Clearing Desktop Report – Short Form

1. PROPOSAL DETAILS

Proposal Name:	Fitzroy River Bridge Replacement – Eastern Bank Scour Protection		
Region/Directorate:	Kimberley		
Local Government:	Shire of Derby – West Kimberley		
Road/Bridge Name & Number:	Great Northern Highway (H006)		
Proposal Location (SLK):	SLK 2524.92 – 2525.07		
CDR Short Form TRIM Number:	D23#763169		
Spatial Data TRIM Number:	D23#766575 & D23#734397		
EOS Number:	2958		
Expected Proposal Start Date:	4 August 2023		
Oracle Project No:	30002131	**Task Code:**	19301
LISC TRIM Number:	D23#736371	**HRA TRIM Number:**	D23#736549

2. PURPOSE OF CLEARING

The purpose of this Clearing Desktop Report (CDR) is to provide a report detailing the desktop assessment of native vegetation clearing that is proposed to be cleared using the Statewide Clearing Permit CPS 818 issued to Main Roads Western Australia (Main Roads).

The eastern Bank of the Fitzroy River adjacent to the proposed new Fitzroy River Bridge was heavily scoured during the flooding event associated with Ex-Tropical Cyclone Ellie in January 2023. This area is on land occupied by the Fitzroy River Lodge.

Historic aerial imagery indicates that the separation distance between the Main structure of the Fitzroy River Lodge and the eroded riverbank has decreased from over 80m in 2010, to under 40m in 2023. This has resulted in significant loss of property as well as a future risk to the Lodge itself.

Furthermore, the area being eroded is directly upstream of the new Fitzroy River Bridge. One of the indicated mechanisms of failure of the old single lane bridge in January 2023, was the inadequate bank protection in place along the actively eroding river bend. This caused a significant wash out during the January 2023 event that destroyed approximately 100m of the Great Northern highway to a depth of around 8-10 meters, leaving the old Bridge separated and therefore prone to failure.

It is therefore essential that bank stabilisation works be carried out prior to the next wet season to protect the new bridge structure and the infrastructure associated with the Fitzroy River Lodge.

To facilitate the implementation of bank stabilisation works an access track is required to be cleared to allow construction equipment to access the riverbank. A small laydown area is required to be established adjacent to the access track. An additional area which requires clearing comprises a small upgrade to the existing waste water treatment plant road on the southern side of the new bridge.

Proposed design of the rock protection measures are located at D23#734897 and the Development Envelope is visible in **Figure 1**.

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

3. ALTERNATIVES TO CLEARING

It would be impractical to install scour protection for the riverbank without clearing to facilitate access. Where practicable, existing cleared areas will be preferentially utilised before clearing further areas for laydown.

4. MEASURES TO AVOID, MINIMISE, MITIGATE AND MANAGE PROPOSAL CLEARING IMPACTS

Drainage modification	Drainage design will seek to maintain existing flow lines/watercourses to avoid impacting existing vegetation and hydrology of the Fitzroy River.
Use of existing cleared areas for access tracks, construction storage and stockpiling	Turnaround locations, site office and stockpile locations will be established in historically cleared areas within the DE as much as practicable.
Installation of barriers	Clearing of vegetation and ground disturbance has been maintained within the existing disturbance footprint as much as possible.
Steepen batter slopes	The design has sought to reduce earthworks as much as possible (fill height/cut depth). Most of the battering for road improvement has been restricted to existing cleared areas.
Simplification of design to reduce complexity of intersections	The Proposal is supporting the design of the Fitzroy river bridge upgrades, which cannot be further simplified whilst retaining the necessary safety benefits.
Alignment to one side of existing road	Not relevant. The Proposal involves the construction access tracks and scour protection adjacent to the new Fitzroy River Bridge.

5. APPROVED POLICES 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 following documents.

Environmental Protection Policies:

- Environmental Protection (Peel Inlet - Harvey Estuary) Policy 1992
- Environmental Protection (Western Swamp Tortoise Habitat) Policy 2011

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) (AHA)
- *Town Planning and Development Act* (WA)*1928*

Relevant other policies and guidance documents:

- Environmental Offsets Policy (Government of Western Australia, 2011)
- A guide to the assessment of applications to clear native vegetation (DEC, December 2014)
- Procedure: Native vegetation clearing permits (DWER, October 2019)
- Environmental Offsets Guidelines (Government of Western Australia, August 2014)
- 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
- EPBC Act Referral guidelines for the three threatened black cockatoo species
- Strategic advice - EPA

6. CLEARING AREA

Clearing Area (ha):	1.34 ha	**No. Trees Cleared:**	N/A
Species Name(s):	*Eucalyptus* sp. and *Corymbia* sp. over tussock grassland		
Easting and Northing:	Access Track: GDA2020 MGA Zone 51 773317mE 7984984mN WWTP: GDA2020 MGA Zone 51 772845mE 7984450mN		

