

**VICTORIA HIGHWAY UPGRADING TO
IMPROVE FLOODING IMMUNITY:
GRAVEL / FILL EXTRACTION**

Department of Planning and Infrastructure

**ENVIRONMENTAL ASSESSMENT REPORT
AND
RECOMMENDATIONS**

ENVIRONMENT PROTECTION AGENCY PROGRAM

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ABBREVIATIONS

AHD	Australian Height Datum
DPI	Department of Planning and Infrastructure (NT Government)
DEH	Department of the Environment and Heritage (Australian Government)
EMP	Environmental Management Plan
EPA Program	Environmental Protection Agency Program (within NRETA, within the NT Government)
EPBC	Environment Protection and Biodiversity Conservation Act (1999)
NoI	Notice of Intent
NRETA	Department of Natural Resources, Environment and the Arts (NT Government)
NT	Northern Territory

1 Background Brief

1.1 Environmental Impact Assessment History

The Northern Territory (NT) Department of Planning and Infrastructure (DPI) (the proponent) lodged a Notice of Intent (NoI) with the Department of Natural Resources, Environment and the Arts (NRETA) in June 2005, proposing an upgrade of the Victoria Highway section between 185km and 220km west of Katherine, to improve flooding immunity.

In October 2005, the NT Minister for Natural Resources, Environment and Heritage determined that the proposal would require assessment under the *Environmental Assessment Act* at the level of a Public Environmental Report (PER). The proponent referred the project to the Australian Government Department of the Environment and Heritage (DEH) under the *Environment Protection and Biodiversity Conservation (EPBC) Act (1999)*. The Australian Government determined that the proposal constituted a Controlled Action. The Australian and NT Governments agreed that the project would be assessed in accordance with the Bilateral Agreement.

In June 2006 DPI submitted the PER to the NT Environmental Protection Agency (EPA) Program, and in September 2006 submitted the Supplement to the PER. In October 2006 the Minister for Natural Resources, Environment and Heritage released Assessment Report 56, which concluded:

“The outcome of the environmental impact assessment for this proposal is that the Environment Protection Agency Program is reasonably confident that ultimately the Upgrade can be managed in an environmentally appropriate manner, however information that allows such a conclusion to be reached has not yet been presented. In particular information pertaining to the assessment of the gravel and fill extraction sites has not been provided.

Given that the final location and assessment of the gravel and fill extraction sites for the project has not been included as part of this assessment process, the EPA Program requires that once the final locations are known and assessments are conducted, the information is provided to the EPA Program to complete its assessment of that component of the project.”

A second Supplement providing the information on proposed gravel and fill extraction sites was lodged with the EPA Program on 27 November 2006 and was circulated to relevant NT Government agencies for comment. This report now represents the EPA Program's assessment of the outstanding gravel and fill extraction component of the Victoria Highway Upgrade proposal. It is based upon information provided in the second Supplement and comments received from Government agencies.

1.2 Major Issues

The principal environmental issues associated with the gravel and fill extraction sites are:

- risks to Gregory National Park's natural or cultural values;
- potential erosion and sedimentation of disturbed soils;
- disturbance of tributaries of Sandy Creek and their associated riparian ecology;
- potential impacts on threatened fauna species;
- potential disturbance of sites of heritage significance;
- weed management;
- appropriate rehabilitation of the site post-extraction;
- dust suppression; and
- monitoring, auditing and ensuring the contractor implements and complies with all requirements arising from the PER, Assessment Reports and Environmental Management Plan.

1.3 Conclusion / Summary

Based on its review of the second Supplement the EPA Program considers the risk of unacceptable environmental, social or heritage impacts is low arising from the operation of the gravel and fill extraction areas. This is provided that all environmental commitments and recommendations detailed in the following reports are implemented and managed under an Environmental Management Plan (EMP) and are subject to regular compliance auditing and reporting:

- the PER;
- the first Supplement;
- Assessment Report 56;
- the second Supplement;
- this report; and
- the final Request for Tender document.

The EMP is to be submitted to the EPA Program for approval prior to commencement of the proposed operations.

