

REVEGETATION PLAN
Great Northern Highway
Ellendale Gravel Extraction Area



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GREAT NORTHERN HIGHWAY, ELLENDALE GRAVEL EXTRACTION AREA

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 Ellendale section of the Great Northern Highway, material extraction from the Ellendale Gravel extraction area.

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

Great Northern Highway 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.

1.3 Project Description

The proposed scope of works will involve extraction of gravel material for road construction works associated with the Ellendale Rehabilitation proposal (SLK 2415.3 – 2435.4). It is proposed to investigate the area delineated on the aerial maps (see images 1 & 2) and locate naturally occurring gravels suitable for the upgrade and seal of the Ellendale section of the Great Northern Highway. The whole area under investigation will not require clearing and excavation but the best available materials will be sourced from within the proposed area. Therefore materials may be extracted from one or several locations within the proposed investigation area. All areas that are cleared and disturbed will be revegetated once gravel extraction is complete.

Temporary Clearing = 10 ha approx.

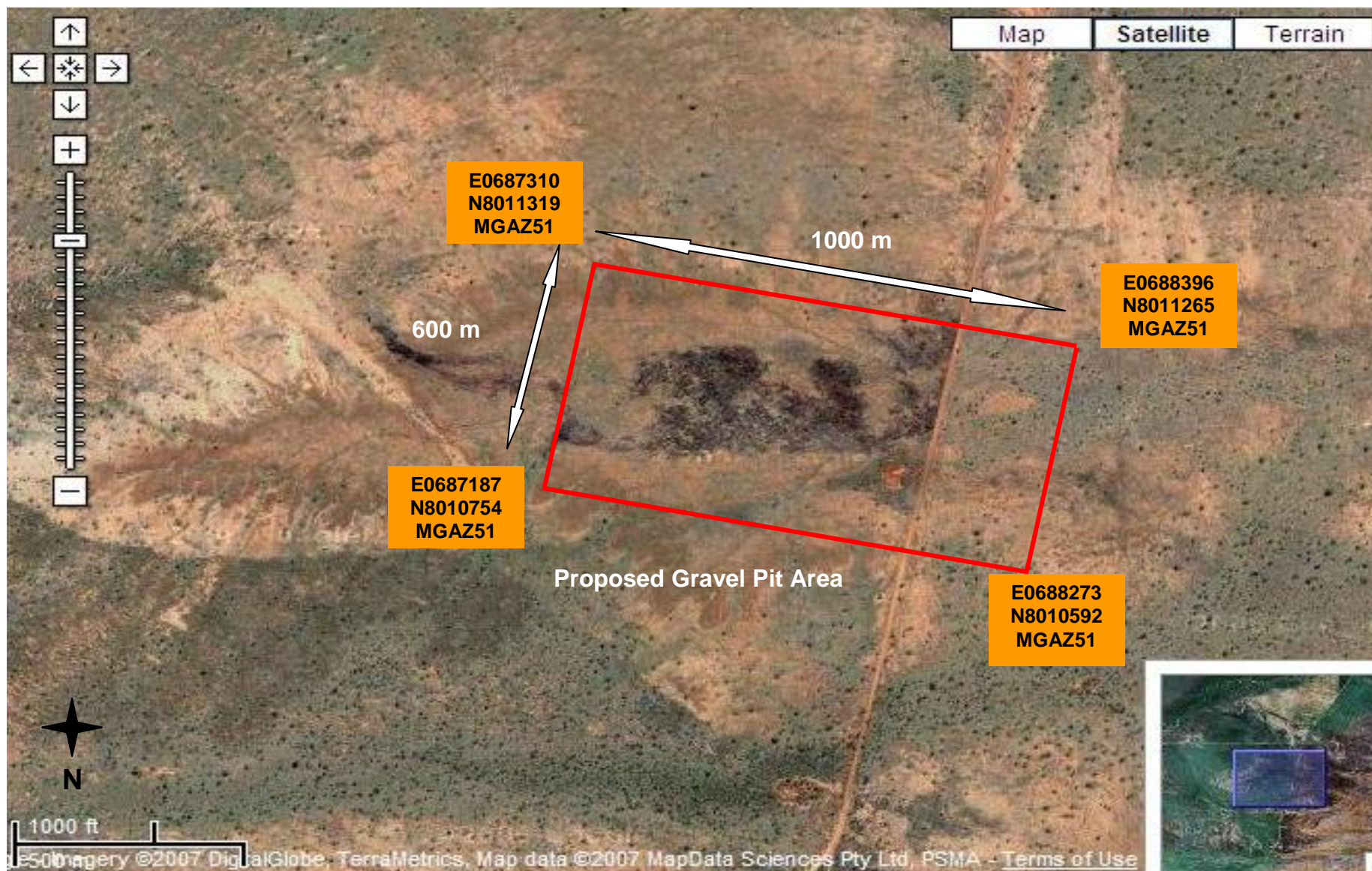
The areas to be rehabilitated are shown in Table 1:

Table 1: Revegetation Area Details

Type	Area
Temporary clearing revegetation	10 hectares
Other revegetation	



Aerial Map 1...Broad Locality Map



Aerial Map 2...Locality Map

1.4 Existing vegetation

Vegetation type, extent and conservation status (after Shepherd et al., 2002) for the Gibb River Road Upgrade:

Vegetation Association Number	Association Description	% Remaining
64	Grasslands, tall bunch grass savanna low tree; baobabs (<i>Adansonia gregorii</i>) , bauhinia & beefwood (<i>Grevillea striata</i> over ribbon grass).	100.0
699	Shrublands, pindan; <i>Acacia eripoda</i> shrubland with scattered low bloodwood (<i>Eucalyptus dicromophloia</i>) & <i>E. setosa</i> over soft & curly spinifex on sandplain.	99.9
700	Shrublands, pindan; <i>Acacia eripoda</i> shrubland with scattered low bloodwood & <i>Eucalyptus setosa</i> over soft & curly spinifex between dunes.	100.0

1.5 Weeds

No Declared Plants were recorded from the survey area.

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 twelve 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