7. EXISTING ENVIRONMENT AND SITE INFORMATION

Site Vegetation Description/ Association:	Native vegetation representative of VA no. 61 (Beard 1975) described as 'Grasslands, tall bunch grass savanna woodland, coolabah over ribbon grass (*Crysopogon spp.*)'.
Site Vegetation Condition:	Degraded (contains previous track disturbance)

Pre-European Extent Remaining (%):

Pre-European Vegetation Association	Scale	Pre-European Extent (ha)	Current Extent (ha)	% Remaining	% Current Extent in DBCA Managed Land (Proportion of pre-European Extent)
Veg Assoc No. 61	**Statewide** WA	185,473	185,316	99.92	0.55
	IBRA Region Dampierland	130,881	130,785	99.93	0.77
	IBRA Sub-Region Fitzroy Trough	130,664	130,569	99.93	0.77
	LGA Shire of Derby-West Kimberley	182,468	182,311	99.91	0.55

8. ASSESSMENT OF PROPOSAL AGAINST CLEARING PRINCIPLES

Is vegetation to be cleared at variance with:	Justification or Evidence:
Principle (a) – Native vegetation should not be cleared if it comprises a high level of	<u>Vegetation</u> The NVCA comprises 1.34 ha of mapped native vegetation representative of VA no. 61 (Beard 1975) described as 'Grasslands, tall bunch grass savanna woodland, coolabah over ribbon grass (*Crysopogon spp.*)'. <u>Significant ecological communities</u>

biological diversity.	Desktop searches (EPBC PMST, NatureMap, DBCA, WA Herbarium) confirm the DE and Study Area (as seen in **Figure 2**) are not located within any Commonwealth or State listed Threatened Ecological Communities (TECs). Review of GoWA (2023; DBCA-038) indicates the presence of a Priority Ecological Community (PEC) within the DE and Study Area. This PEC is listed as Gogo Land System, classified as a Priority 3 ecological community. The Gogo Land System PEC typically occurs on active floodplains with broad levee zones and moderately extensive alluvial back plains of cracking clays with grasslands and grassy woodlands. The PEC consists of a wide range of soil types, from clayey alluvial soils to loamy alluvial soils, and cracking and heavy clays to self-mulching clays. The PEC also encompasses a wide range of vegetation, including fringing forests, open grassy woodlands, grassland with scattered trees and shrubs, perennial grasslands and annual grasses and forbs. Threats to the ecological community include agricultural expansion, weed invasion (buffel), altered fire regimes, and over-grazing leading to soil loss and loss of vegetation structure (Payne & Schoknecht 2011). Desktop review of soil types and landforms of the DE indicates the DE is synonymous with land unit 6 of the PEC (Payne & Schoknecht 2011): • Landform: Minor channels and billabongs; channels up to 3 m deep and 275 m wide; billabongs up to 3.2 km long, often in linked series. • Soil type: Brownish, massive, intractable, silty to heavy clays. Review of GoWA (2023; DPIRD-064) confirms the DE is comprised of soil type 331Go (Gogo system: Hard cracking clay; active flood-plains with broad levee zones supporting ghost gum and coolibah woodlands with frontage grasses, and cracking clay back plains supporting Mitchell grass and ribbon grass-blue grass grasslands). • Vegetation: Grassy woodland fringing communities, varying according to conditions of flooding; *Eucalyptus microtheca* alliance. There is an estimated 196,600 ha of Gogo Land System PEC within the Kimberley region (Payne & Schoknecht 2011). The entire extent of the DE comprises 0.00068% of the PEC. Ground disturbance within the PEC is unlikely to directly or indirectly impact the maintenance of the PEC locally or regionally. <u>Significant Flora</u> Desktop searches (EPBC PMST, DBCA TPFL, WA Herbarium, NatureMap) identified the presence/potential presence of 266 flora taxa within the Study Area including five DBCA-listed Priority species: • *Corchorus fitzroyensis* (Fitzroy River Corchorus) - Priority 3 • *Goodenia sepalosa var. glandulosa* - Priority 3 • *Cullen candidum* - Priority 1 • *Euploca foveolata* (Craven) - Priority 1 • *Nymphaea kimberleyensis* (Water Lily) - Priority 1. The desktop search did not record any of the above species within the DE. The closest record to the DE was *Corchorus fitzroyensis* (DBCA-listed Priority 3) located approximately 2.2 km north-east of the DE. Review of Florabase found the following information for population numbers and soil preferences of the above priority species: • *Corchorus fitzroyensis* (Fitzroy River Corchorus): Over 24 records present across WA. Prefers sandy soil or grey alluvial silt. • *Goodenia sepalosa var. glandulosa*: Over 16 records present across WA. Prefers red sand or loam. • *Cullen candidum*: Five records present across WA. Prefers clayey sand.

