

REVEGETATION PLAN
Fitzroy Crossing to Gogo
Stage 1 Preconstruction
SLK 2524.85 – 2536.55



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FITZROY CROSSING TO GOGO STAGE 1 PRECONSTRUCTION SLK 2524.85 – 2536.55

REVEGETATION PLAN

1. PROJECT DESCRIPTION

1.1 Purpose

Main Roads Western Australia (MRWA) has a policy aim to “protect and enhance the environmental values of road reserves”. This document has been prepared to ensure compliance with Main Roads’ Environmental Policy and Main Roads’ statewide Purpose Permit CPS 818/4.

In the process of establishing new roads and upgrading existing roads, there is often a need to undertake revegetation of the road reserve or other affected areas. Where clearing of native vegetation is to occur under Main Roads’ statewide Purpose Permit CPS 818/4, a revegetation plan is required for temporary clearing (eg. borrow pits, access tracks, camps etc.). Where the temporary clearing exceeds 0.5ha, the revegetation plan needs to be forwarded to the Department of Environment and Conservation prior to clearing.

This revegetation plan sets out the revegetation requirements for the Fitzroy Crossing to Gogo proposal (Stage 1 Preconstruction Activities), SLK 2524.85 – 2536.55.

The purpose of the revegetation plan is to identify effective revegetation practices that help accelerate the natural succession processes that occur following the clearing of native vegetation and soil disturbance.

1.2 Background

The Great Northern Highway (GNH) forms part of the National Highway linking Perth to the north of the State and the Northern Territory. Growth in the mining, cattle and tourism industries in the region has resulted in increased traffic volume along the Highway. Expansion of the Ord River Irrigation Area and the fast growing tourism and mining industries in the East Kimberley are expected to further intensify the volume of traffic and freight carried on this road.

GNH currently crosses the Fitzroy River floodplain in the Fitzroy Crossing area. During the wet season (October through to March) annual road closures, due to flooding, occur along this section of the GNH causing disruption to traffic and freight for extended periods. The Federal Government, in consultation with Main Roads, has identified the need to upgrade the Fitzroy Crossing to Gogo section of the GNH in order to ensure an acceptable level of serviceability is achieved for the National Highway.

1.3 Project Description

The primary objective of the Fitzroy Crossing to Gogo reconstruction work is to increase road serviceability and improve road safety by upgrading the existing low level road by raising the road profile and providing suitable culverts and bridges. The scope of the proposed upgrade will include the following works:

- Replacement of two existing bridges across Two Mile Creek and Blue Bush Creek;
- Construction of two new bridges;
- Upgrading, realignment and significantly raising the 11.4 km road formation; and,

- Construction of up to five high level floodways.

The Fitzroy Crossing to Gogo proposal has been divided into two stages:

- **Stage 1 – Preconstruction Activities:**
Preconstruction activities will involve investigating certain material extraction areas to identify the whereabouts of the most suitable road building materials. Up to approximately 80ha of native vegetation will be temporarily cleared during these works and rehabilitated once investigation work is complete. Once Main Roads has identified appropriate material extraction areas and the concept design is finalised, the extent of clearing of native vegetation for the proposed works can be more accurately determined for Stage 2 Construction Activities.
- **Stage 2 – Construction Activities:**
Construction activities will involve the replacement of two existing bridges, the construction of up to two new bridges, construction of floodways, and upgrading and realignment of the road profile. Currently there are no construction funding identified for this project.

Figures 1 and 2 provide locality maps of the proposed materials investigation areas (the materials investigation areas are highlighted in yellow; the clearance corridor for the proposed realignment is highlighted in green). Sections within areas 1A, 3, 6, 7, 8 and 9 will be divided into grids. These grids will be investigated by digging holes to determine the most suitable road building material. Those holes will be backfilled with soil and levelled to allow natural regeneration of vegetation to occur.

The areas to be rehabilitated are shown in Table 1:

Table 1: Revegetation Area Details

Type	Area
Temporary clearing revegetation	80 hectares
Other revegetation	Nil

The location and boundaries of the project area are shown on Figures 1 & 2.

