribbon grass)', and Vegetation Association 699 described as 'shrublands, pindan, *Acacia eropoda* shrubland with scattered low bloodwood over soft curly spinifex'. (Shepherd, Beeston, & Hopkins, 2002). Astron have mapped vegetation condition within the MIA as Good (76.2 ha) to Very Good (818.8 ha).

Summary of Project Area's Mapped Pre-European Vegetation Associations

Pre-European Vegetation Association(s)	Clearing Description	Vegetation Condition	Comments
Vegetation Association 64, North Fitzroy Plains – 'grasslands, tall bunch grass savanna low tree; baobabs (*Adansonia gregorii*), bauhinia & beefwood (*Grevillea striata* over ribbon grass)' (Government of Western Australia, 2019).	Clearing of up to 5 ha for material investigation.	Good to very good except along previously disturbed areas (Astron, 2017).	Vegetation description and condition determined from Astron Vegetation Survey completed in July and August 2017.
Vegetation Association 699, North Fitzroy Plains –' shrublands, pindan, *Acacia eropoda* shrubland with scattered low bloodwood over soft curly spinifex' (Government of Western Australia, 2019).			

Pre-European Vegetation Representation

Pre-European Vegetation Association	Scale	Pre–European (ha)	Current Extent (ha)	% Remaining	% Remaining in DBCA reserves
Veg Assoc No. 64 – North Fitzroy Plains	**Statewide**	434,783.66	434,560.88	99.95	0
	IBRA Bioregion Dampierland	434,783.66	434,560.88	99.95	0

		IBRA Sub-region Fitzroy Trough	410,085.60	409,862.82	99.95	0
		Local Government Authority Shire of Derby-West Kimberley	427,578.09	427,355.31	99.95	0
	Veg Assoc No. 699 – North Fitzroy Plains	**Statewide**	1,986,450.04	1,984,438.78	99.9	0.47
		IBRA Bioregion Dampierland	1,797,649.63	1,795,879.24	99.9	0.52
		IBRA Sub-region Fitzroy Trough	180,118.58	179,963.88	99.91	0
		Local Government Authority Shire of Derby-West Kimberley	357,807.33	357,647.24	99.96	0
	Pre-European vegetation associations 64 and 699 have over 99% remaining at all scales (State, IBRA Bioregion, IBRA Sub-region and LGA). Therefore, the MIA is not located in an area of regionally significant remnant vegetation. The vegetation associations are widespread throughout the area and well represented locally and regionally. The proposed clearing is not at variance to this Principle.					
Methodology	Aerial photography Astron Environmental Services, Detailed Flora and Vegetation and Level 1 Fauna Assessment (Astron, 2017) EPA Technical Guidance (EPA, 2016) Statewide Vegetation Statistics (Government of Western Australia, 2019) Shepherd Report (Shepherd, Beeston, & Hopkins, 2002) Main Roads GIS Shapefiles DPIRD GIS shapefiles (pre-european vegetation)					

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Comments	Proposed clearing is not likely to be at variance to this Principle
	The proposed works will not interact with any water course. A major non-perennial watercourse runs outside of the MIA, approximately 700 m from the south-east corner. The proposed works will not interact with this watercourse. An earth dam is recorded in spatial data as being present within this MIA and its existence will be confirmed on the ground prior to works commencing. This dam is likely to be a pastoral asset and will be avoided during works. The vegetation units mapped by Astron do not align with wetland or riparian vegetation. A summary of the vegetation units mapped by Astron is provided in Section 4. Astron noted the Non-Cracking Clay Pan habitat may be partially inundated during the wet season (Astron, 2017). As works are very minor and are proposed for the dry season, they are unlikely to cause a significant impact to this habitat type or to the minor non-perennial water courses. The proposed clearing is not likely to be at variance to this Principle.
Methodology	Aerial photography Astron Environmental Services, Detailed Flora and Vegetation and Level 1 Fauna Assessment (Astron, 2017) DWER and DBCA shapefiles