- *Euploca foveolata* (Craven): Nine records present across WA. Soil type preference unknown
- *Nymphaea kimberleyensis* (Water Lily): Four records present across WA. Soil type preference unknown.

Dominant soil types mapped in the DE are hard cracking clay (331Go) (DPIRD-064). These soil types are incompatible with *Corchorus fitzroyensis*, *Goodenia sepalosa* var. *glandulosa*, or *Cullen candidum* preferred soil types. It is unknown whether the soil type within the DE would support *Euploca foveolate*, however, the small proportion of clearing within the DE compared to vast tracts of soil and vegetation outside of the DE is unlikely to significantly impact Priority flora species. *Nymphaea kimberleyensis* is a floating waterlily and due to the absence of water habitat within the DE this species is unlikely to be present.

Further analysis of GIS data (WA Herbarium) using a 40 km radius of the DE was employed to identify further species of significant flora known to occur in the region. The following additional species were returned from the search:

- *Cucumis sp.* Bastion Range (A.A. Mitchell et al. AAM 10710) - Priority 1
- *Euploca geocharisI* - Priority 1
- *Cayratia cardiophylla*- Priority 2
- *Hibiscus calcicole*- Priority 2
- *Fimbristylis* sieberiana- Priority 3
- *Goodenia byrnesii*- Priority 3
- *Schoenus punctatus*- Priority 3

None of the additional species identified in the 40 km database search were located within the Gogo land system, and therefore they display a reduced likelihood of being located within the DE.

Significant Fauna

Desktop searches (EPBC PMST, NatureMap, DBCA) identified the presence/potential presence of 210 fauna taxa within the Study Area, comprising of 154 birds, 36 reptiles, 10 amphibians, six mammals, three invertebrates and one fish. The following significant fauna species were recorded in the Study Area:

- 13 species listed as Threatened under the EPBC Act and/or the BC Act.
- 17 species listed as Marine and Migratory (Terrestrial and Wetland) under the EPBC Act.
- One species listed as Marine under EPBC Act and Other Specially Protected (OS) under BC Act.
- Two DBCA listed Priority species.

Only one significant fauna species was located in desktop searches as a historic record within the DE: the Common Sandpiper (*Actitis hypoleucos*) listed as Marine and Migratory under EPBC Act. The Common Sandpiper is highly mobile and would not rely solely on the DE for survival or persistence.

Conservation Estates

One National Park is located within the Study Area (GoWA 2023; DBCA-011), namely Warlibirri National Park, located approximately 2.5 km north-east of the DE. Danggu (Geikie Gorge) Conservation Park is located approximately 12 km north-east of the DE, outside of the Study Area (GoWA 2023; DBCA-011). Bush Forever is only relevant to the Perth metropolitan area, and therefore not this Proposal.

Environmentally Sensitive Areas (ESAs)

No ESAs are located within the DE or Study Area. One ESA is located 12 km north-east of the DE likely to be associated with Danggu (Geikie Gorge) Conservation Park (GoWA 2023; DWER-046).

	Ecological linkages Ecological linkages have not been mapped for the Shire of Derby -West Kimberley, and it is unlikely that the clearing required within the DE will fragment or interrupt any ecological linkages within the vicinity. Proposal clearing of 1.34 ha mapped native vegetation is occurring in areas adjacent to the existing Great Northern Highway within vegetation that is well represented at a local and regional scale. Proposed clearing will not fragment or remove entire corridors of vegetation or supporting habitat for significant flora and fauna species. Vegetation within the DE does not comprise a high biological diversity in the local or regional context. The proposed clearing is not at variance to this Principle.
Principle (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.	Desktop searches (EPBC PMST, *NatureMap*, DBCA) identified the presence/potential presence of 210 fauna taxa within the Study Area, comprising of 154 birds, 36 reptiles, 10 amphibians, six mammals, three invertebrates and one fish. The following significant fauna species were recorded in the Study Area: • 13 species listed as Threatened under the EPBC Act and/or the BC Act • 17 species listed as Marine and Migratory (Terrestrial and Wetland) under the EPBC Act • One species listed as Marine under EPBC Act and Other Specially Protected (OS) under BC Act • Two DBCA listed Priority species. Only one significant fauna species was located in desktop searches as a historic record within the DE: the Common Sandpiper (*Actitis hypoleucos*) listed as Marine and Migratory under EPBC Act. The Common Sandpiper is highly mobile and would not rely solely on the DE for survival or persistence. Based on species biology, habitat requirements, the likely quality and availability of suitable habitat (based on VA no. 61 within the Study Area) and records of the species in the vicinity of the DE, the following species have some potential of occurring within the DE: • Northern Quoll (*Dasyurus hallucatus)* – EPBC Act and BC Act • Endangered Ghost Bat (Macroderma gigas) – EPBC Act and BC Act Vulnerable • Northern Brushtail Possum (Trichosurus vulpecula arnhemensis) - EPBC Act and BC Act Vulnerable • Greater Bilby (*Macrotis lagotis)* – EPBC Act and BC Act Vulnerable. *Northern Quoll* The DE is located within the mapped distribution of the Northern Quoll (TSSC) (2005). The Northern Quoll is a nocturnal predator, with historical distribution across northern Australia, that has declined dramatically, especially in the more arid parts of its range. Surviving populations exist within the Pilbara, Kimberley, parts of the Northern Territory and near-coastal Queensland. In the Kimberley, records are scattered discontinuously from just south of Derby across to Wyndham (TSSC 2005). The Northern Quoll occupies a diversity of habitats across its range which includes rocky areas, Eucalypt forest and woodlands, rainforests, sandy lowlands and beaches, shrubland, grasslands and desert (Braithwaite & Griffiths 1994) . The nearest official record of a Northern Quoll is 90 km to the east of the DE in the Meuller Ranges (DBCA datasets). Due to the large distance to the nearest record of the species, the absence of denning habitat locally and the lack of preferred foraging habitat in the DE, this species is unlikely to occur. *Ghost Bat* The DE is located within the mapped distribution of the Ghost Bat (TSSC 2016b). The ghost bat is a monotypic species endemic to northern Australia. It comprises isolated populations extant in the semi- desert Pilbara region of WA, the mesic Kimberley and Top End of the Northern