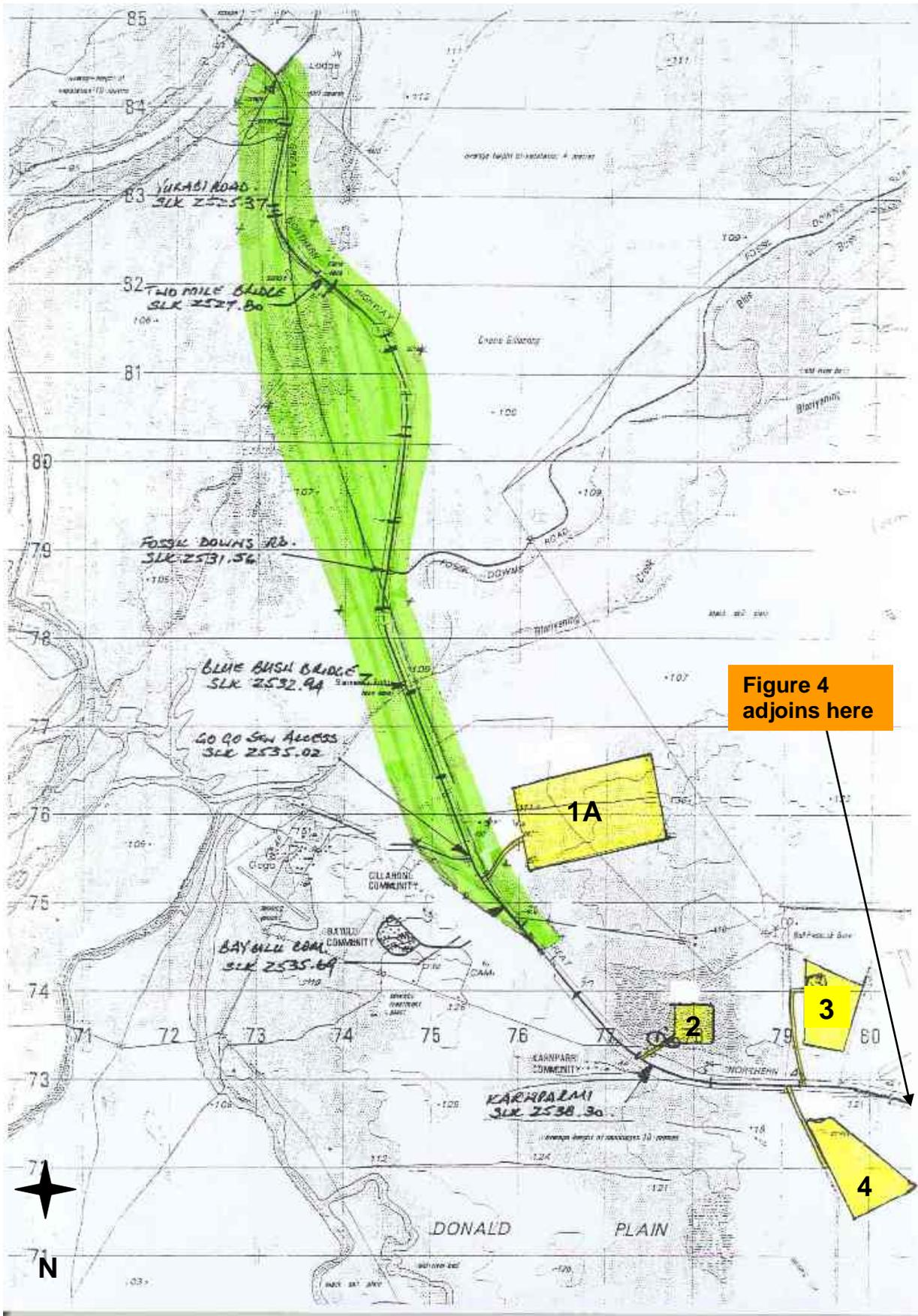


Figure 1...Fitzroy Crossing to Gogo materials investigation areas

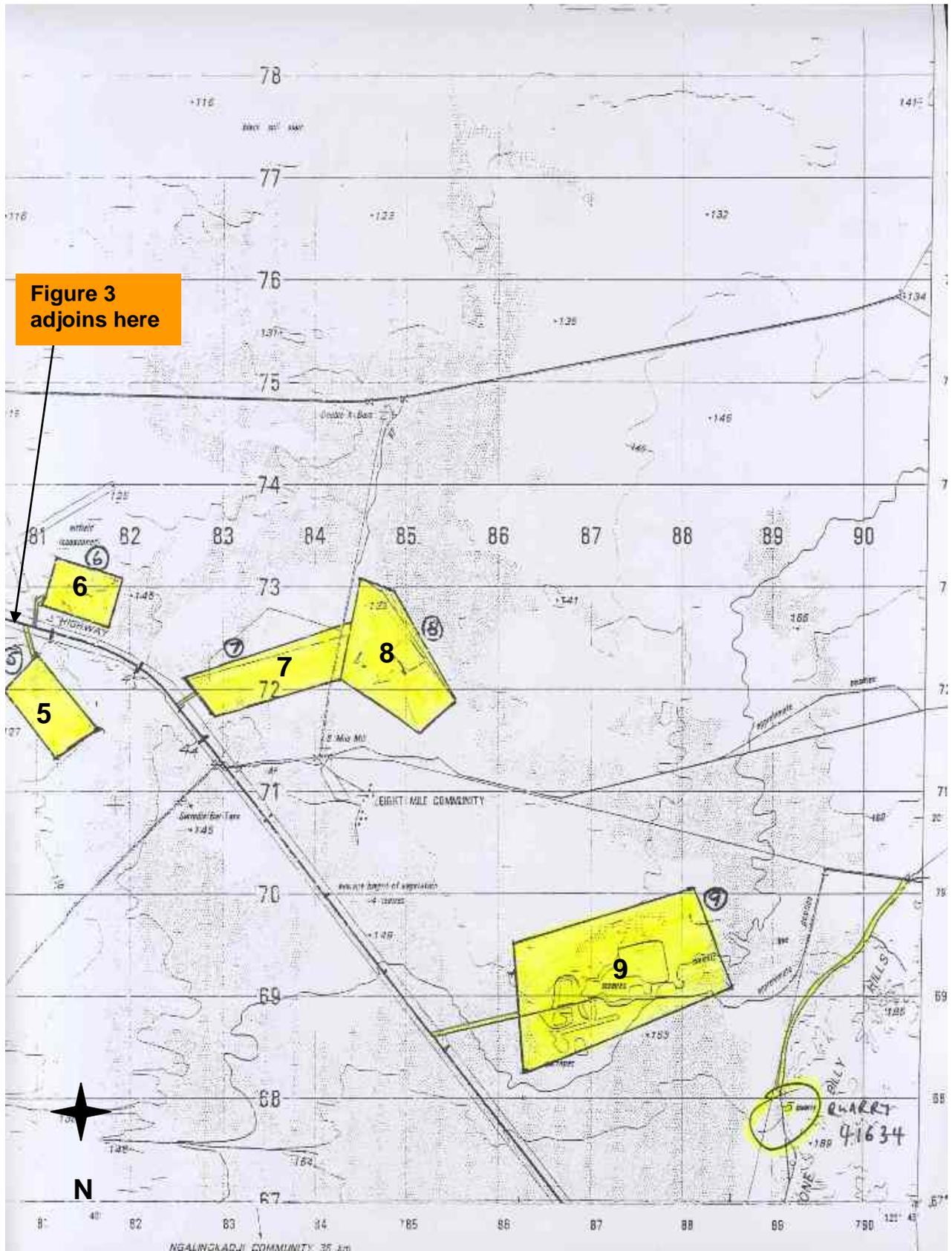


Figure 2...Fitzroy Crossing to Gogo material investigation areas

1.4 Existing vegetation

Vegetation type, extent and conservation status (after Shepherd *et al.*, 2002) for the Fitzroy Crossing to Gogo proposal (Stage 1 Preconstruction Activities):

Vegetation Association Number	Association Description	% Remaining
61	Grasslands; tall bunch grass savannah woodland; coolabah over ribbon grass (<i>Chrysopogon</i> spp.)	100.0
116	Hummock grassland, sparse tree steppe; mixed low trees over <i>Triodia wiseana</i>	100.0
569	Hummock grasslands, low tree steppe; bloodwood over soft spinifex and <i>Triodia wiseana</i>	100.0
699	Shrublands, pindan; <i>Acacia eriopoda</i> shrubland with scattered low bloodwood and <i>Eucalyptus setosa</i> over soft and curly spinifex on sandplain	99.9
703	Hummock grasslands, low tree steppe; snappy gum over <i>Triodia intermedia</i>	100.0
878	Hummock grasslands, sparse tree steppe, snappy gum & bloodwood (<i>Eucalyptus drichoromophloia</i>) over soft spinifex and <i>Triodia intermedia</i>	100.0

1.5 Weeds