2 Project Description

The proposed extraction site is contained within the greater area colloquially identified in the first Supplementary Report as "Little Italy" and is shown below in Figure 1. The extraction site is located to the south of the Victoria Highway, from a point approximately 2.3 km east of Sandy Creek and adjacent to the turn-off to Coolibah Station. The extraction site is located south east of Billycan Trap Yard and can be currently accessed by a 4WD track. The northern most part of the extraction site is 5.7 km south of the Victoria Highway. The total area of the proposed gravel and fill extraction area is 296 Ha. Extraction is planned to be carried out over two dry seasons, with the majority of the fill being extracted in the first dry of 2007.

The area has been previously tested for gravel (probably during Victoria Highway construction 15 years ago) and a portion of the northern section of the gravel and fill extraction area has been previously disturbed by gravel extraction.

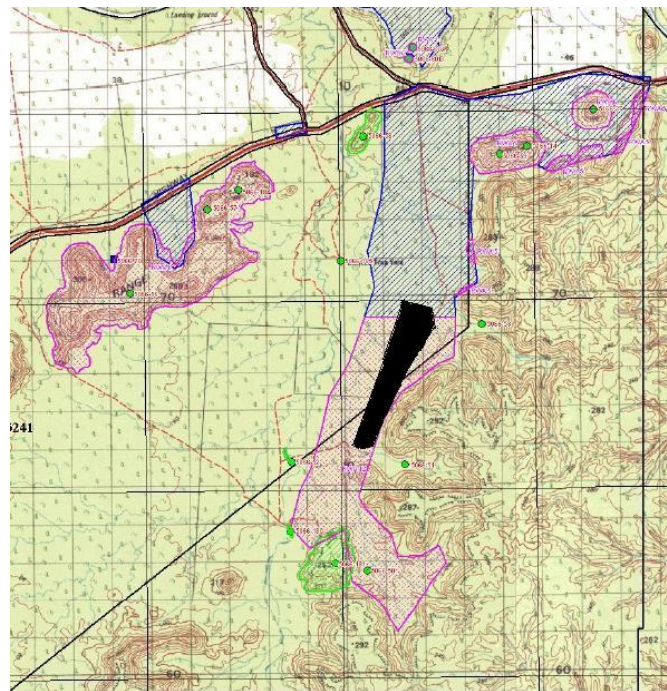


Figure 1 - Location of Gravel and Fill Extraction Site within the Overall “Little Italy” Site