	Territory, along with north-western Queensland, and the central Queensland coastal and hinterland regions (TSSC 2016b). In the Kimberley, ghost bats are widespread across ecosystems associated with rocky landscapes, both sandstone and limestone, including offshore islands with well-developed riparian zones (McKenzie et al. 2020). Ghost bats move between a number of caves seasonally or as dictated by weather conditions and/or foraging opportunities, so they require a range of cave sites. There are several documented permanent roost caves and underground mines in northern Australia, for example, Tunnel Creek in the Kimberley (McKenzie et al. 2020). There are no caves within the DE. Whilst the DE may represent supporting habitat for the species, it is likely limited as there are no known roosting caves in the vicinity of the DE. The nearest record of a Ghost Bat is 77 km to the south east of the DE in the Meuller Ranges and 80 km north west in the King Leopold Ranges (DBCA datasets). Due to the lack of suitable roosting caves locally and the large distance from the nearest records, this species is unlikely to occur within the DE. *Northern Brushtail Possum* The DE is located within the mapped distribution of the Northern Brushtail Possum habitat (TSSC 2021). The Northern Brushtail Possum is a nocturnal semi-arboreal marsupial. It occurs discontinuously across the Northern Territory, westward to the Western Australian Kimberley. Most of the current population appears to be in the Northern Territory, with limited sightings recorded in WA, spanning the Kimberley. The northern Brushtail Possum prefers tall Eucalypt open forests or mangrove communities with large hollow- bearing trees, as well as some rainforests and semi- urban areas. The subspecies is found in higher abundance where shrub density is high (TSSC 2021) . There are no known records of the species in the vicinity of the DE (DBCA datasets). The open savannah woodland habitat type within the DE is not the preferred habitat for this species, and due to the lack of local records it is unlikely to be present. *Greater Bilby* The DE is located within the mapped distribution of the Greater Bilby (TSSC 2016a) . The Bilby is a long tailed, long eared desert bandicoot that formerly occurred across larger areas of Australia in the arid and semiarid zones. The distribution of this species is now restricted to 20% of its former range, mainly in parts of the Tanami Desert, Pilbara and southern Kimberley. Bilbies shelters in burrows and occupy a range of habitats from grassland on clayey and stony soils or sandplains to mulga scrub and woodlands on red earths, however, this species requires sandy or loamy soil in which to burrow (TSSC 2016a). The nearest record is 80 km south of the DE at Cherabun (DBCA datasets). The stony soils and cracking clays mapped as dominant within the DE (DPIRD-064) are unlikely to be suitable to support Bilby burrows, and due to the distance to known records the species is unlikely to occur within the DE. Listed bird species are mobile and would not rely solely on the DE for survival or persistence. Some significant fauna species may infrequently visit the DE, however, the small scale of proposed clearing is unlikely to be necessary for the maintenance of significant fauna due to the following: • The DE comprises habitat that is well represented locally and regionally and not spatially restricted • Surrounding vegetation and habitat is likely to provide preferable habitat for the maintenance of the significant fauna species • Fauna species are mobile and can relocate outside the DE to good or better vegetation and habitat. Proposed clearing does not comprise of vegetation that is the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia and is therefore not likely to be at variance to this Principle.

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

Desktop searches (EPBC PMST, *NatureMap*, DBCA, WA Herbarium) did not identify any Threatened flora within the DE or Study Area.

The proposed clearing is not at variance to this clearing Principle.