A total of 28 weed species were recorded within the survey area, comprising approximately 12% of the total number of plant species recorded within the survey area. Dominant weed families include Poaceae (grasses), Euphorbiaceae (spurge) and Asteraceae (daisies).

Four noxious weeds declared under the *Agriculture and Related Resources Protection Act 1976 (ARRP Act)* were recorded in the survey area: Parkinsonia (*Parkinsonia aculeata*), Bellyache Bush (*Jatropha gossypifolia*), Noogoora Burr (*Xanthium strumarium*) and Zornia (Chinese Apple *Ziziphus mauritiana*). Under the *ARRP Act* all these plants are 'Priority 1' weeds for the whole of state, which means that the movement of plants and their seeds is prohibited. Parkinsonia and Bellyache Bush are also 'Priority 4' weeds within the survey area, which means that the spread of infestations from properties must be prevented. Zornia is 'Priority 5' within the area, which means that infestations on public lands must be controlled. Additionally, Parkinsonia is listed as one of the twenty 'Weeds of National Significance' (WONS) which means it has been identified as a weed that is causing significant environmental damage. Parkinsonia was identified in a number of locations within the alignment corridor, particularly along Fitzroy River and the creeklines of the survey area and in the floodplains of these waterways. Zornia was identified at only one site along the highway.