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

Comments	Proposed clearing is not at variance to this Principle
	The MIA is located within zone 331 – North Fitzroy Plains Zone. This zone is described as "floodplains and sandplains with alluvial plains and undulating plains on Permian sedimentary rocks of the Canning Basin with self-mulching cracking clause, red deep sands, red sandy earths and red/brown non-cracking clays". Land zones have been further classified into soil-landscape systems. The MIA is located within the Calwynyardah System (331Cy) described as "alluvial plains with scalded tracts downslope from lateritic remnants with yellowish loamy soils supporting patchy beefwood-bauhinia low woodlands with curly spinifex and ribbon grass". Land qualities relating to the Calwynyardah land system are described below:

Aspect	Risk
Flood	-99% of map unit Moderate to High Hazard
Salinity	-99% of map unit Moderate Hazard
Waterlogging	-99% of map unit Moderate to Very High Hazard
Water Erosion	-99% of map unit Very high to Extreme Hazard
Wind Erosion	-99% of map unit High to Extreme Hazard
Land Instability	-99% of map unit Moderate to High Hazard

Source: (DPIRD, 2021)

	Based on the above, the MIA is located in an area at low risk of land degradation. The proposed activities and clearing will occur during the dry season. This will alleviate the potential for soils to become waterlogged and for surface water flows to result in erosion and scour. Given the activities will be on a small scale (5 ha) within a larger and vegetated area this is anticipated to minimise soil movement via wind. In addition, following material investigation, disturbed areas will be backfilled, ripped and left to regenerate naturally. Main Roads standard environmental management measures will be put in place to mitigate any issues associated with land degradation. The MIA is located in an area of 'extremely low probability of occurrence' (1-5%) of Acid Sulfate Soil (ASS) occurring. Accordingly, ASS is unlikely to be an issue. As works will excavate to a depth of 1 metre, it is highly unlikely that groundwater will be intercepted or that ASS will be an issue. The proposed clearing is considered not at variance to this Principle.
Methodology	Soil Landscape Mapping (DPIRD, 2021) Soil-landscapes of Western Australia's rangelands and arid interior (Tille, 2006) ASRIS (ASRIS, 2011)

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

Comments	**Proposed clearing is not at variance to this Principle**
	There are no reserves, conservation areas, Bush Forever sites or other DBCA managed lands and waters within or surrounding the MIA. The closest reserve is the Devonian Reef Conservation Park located 28km northeast of the MIA. There are no environmentally sensitive areas within or nearby to the MIA. The proposed clearing is considered to be not at variance to this Principle.
Methodology	Astron Environmental Services, Detailed Flora and Vegetation and Level 1 Fauna Assessment (Astron, 2017) DWER and DBCA shapefiles – ESAs, DBCA Managed Lands and Waters

(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.

Comments	**Proposed clearing is not at variance to this Principle**
	MIA 16 is located within the Fitzroy River and Tributaries Proclaimed Surface Water Area and Proclaimed Groundwater Area 'Canning-Kimberley Groundwater Area'. There are no drainage lines within the MIA boundary and the proposed activities will not interact with any watercourses. No dewatering is required for these activities. The depth of excavations will be up to 1 m in depth and will not intersect groundwater. There will be no impacts to groundwater or groundwater dependent vegetation from the proposed clearing. The proposed clearing is considered not at variance to this Principle.