Principle (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.

Desktop searches (EPBC PMST, DBCA) did not identify any threatened ecological communities within the DE or Study Area.

The proposed clearing is not at variance to this clearing Principle.

Principle (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.

Vegetation Association

The NVCA is located within the Dampierland IBRA region and the Fitzroy Trough subregion (DAL01). The vegetation within the NVCA has been broadly mapped as VA no. 61 described as 'Grasslands, tall bunch grass savanna woodland, coolabah over ribbon grass (Crysopogon spp.)'. The table below summarises the remaining extent of VA no. 61 at Statewide, IBRA Bioregion, IBRA Sub-region and LGA scales.

Pre-European Vegetation Association	Scale	Pre-European Extent (ha)	Current Extent (ha)	% Remaining	% Current Extent in DBCA Managed Land (Proportion of pre-European Extent)
Veg Assoc No. 61	**Statewide** WA	185,473	185,316	99.92	0.55
	IBRA Region Dampierland	130,881	130,785	99.93	0.77
	IBRA Sub-Region Fitzroy Trough	130,664	130,569	99.93	0.77
	LGA Shire of Derby-West Kimberley	182,468	182,311	99.91	0.55

The national objectives and targets for biodiversity conservation Australia have been set to prevent clearance of ecological communities with less than 30% of their pre-European extent, below which species loss appears to accelerate exponentially (Commonwealth of Australia 2001).

The current extent of VA no. 61 is higher than 30% for pre-European extent at all scales (Statewide, IBRA Bioregion, IBRA Subregion, LGA). Vegetation clearing within the NVCA is

	occurring in an area that has not been extensively cleared at a local and regional scale and therefore is not significant as a remnant. The proposed clearing is not at variance to this Principle.
Principle (f) – Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.	The DE is not located within, and does not intersect: • Internationally Important Wetlands (i.e. RAMSAR); • Nationally Important Wetlands; or • Geomorphic wetlands of any conservation category. The Proposal DE is located outside the Fitzroy River and associated riparian vegetation. Vegetation within the DE does not support wetland dependent vegetation or ecosystems and is not growing in association with the Fitzroy River. The proposed clearing is not at variance to this Principle.
Principle (g) – Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.	The DE is comprised of the road alignment, that intersects flat stretches of grassy woodland located on undulating alluvial plains. Geology within the Fitzroy Trough subregion is composed of alluvial plains, sandplain and eroded dune surfaces, and extensive coastal mud flats (Graham 2001). The DE is comprised of one dominant soil type (DPIRD-064): • 331Go – hard cracking clay of the Gogo system. Active flood-plains with broad levee zones supporting ghost gum and coolibah woodlands with frontage grasses, and cracking clay back plains supporting Mitchell grass and ribbon grass-blue grass grasslands. Review of the Australian Soil Resource Information System (ASRIS) indicates the Study Area is mapped as having an Extremely Low Probability of Acid Sulphate Soil (ASS) occurrence (ASRIS 2023). Soil landscape mapping for salinity, surface acidity, flooding, water erosion, wind erosion, and waterlogging is not available for the Study Area. However, the dominant soil types within the DE (stony soil and hard cracking clays) indicate the DE has a low risk of wind erosion, water erosion, acidification, and salinity. The dominant soil types within the DE are naturally susceptible to waterlogging and flooding. The DE is located in a highly modified area, which is subject to historical land use, and extreme flooding events. Clearing of vegetation within the DE is unlikely to cause appreciable land degradation beyond what is currently occurring. Management measures will be implemented to minimise potential erosion, sedimentation and salinity. The road design will aim to maintain existing hydrological flows thereby minimising the risk of waterlogging and flooding. Proposal clearing is not at variance to this Principle.
Principle (h) – Native vegetation should not be cleared if the clearing of the vegetation is	The DE does not intersect conservation reserves or DBCA managed lands (GoWA 2023; DBCA-011). Warlibirri National Park is located approximately 2.5 km north- east of the DE (GoWA 2023; DBCA-011) and Danggu (Geikie Gorge) Conservation Park is located approximately 12 km north-east of the DE, outside of the Study Area (GoWA 2023; DBCA-011). Vegetation clearing within the DE will not impact on the environmental values of any adjacent or nearby conservation areas.