2. SITE PREPARATION

2.1 Vegetation clearing, mulching and re-use

All vegetation will be cleared from the works area and non-weed infested vegetation will be stockpiled. Stockpiled vegetation will not be placed on the very edge of the approved cleared area in order to prevent machinery going outside the cleared area to push the stockpile forward again. Weed infested vegetation will be disposed of at an appropriate site. Burning of the cleared vegetation will not be permitted.

2.2 Topsoil stripping and re-use

Topsoil will be stripped to a maximum depth of 100 mm. Topsoil will be stored in a weed free (as far as possible) area, as close as possible to the area to be rehabilitated. The topsoil will be placed in windrows of less than 1.5m in height and reinstated as soon as possible, to prevent deterioration to the in-situ seeds and maintain seed viability.

3. WEED CONTROL

Adequate control measures will be incorporated to ensure weeds are killed or not transported to other areas. Control measures include removal of weeds to an approved dump site or treatment of weeds such as using herbicide spraying.

Herbicide spraying shall only be carried out by licensed operators and herbicide shall be mixed and applied in accordance with manufacturer's instructions.

Where practicable, weeds should not be removed when they are in flower or seeding.

All machinery shall be free of built up soil and vegetative material before entering and leaving the site to help minimise the transportation of weeds and their seeds.

Exposed areas such as bare batters and borrow pits shall be promptly rehabilitated to reduce the ingress of weeds.

Where works are adjacent to good quality vegetation, weeds within the project area will be removed or killed once a year for 5 years.

4. REVEGETATION THROUGH REGENERATION

4.1 Revegetation objectives

The revegetation objectives are to:

- Ensure roadside stability and minimise ongoing maintenance;
- Ensure that conservation values and biodiversity are protected; and
- Ensure local amenity and aesthetics are enhanced.

4.2 Required vegetation cover

The roadside vegetation should be similar in structure and content to comparable naturally occurring vegetation in the local area and will reflect the vegetation communities present in the road reserve and adjacent bushland. The width of the vegetation setbacks and clearances will be appropriate for the specific location and will be dependent on an assessment of the road design speed, road alignment and the roadside batter slopes.

4.3 Revegetation Techniques

The following rehabilitation works shall be undertaken on areas of disturbed earth requiring rehabilitation:

- Topsoil will be uniformly respread to a minimum depth of 100mm over the area; and
- Area to be ripped to a minimum depth of 200mm deep with rip lines approximately 300mm apart. Where slopes are present, rip lines shall be along contours.

The following rehabilitation work shall be undertaken at borrow/gravel pits:

- Overburden and then topsoil shall be uniformly and evenly spread over the disturbed areas of the pit. Depending on the slope of drainage lines within the pit, it may be necessary to form small swales from the topsoil to reduce erosion velocities and encourage the deposition of seeds.
- The existing pit floor shall be ripped to a depth of 300 – 500mm deep with rip lines between 500 - 800mm apart, if the material in the floor of the pit is able to be ripped. The whole area of the pit, including drainage lines, shall be ripped.
- All stockpiled vegetation shall be spread along the contour and pit floor to help promote seed deposition and further reduce erosion velocities.

5. VEGETATION ESTABLISHMENT PERIOD

The vegetation establishment period will be for at least twelve months following the completion of the works. During this period, the maintenance and monitoring will be undertaken, see Section 6.

6. ONGOING MAINTENANCE AND MONITORING

Maintenance and monitoring of the project shall be ongoing to measure regeneration effectiveness and to control weeds.

6.1 Maintenance and Monitoring

After revegetation works, revegetated areas will be inspected every six months for a total of 24 months to monitor and control weeds and to measure the effectiveness of revegetation works.

Monitoring will comprise the use of criteria. Essentially, this involves visual assessment to ensure the revegetation works have been implemented as planned. Table 2 shall be used as the monitoring guide to assess the success or otherwise of the revegetation plan.

Due to the variable rainfall patterns in pastoral areas, revegetation works may not be successful, despite the use of best management practices.

Table 2: Revegetation Monitoring Guide

Criterion	Target	After three months	After one year	After three years
Mean vegetation foliage cover (%) excluding weeds.	>50	0	20	40
Mean weed foliage cover (%).	<20	<20	<20	<20
Amount of bare soil areas >4m ² (%).	<30	<100	<80	<70