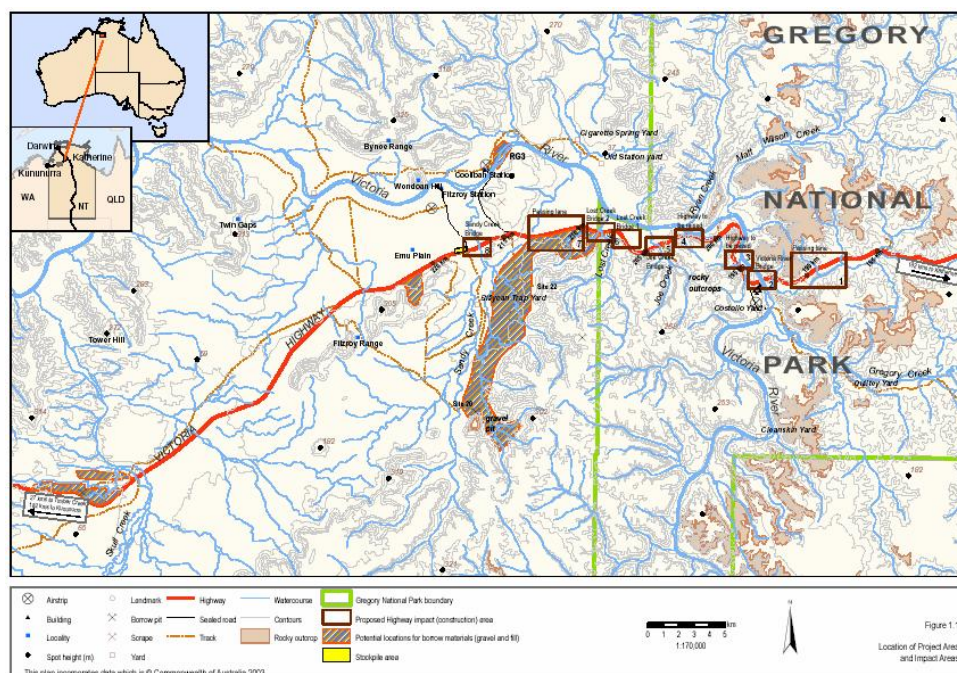


Figure 2 - Location of Victoria Highway Upgrade Project in relation to Gregory National Park (figure from the PER)

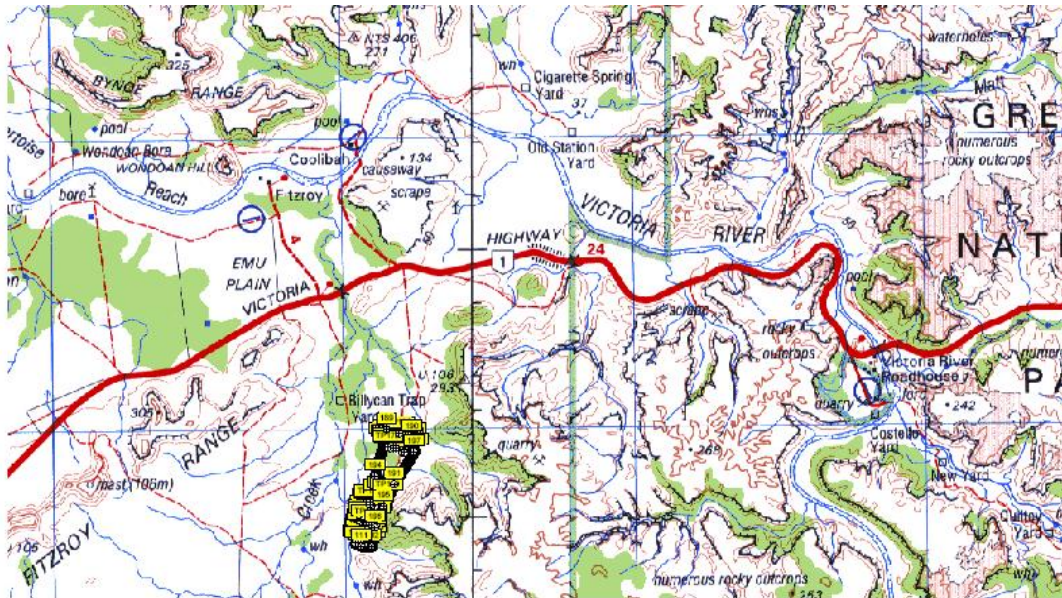
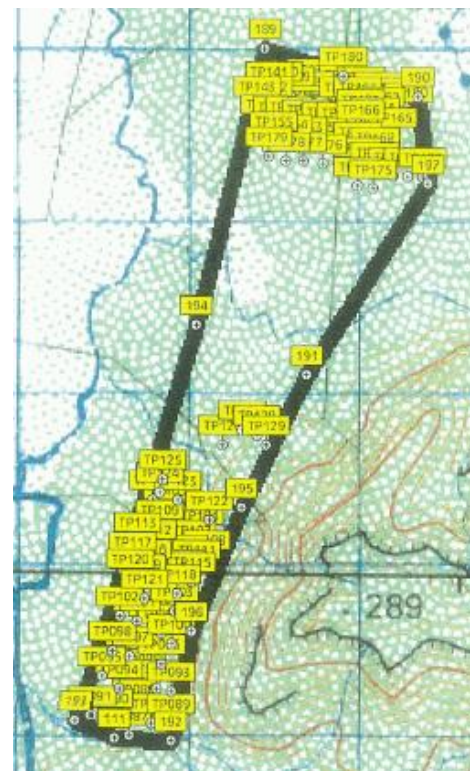


Figure 3 - Location of Gravel and Fill Extraction Site relative to Victoria River and the Floodplain Region

Figure 4 - Area 3 in the north (upper area) of the above extraction site and Area 2 in the south

The site is contained within NT Portions 2917 and 3241, which is Aboriginal Freehold land, owned by the Ngaliwurru/Nungali and the Wanimyn Aboriginal Land Trust. The Victoria River Crossing area is part of Wardaman country, which stretches from Flora west of Katherine to Timber Creek. Negotiations are currently underway with traditional owners regarding the price to be paid for the extracted resource.