likely to have an impact on the environmental values of any adjacent or nearby conservation area.	The proposed clearing is not at variance to this Principle.
Principle (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.	The DE and Study Area are located within the Fitzroy River and Tributaries, a surface water area proclaimed under the RIWI Act (GoWA 2023; DWER-037). The DE and Study Area are located within the Fitzroy Crossing Water Reserve Public Drinking Water Source Area (PDWSA), protected under the Country Areas Water Supply Act 1947 (GoWA 2023; DWER-033). The DE intersects Priority 2 and Priority 3 sections of this PDWSA. In accordance with the DWER Water quality protection notes 25 (DWER 2021) (Land use compatibility tables for public drinking water source areas) road infrastructure is deemed a compatible and acceptable land use with the PDWSA Priority 2 and 3 listings, respectively. The DE and Study Area are located within the Canning-Kimberley groundwater area proclaimed under the RIWI Act. Depth to groundwater across the Study Area is not mapped. If the Proposal requires taking of surface water, groundwater abstraction/dewatering and/or bore/well construction/alteration necessary licences under the RIWI Act will be necessary, including appropriate controls and monitoring. Deterioration in the quality of surface water or underground water is unlikely to occur as a result of native vegetation clearing during construction and operation of the Proposal. It is anticipated that only common substances such as fuel, oil and bitumen will be used during construction of the Proposal. Main Roads will adhere to standard management actions and safety data sheets to manage and potential risk associated with use of any hazardous substances. The proposed clearing is not likely to be at variance to this Principle.
Principle (j) – Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.	Based on climate data from the nearby Bureau of Meteorology (BoM) Fitzroy Crossing Aero weather station (site number: 003093) the region receives an annual average rainfall of 690.6 mm, with most of the rainfall occurring during the wet season months of December, January and February (BoM 2023). The DE is comprised of one dominant soil types (DPIRD-064): • 331Go – hard cracking clay of the Gogo system. Active flood-plains with broad levee zones supporting ghost gum and coolibah woodlands with frontage grasses, and cracking clay back plains supporting Mitchell grass and ribbon grass-blue grass grasslands. Whilst waterlogging and flood risk have not been mapped for the Study Area, the properties of the dominant soil types (stony soil and hard cracking clays) indicate the DE is naturally susceptible to waterlogging and flooding. The recent December 2022/January 2023 flooding event is evidence of this. Surface water management measures will be implemented as part of the Proposal design to maintain existing hydrological regimes and to avoid impact to adjacent native vegetation. Clearing

	of native vegetation associated with the Proposal will not cause or exacerbate the incidence or intensity of flooding within, or in the vicinity of, the DE. The proposed clearing is <u>not</u> at variance to this Principle.
Methodology Used and References:	• Shapefile of clearing area/trees: D23#734397 • BoM Website (Accessed July 2023) • Soil Landscape Mapping – Western Australia attributed by Department of Primary Industry and Regional Development (DPIRD-064) (Accessed July 2023). • Beard JS (1975). Vegetation Survey of Western Australia: Pilbara, Western Australia, map and explanatory memoir 1:250,000 series, Apple Cross, Vegmap Publications. • Clearing Regulations – Environmentally Sensitive Areas (DWER-046) (Accessed February 2023) • DBCA Legislated Lands and Waters (DBCA-011) (Accessed February 2023) • DBCA Threatened and Priority Ecological Community database search (Accessed February 2023) • Threatened and Priority Flora (WA Herbarium and TPFL) (Accessed February 2023). NatureMap (Accessed February 2023) • Payne, A., Schoknecht, N. (2011). Technical Bulletin Land Systems of the Kimberley Region, Western Australia No. 98. Prepared for Department of Agriculture and Food, Western Australia. • Statewide Vegetation Statistics (Government of Western Australia 2019). • Braithwaite, R.W. & A.D. Griffiths (1994). Demographic variation and range contraction in the Northern Quoll, Dasyurus hallucatus (Marsupialia: Dasyuridae). • DBCA Threatened and Priority fauna database search (Accessed February 2023) NatureMap (Accessed February 2023) • TSSC (2005). Commonwealth Listing Advice on Northern Quoll (Dasyurus hallucatus). TSSC (2016a). Conservation Advice Macrotis lagotis greater bilby. • TSSC (2016b). Conservation Advice Macroderma gigas ghost bat. • McKenzie, N. L., Bullen, R. D., and Gibson, L. A. (2020). Habitat associations of zoophagic bat ensembles in north-western Australia. • DCCEEW Protected Matters Search Tool Report Florabase (Accessed February 2023) • DBCA Threatened flora database search (Accessed February 2023) • DBCA Threatened Ecological Community database search (Accessed February 2023). • Pre-European vegetation (DPIRD-006) (Accessed February 2023) • Native Vegetation Extent (DPIRD-005) (Accessed February 2023) Statewide Vegetation Statistics (Government of Western Australia 2019). • Geomorphic Wetlands (Accessed February 2023) • Native Vegetation Extent (DPIRD-005) (Accessed February 2023). • Australian Soil Resource Information System ASRIS (2023). • Graham (2001). Dampierland 1 (DL1 – Fitzroy Trough subregion). A Biodiversity Audit of WA's 53 Biogeographical Subregions in 2002, pp 170. Department of conservation and Land Management (ed). • RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037) (Accessed February 2023) • RIWI Act, Groundwater Areas (DWER-034) (Accessed February 2023) • Ramsar Wetlands (DBCA-010) (Accessed February 2023) • Important Wetlands (DBCA-045) (Accessed February 2023).