Methodology	Astron Environmental Services, Detailed Flora and Vegetation and Level 1 Fauna Assessment (Astron, 2017) DWER and DBCA shapefiles – Hydrology, groundwater areas, surface water areas, public water source areas EPA Technical Guidance (EPA, 2016)

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Comments	**Proposed clearing is not likely to be at variance to this Principle**
	The MIA is located in in the central Kimberley which is described as having a tropical monsoonal climate with a warm dry season and wet season. The closest weather station to the MIA is Camballin Station (Site No 003040) located 60 km south-west. The average annual rainfall received at the Camballin Station is 588.7 mm, the majority of which falls between the months of December to March. Tropical cyclones and tropical storms can bring heavy and sustained rainfall, particularly in the months leading up to and during the wet season. It is common for a large proportion of the Region's rainfall to be recorded in one single event, leading to extensive flooding of rivers, creeks and roadways. During a rainfall event, the cleared area for geotechnical test work may result in the collection and temporary retention of storm water or the formation of erosion gullies along cleared tracks. The proposed clearing of up to 5 ha of native vegetation, within a region where >99.95% of pre-European levels of native vegetation remain is unlikely to cause or exacerbate the incidence or intensity of flooding. As noted above, climatic conditions are the main factor influencing flooding and the removal of a relatively small amount of vegetation in this setting will have no measurable influence on flood regimes in the local area or vicinity. Given the above, the proposed clearing is not likely to be at variance to this Principle.
Methodology	Astron Environmental Services, Detailed Flora and Vegetation and Level 1 Fauna Assessment (Astron, 2017) Soil Landscape Mapping (DPIRD, 2021) Bureau of Meteorology – Climate Statistics (BoM, 2021)

6 ADDITIONAL ACTIONS REQUIRED

Table 5 summarises what further pre-clearing impact assessment and vegetation management is required in accordance with CPS 818.

Table 5. Summary of Additional Management Actions Required by CPS 818

Impact of Clearing	Yes/No or NA	*Further Action Required*
1. The CAR indicates that the clearing is 'At Variance' or 'May be at Variance' with one or more of the Clearing Principles. Where the clearing is at variance or may be at variance to Clearing Principle (f) and no other Clearing Principle, and the area of the proposed clearing is less than 0.5 hectares in size and the Clearing Principle (f) impacts only relate to: (i) a minor non-perennial watercourse(s); (ii) a wetland(s) classed as a multiple use management category wetland(s); and/or (iii) a wetland that is not a defined wetland; the preparation of an Assessment Report, as required by condition 6(e), is not required.	**No**	No further action required.
2. Clearing is at variance or may be at variance with Clearing Principle (g) land degradation, (i) surface or underground water quality or (j) the incidence of flooding.	**No**	No further action required.
3. The project involves clearing for temporary works (as defined by CPS 818).	**No**	No further action required.
4 a. Project is within Region that: - Has rainfall greater than 400mm and - Is South of the 26th parallel and - Works are in 'Other than dry conditions' and - Works have potential for **uninfested** areas to be impacted	**No**	Proceed with standard Vehicle and Plant management actions from PEMR's and Vehicle and Plant Hygiene Checklists.

Impact of Clearing	Yes/No or NA	*Further Action Required*
4b. Does the proposed works require clearing within or adjacent to DBCA estate in non-dry conditions?	**No**	No further action required.
5. Main Roads has been notified by DWER or an environmental specialist that the area to be cleared is susceptible to a pathogen other than dieback	**No**	No further action required.
6. The vegetation within the area to be cleared and/or the surrounding vegetation is in a good or better condition and weeds likely to spread to and result in environmental harm to adjacent areas of native vegetation that are in good or better condition	**No**	No further action required.

7 STAKEHOLDER CONSULTATION

Main Roads will undertake stakeholder consultation as required. This will include contacting the Blina Pastoral Station regarding the material investigation works and land access. Additional consultation will be undertaken before proposed clearing works are expected to commence. Should material resources be identified suitable for pit development, relevant approvals will be sought and stakeholder engagement will be undertaken.

8 VEGETATION MANAGEMENT

Main Roads will avoid clearing native vegetation where possible. Where clearing cannot be avoided, then this clearing is kept to a minimum.

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10 APPENDICES

Appendix	Title
Appendix 1	NatureMap Report Protected Matters Search Tool Report

Appendix 1: NatureMap and PMST Reports

PMST Report – D21#412380

NatureMap Report – D21#412383