The extraction area is gently sloping, sited at an altitude of 40 to 50 m above sea level at the foot of slopes of Stokes Range, which extend between 50 m and about 220 m AHD (Australian Height Datum). From that point, the escarpment reaches a further 60 to 80 m vertically. Tributaries of Sandy Creek bisect the proposed extraction area, draining the western aspect of the Stokes Range.



2.1 Quantities of Materials Required for Roadworks

The gravel and fill requirements for the proposal are:

- 20,000 m³ of gravel for the flood plain project;

- 30,000 m³ of gravel for strengthening and widening, making a total of 50,000 m³ of gravel; and
- 350,000 m³ of fill material.

These volumes are compacted cubic metres on the road.

Test pits for this project were excavated at 108 locations, spaced approximately 100m apart, using a D6 bulldozer. The test pits were concentrated within two clusters: Area 3 in the north covers an area of approximately 52 hectares and Area 2 in the south covers approximately 76 hectares (refer Figure 4). Area 3 is proposed for the extraction of gravel and fill. The additional fill material required will be taken from Area 2. The excavation is expected to be between 0.6 to 1.5 metres deep in both the fill and gravel areas. From within the two areas approximately 55Ha total area will be required to supply the 400,000 m³ of material needed for the project.

2.2 Sacred Site Clearances

Traditional Owners have approved the extraction of gravel and fill material from the extraction site. The Aboriginal Areas Protection Authority has issued an Authority Certificate providing sacred site clearances for the entire area of interest.

3 Environmental Assessment

3.1 Risks to Gregory National Park's natural or cultural values

Generally, the proposal to obtain gravel from the area identified poses no major risk to Gregory National Park's natural or cultural values. The park lies ~5km east and in a separate catchment area to the proposed extraction areas. However, negotiations with Traditional Owners are still currently underway on the use of the proposed area for extraction, and therefore there is still an element of uncertainty remaining with the preferred site. This uncertainty has led to contingency enquiries by DPI regarding the feasibility of alternative extraction areas within the Gregory National Park.

Consideration of alternative locations beyond that described in the second Supplement is beyond the scope of this report. Any such changes to the proposal however would require a notification, as per section 14(a) of the NT *Environmental Assessment Act (1994)*.

Given the current status of joint management and the impending handover of title to Traditional Owners, any changes that may have an impact on or involvement of Gregory National Park would require sufficient notice to ensure that negotiations between Parks and Wildlife, Traditional Owners and DPI can occur within realistic timeframes.

Recommendation 1

If the location or extent of the proposed extraction area is modified from that contained within the second supplement, then according to requirements of the *Environmental Assessment Act (1994)*, notification should be provided of the proposed changes to the Environment Protection Agency Program.

3.2 Dust

There is concern regarding potential safety issues that may arise from dust obscuring visibility for traffic on the Victoria Highway generated by the extraction and transport operations associated with the project.

NRETA stated that the current proposal did not address the dust concern adequately; with no proposal to seal the haul road or construct slip lanes. It is expected that the equivalent of in excess of 9,000 triple road train trips per year would occur on the roads between the extraction and construction sites. This is in addition to expected large increases in heavy armoured traffic associated with activity as part of the Australia-US Joint Combined Training Centre initiative commencing at the Bradshaw Field Training Area in May 2007.