9. REHABILITATION, REVEGETATION AND OFFSETS	
Offset Proposal:	No offset proposal is required as the proposed clearing will not result in significant residual impacts to native vegetation within the region.
Revegetation and Rehabilitation:	No temporary clearing will be undertaken as part of the Proposal activities.

10. COMPLIANCE WITH CPS818		
The clearing associated with the proposal is not at variance with the Clearing Principles. Additional management actions under CPS 818 are detailed below.		
Impact of Clearing	**Yes/No or NA**	**Further Action Required**
1. Proposal is within a Region that: • has rainfall greater than 400mm; and, • is South of the 26th parallel; and, • works are necessary in 'Other than dry conditions'; and, • works have potential for **uninfested** areas to be impacted.	**No**	Standard Vehicle and Plant Management Actions from Annexure 204B (TABLE 204B.9.1), Hygiene Checklists (D17#859669) and Vehicle, Plant and Machinery Hygiene Vehicle Register Template (D23#179551) will be applied (which include relevant sections of Condition 10).
2. Do the proposed works require clearing within or adjacent to DBCA managed lands in non-dry conditions?	**No**	No further action required.
3. 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.
4. Weeds are 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.

Completed By:	
Job Title	Graduate Environment Officer (Main Roads)
Date	11/08/2023

Once all sections are completed, send the form to CRSP for review and endorsement.

DECISION ON CLEARING ASSESSMENT		
Clearing Assessment	**ENDORSED ☑**	**REFUSED ☐**
Comments		
Name		
Signature		
Job Title	Senior Environment Officer	
Date	16/08/2023	

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APPENDIX 1.