The Second Supplement included the following provisions relating to dust control:

- *Access roads (would be constructed to)... pass through gravelly areas as well as some weaker clayey soils. Weak clayey areas will likely need some gravelling to improve bearing capacity and reduce dust generation. The gravel will be provided from the extraction site.*
- *Trucks will be loaded to the legal ordinance loading and will not be covered unless dust becomes an issue. There will be no spillage of material since there will be no overloading and hence adequate freeboard will be maintained.*
- *A dust shaker will be installed on the access road towards the exit to the highway if required to remove excessive dust and any rocks that may inadvertently be caught between the tyres and/or trapped on the bodies of the trucks and trailers.*

Earlier comments on the PER had queried whether water would be used for dust suppression, and recommended this occur during wind periods over 5 knots. No indication was provided in the second supplement that groundwater bores would be sunk or surface water utilised to support the extraction operation. Accordingly there is uncertainty on whether the use of water as a dust-control method is proposed. Refer to section 3.6.

Recommendation 2

The environmental management plan must include both a monitoring and contingency program to ensure proposed dust control methods are implemented in the event that dust becomes a safety or nuisance issue.

3.3 Vegetation and Riparian Buffers

Flora surveys of the proposed extraction areas were carried out under contract by the Land and Water Division of NRETA, assessing site vegetation, with particular focus on any potential species of conservation significance.

Although the PER study identified 13 species recognised as significant, the majority of associated habitats are confined to locations not proposed for development, therefore no substantial impact is expected. Species found in habitats near the areas proposed for development, occur in representative habitats widely distributed throughout the Top End, and again no significant threat is anticipated.

The two species with the highest threatened status in the broader region include *Gleichenia sp. Victoria River* and *Adiantum capillus-veneris* both of Vulnerable IUCN status. The two species are restricted to habitats on permanent springs at bases of sandstone cliffs. Given no development is proposed to occur in these habitats, no direct threat is envisaged as a consequence of the proposed project.

Riparian corridors have different species compositions to that of floodplains. The riparian areas provide significant wildlife habitat, for both breeding and non-breeding purposes. During the dry season, any pools present provide important water sources, although it appears that few pools remain in any of the tributaries of the impact area during the mid to late dry season. Some of the larger trees of drainage lines are more likely to be in “fire shadows” and contain hollow-bearing trees; and hence provide important roosting and/ or breeding locations for bats, birds and small mammals such as possums.

The flora report at Appendix B of the second Supplement stated that the clearing of native vegetation would be compliant with NT Land Clearing Guidelines (2002). Tributaries to Sandy Creek represent 3rd or 4th order seasonal waterways, and would thus attract a recommended 100m riparian buffer either side of the creek banks, according to the guidelines.

Recommendation 3

A 100m riparian buffer should be retained either side of any seasonal drainage lines within the extraction areas.

3.4 Archaeology

The Archaeology Report at Appendix A of the second Supplement referred to tributaries of Sandy Creek bisecting the general area of proposed excavation. Heritage Conservation Services, NRETA, commented that there is a high likelihood that sub-surface and surface archaeological materials would be located along the creek zone. It recommended that an exclusion zone be implemented along the creek zone to avoid impacts to archaeological places and objects protected under the Heritage Conservation Act 1991. In keeping with Recommendation 3, a 100m buffer zone is

recommended for either side of the creek to be excluded from any major earth moving activities.

Archaeological sites are protected under NT *Heritage Conservation Act* and an approval is required from the Minister for Natural Resources, Environment and Heritage to disturb these sites.

3.5 Soil Conservation

The proposed extraction area is located within the Sandy Creek sub-catchment which directly discharges into the mid reaches of Victoria River. Victoria River contains up to three fish species that are listed as Threatened under the EPBC Act, and is therefore considered to be an ecologically sensitive habitat. The Northern Land Council (NLC) commented that if not managed correctly, the proposed extraction operation has the potential to increase sediment (and other pollutant) loads to downstream waterways which could adversely impact upon the water quality and aquatic ecological health of Sandy Creek and potentially, the mid reaches of Victoria River. Accordingly, it is important that the proponent identifies, understands and addresses all water quality impacts that may arise from the proposal.

The NLC requested that the DPI identify and address water quality impacts in the site-based environmental management plan with management measures including:

- Turbidity and suspended sediment monitoring of sites downstream and upstream of the extraction site (if water is present in Sandy Creek and its tributaries). Turbidity and suspended sediment measurements should be compared to the ANZECC 2000 Water Quality Guidelines (for the protection of ecosystems).
- Construction of silt fence(s) and sediment basin(s) downstream of the extraction site.
- Develop and implement a sediment and erosion control plan.

NRETA commented that contract documents should require plans detailing erosion and sediment control measures to be implemented both during and post construction. These plans should be included in an Environmental Management Plan (EMP) for the extraction area.

The second Supplement states that the extraction segments would be designed in such a way as to facilitate autonomous drainage to a single outlet. This outlet would incorporate a permanent sedimentation basin designed with reference to the “blue book” (Managing Urban Construction, Soils and Construction – Landcom, Vol 1, 4th Edition, March 2004). These basins are to be maintained and cleaned out by the extraction contractor as part of their contract obligations for the first twelve months after construction. After that period DPI will take over the maintenance until the rehabilitation is complete.

Although it is likely that measures contained in the 'blue book' would satisfy the concerns of NRETA and the NLC, their details were not presented in the PER or the Supplement documents.

Recommendation 4

An erosion and sediment control plan is to be developed as part of the environmental management plan (EMP) process and implemented during and post gravel extraction activities. The EMP should include a monitoring program for turbidity and suspended sediment at sites downstream and upstream of the extraction site (if water is present in Sandy Creek and its tributaries). ANZECC 2000 Water Quality Guidelines (for the protection of ecosystems) should be utilised as triggers levels to adaptive management responses.

3.6 Water Management

The second Supplement provides no discussion on water use issues specific to the proposed extraction activities. These aspects should be fully addressed in the site-based Environmental Management Plan.

Previous advice from NRETA has indicated that any extraction of surface water for construction or any other use associated with this project will require a Surface Water Extraction Licence issued under the Water Act. Amounts extracted will be required to be reported to the Controller of Water Resources. Ground water extraction from any bore that is not located within the road reserve will require express permission from the land holder.

Recommendation 5

If groundwater or surface water extraction is proposed to be used as part of the gravel extraction operation or in dust suppression activities details should be included in the Environmental Management Plan for the project. Details should include an assessment of any existing or proposed bores' water quantity and quality as well as potential drawdown effects.

3.7 Weed Management

A potential impact of the extraction operations potentially include the introduction and increase in weed/pest numbers in the area. DPI state that extraction would be in accordance with DPI environmental clauses for borrow pits and rehabilitation, and that operation and rehabilitation would be in accordance to best practice techniques.

Standard practice to control weed spread involves the installation of a wash down facility to the entry to the highway. DPI has rejected this suggestion by stating:

The risk of weed seed transportation from the fill and gravel pit is very low. The seed bank will be contained within the topsoil and overburden strata and will be contained within the site. The access track will be wide enough to prevent the vehicles from entering unmade sections of the paddock eliminating tyre pick-up and transportation.

It is therefore not proposed to install a wash down facility at the entry to the highway. Such an installation, if required would produce significant environmental issues in itself, in that the supply and disposal of water would be very difficult. In this instance, the environmental risks associated with the wash down facility would far outweigh its possible benefits.

Given the uncertainty as to whether groundwater bores are to be included in the extraction proposal, alternative weed management techniques may be more appropriate.

Recommendation 6

A Weed Management Plan is to be drafted in consultation with the Weed Management Branch of NRETA and included in the Environment Management Plan. The Plan should include but be not limited to: identification, marking and treatment of weeds prior to vehicles initially entering extraction areas, and subsequent avoidance of infested areas; weed management of progressively rehabilitated areas; and inclusion of a 5-year post-extraction monitoring and weed treatment program.

3.8 Fauna

The second Supplement states that: “Based on the outcome of the fauna studies undertaken as part of the PER, it is most unlikely that a species of significance will be encountered in the extraction areas, and therefore a fauna study will not be necessary”. The NLC noted that the first Supplement made a commitment to undertake additional fauna studies on the impact of extraction activities on threatened and non-threatened species once the actual location of the gravel extraction area is defined.