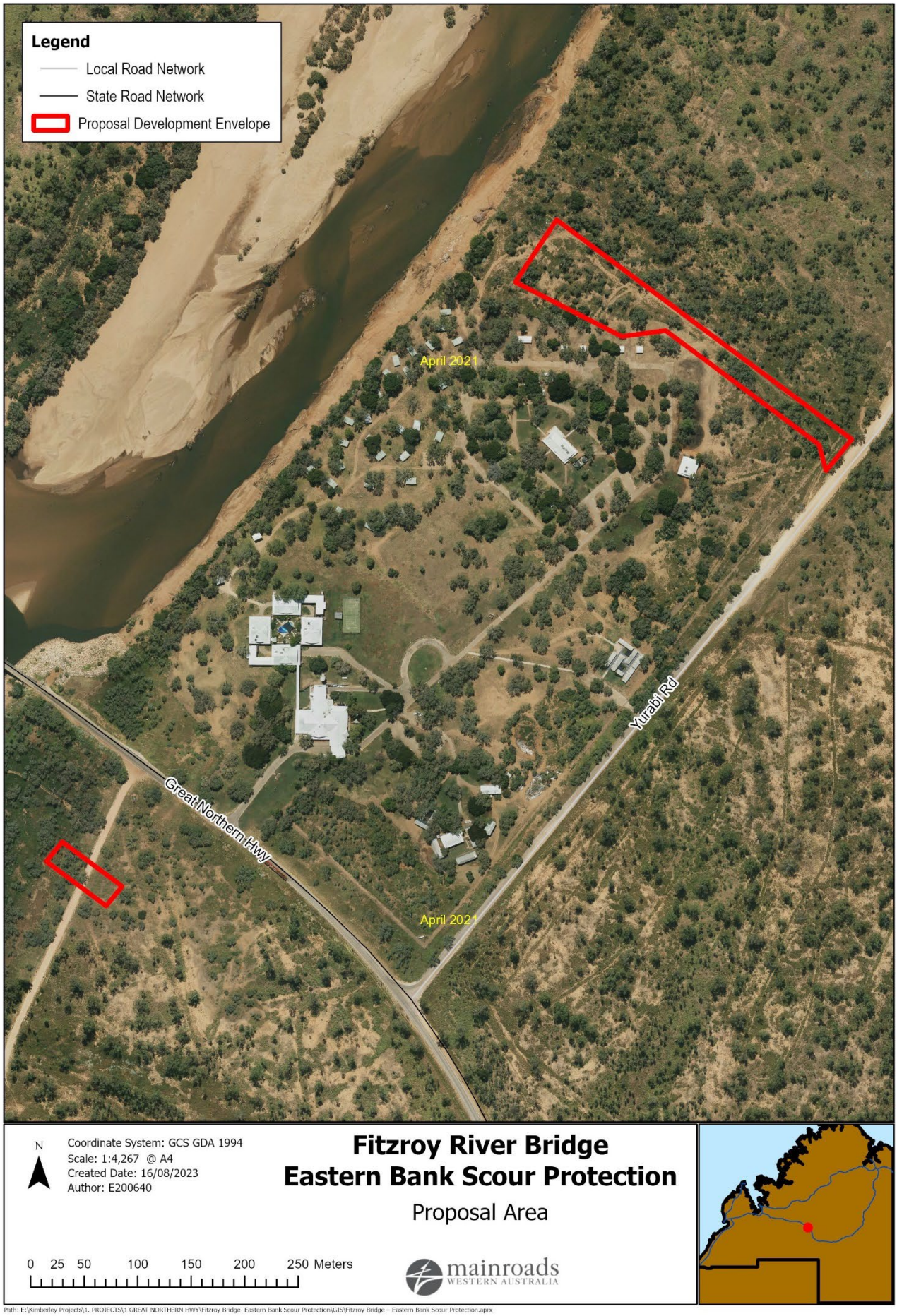

Figure 1: Fitzroy River Bridge – Eastern Bank Scour Protection Proposal Area

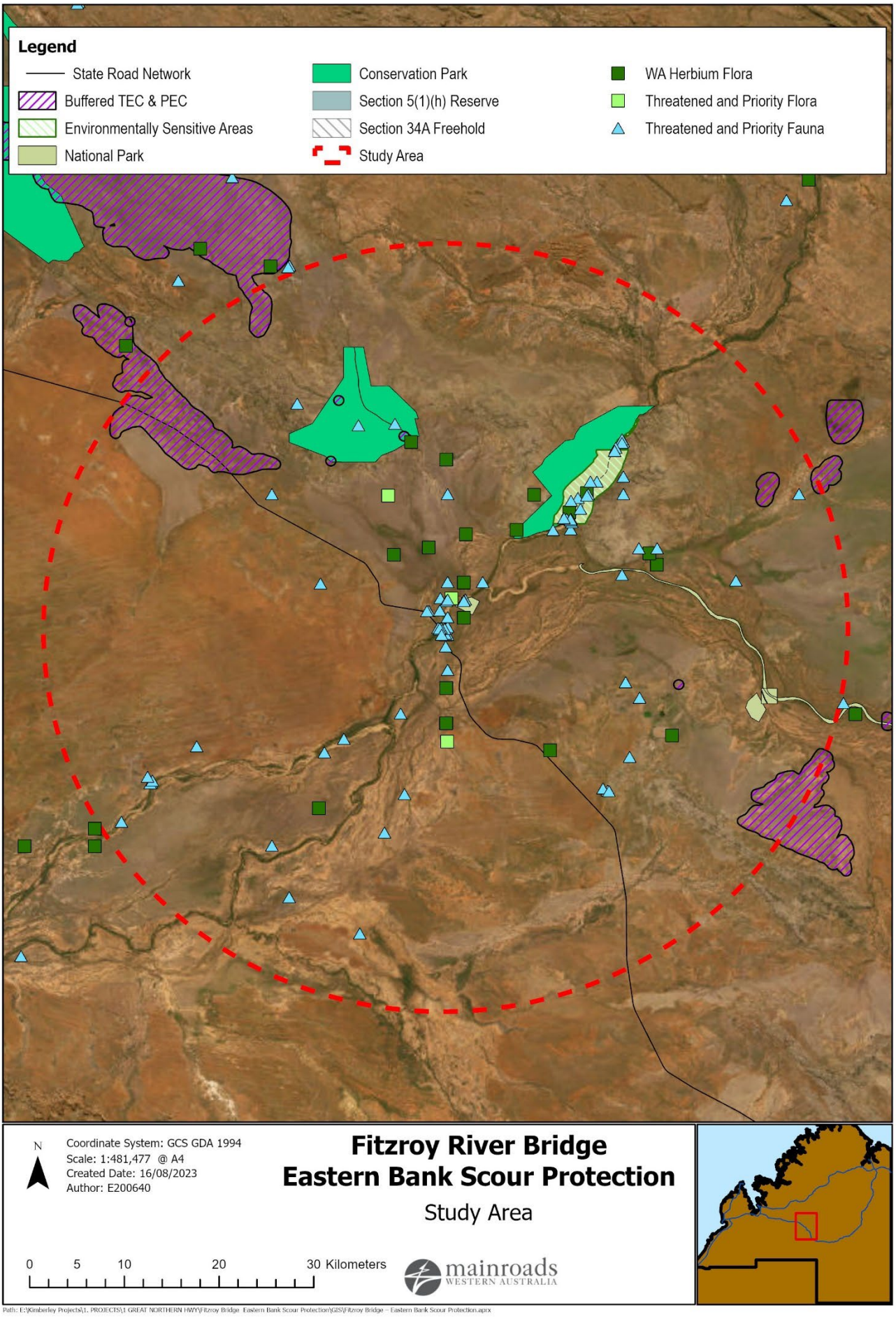

Figure 2: Fitzroy River Bridge – Eastern Bank Scour Protection Study Area