The fauna impact surveys conducted for the PER indicate that within the broader project area, there are approximately 154 terrestrial vertebrate species, of which 145 are native, and 9 are introduced. Sixteen threatened terrestrial species listed under the EPBC and / or TPWC Act exist, or potentially exist, in the project area. Of these 16 terrestrial species, one species (Star Finch) has been recorded within woodland of similar type as in the project area and within ~5km. Additionally, eight terrestrial vertebrate species that are classified as Near Threatened on a regional level have been recorded in the broad vicinity of the project area (Horner and Archibald 2005). Four of these species (Bush Stone-Curlew, Red-Tailed Black Cockatoo, Western Chestnut Mouse and Pale Field Rat) are known to reside in woodland areas.

Given that the dominant vegetation community type within the proposed extraction area is woodland, there is the potential for woodland dwelling species, including the Near Threatened species cited above, to exist in the area. It is therefore recommended that the proponent:

- undertake a fauna/habitat survey of the extraction area to determine the presence of species of conservation significance;
- depending on the outcome of the survey, incorporate specific habitat requirements for species of conservation significance in the EMP and rehabilitation plan; and
- ensure that employees and contractors are aware of any species of conservation significance in the area (as part of site induction).
-

Pest animals including the domestic mouse and black rat have the potential to reach plague proportions, and can compete with native species for food and cause damage to infrastructure such as cables. Mitigation measures proposed include the preparation of a Waste Management Plan to ensure wastes on site are appropriately managed to control the spread of pest species.

Recommendation 7

The proponent is to undertake a fauna/habitat survey of the extraction area to determine the presence of species of conservation significance. Depending on the outcome of the survey, specific habitat requirements for species of conservation significance are to be incorporated into the Environmental Management Plan and rehabilitation plan. Employees and contractors should be made aware of any species of conservation significance in the area (as part of site induction).

3.9 Rehabilitation

DPI has proposed that progressive rehabilitation will be carried out by the extractive contractor as each of the extraction area segments becomes exhausted. The previously stockpiled overburden and topsoil is proposed to be pushed back to an even thickness over the exhausted areas of the pit and then the whole area will be deep ripped to 400 mm deep.

Concern was raised that deep ripping to 400mm once topsoil has been spread would mix and bury the topsoil and seed bank in deeper potentially infertile soil layers. Accordingly, scarification of the pit surface prior to returning subsoil to the pit and re-spreading topsoil would seem more appropriate.

Grass species are proposed as the main type of plant material used for the rehabilitation, due to the simplicity of their sowing and their use as a medium to prevent soil erosion. Following scarification, ripping and the spreading of stripped trees grasses and shrubs, selected native grass and shrub seeds are planned to be broadcast or direct drilled over the area.

Rehabilitation details provided in the second supplement failed to mention whether watering would occur of the progressively rehabilitated areas, and if so, from what source. Large tracts of dry, exposed topsoil would be vulnerable to erosion and soil degradation from prevailing winds. Wet-season surface water runoff would also need to be managed to prevent potential accelerated soil erosion.

Recommendation 8

A rehabilitation management plan is to be developed as part of the project's Environmental Management Plan.

3.10 Stakeholder Consultation

As a stakeholder of the project, the NLC has requested the opportunity to review and comment on the project's Environmental Management Plan prior to its final approval. DPI should negotiate directly with the NLC regarding this issue.

3.11 Issue-based Management Plans

The issue-based management plans, as part of the Environmental Management Plan, are to be used for implementing management and monitoring commitments made by the proponent in the PER, the Supplementary Reports and the recommendations detailed in Assessment Report 56 and this Report. As such, it will be a working document for the life of the development and will require continual review in light of operational experience, monitoring results and changed circumstances.

Recommendation 9

DPI should prepare a site-based Environmental Management Plan specific to the extractive operations in "Little Italy". The Plan should address all outstanding issues highlighted in this report and clearly define Principal and Contractor responsibilities. The Environmental Management Plan is to be submitted to the Environment Protection Agency Program for approval before the commencement of operations.