GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 5314/1
Permit Holder:	Great Sand Supplies Pty Ltd
Duration of Permit:	7 June 2013 – 7 June 2018

The Permit Holder is authorised to clear native vegetation subject to the following conditions of this Permit.

PART I –CLEARING AUTHORISED

1. **Purpose for which clearing may be done**
   Clearing for the purpose of road widening and upgrade.

2. **Land on which clearing is to be done**
   Lot 28380 on Deposited Plan 212105 (The Lakes, 6556)
   Lot 28808 on Diagram 32848 (The Lakes, 6556)
   Lot 335 on Deposited Plan 72927 (Woottating 6562)

3. **Area of Clearing**
   The Permit Holder must not clear more than 0.73 hectares of native vegetation within the area shaded yellow on attached Plan 5314/1.

4. **Application**
   This Permit allows the Permit Holder to authorise persons, including employees, contractors and agents of the Permit Holder, to clear native vegetation for the purposes of this Permit subject to compliance with the conditions of this Permit and approval from the Permit Holder.

5. **Compliance with Assessment Sequence and Management Procedures**
   Prior to clearing any native vegetation under conditions 1, 2 and 3 of this Permit, the Permit Holder must comply with the Assessment Sequence and the Management Procedures set out in Part II of this Permit.

PART II – ASSESSMENT SEQUENCE AND MANAGEMENT PROCEDURES

6. **Avoid, minimise etc clearing**
   In determining the amount of native vegetation to be cleared authorised under this Permit, the Permit Holder must have regard to the following principles, set out in order of preference:
   (a) avoid the clearing of native vegetation;
   (b) minimise the amount of native vegetation to be cleared; and
   (c) reduce the impact of clearing on any environmental value.

7. **Dieback and weed control**
   When undertaking any clearing or other activity authorised under this Permit, the Permit Holder must take the following steps to minimise the risk of the introduction and spread of *weeds* and *dieback*:
   (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
   (b) shall only move soil in *dry conditions*;
   (c) ensure that no *dieback* or *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared; and
   (d) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

8. **Management plan (offset)**
   (a) The Permit Holder must implement and adhere to the "Management Plan for Clearing – Proposed Upgrade to Goods Road, The Lakes. 25 March 2013".
   (b) If it is necessary to modify the "Management Plan for Clearing - Proposed Upgrade to Goods Road, The Lakes. 25 March 2013", then the Permit Holder must provide that modified Management Plan to the CEO for the CEO's approval.
   (c) The modified Management Plan must not be implemented until approved by the CEO.
   (d) An approved modified Management Plan supersedes any previous Management Plan.

PART III - RECORD KEEPING AND REPORTING

9. **Records must be kept**
   The Permit Holder must maintain the following records for activities done pursuant to this Permit.
   (a) In relation to the clearing of native vegetation authorised under this Permit:
      (i) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings;
      (ii) the date that the area was cleared; and
      (iii) the size of the area cleared (in hectares).
   (b) In relation to the management and offset of areas pursuant to condition 8, a description of the activities undertaken in accordance with the "Management Plan for Clearing - Proposed Upgrade to Goods Road, The Lakes. 25 March 2013".

10. **Reporting**
   (a) The Permit Holder must provide to the CEO on or before 30 June of each year, a written report:
      (i) of records required under condition 9 of this Permit; and
      (ii) concerning activities done by the Permit Holder under this Permit between 1 January to 31 December of the preceding calendar year.
   (b) If no clearing authorised under this Permit was undertaken between 1 January to 31 December of the preceding calendar year, a written report confirming that no clearing under this permit has been carried out, must be provided to the CEO on or before 30 June of each year.
   (c) Prior to 7 March 2018, the Permit Holder must provide to the CEO a written report of records required under condition 9 of this Permit where these records have not already been provided under condition 10 (a) of this Permit.

DEFINITIONS

The following meanings are given to terms used in this Permit:
dieback means the effect of *Phytophthora* species on native vegetation;
dry conditions means when soils (not dust) do not freely adhere to rubber tyres, tracks, vehicle chassis or wheel arches;
fill means material used to increase the ground level, or fill a hollow;
mulch means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation;
weed/s means any plant –
   (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or
   (b) published in the Department of Environment and Conservation Regional Weed Assessments, regardless of ranking; or
   (c) not indigenous to the area concerned.

M Warnock
MANAGER
NATIVE VEGETATION CONSERVATION BRANCH

Officer delegated under Section 20
of the Environmental Protection Act 1986

16 May 2013

MANAGEMENT PLAN for CLEARING

PROPOSED UPGRADE to GOODS ROAD, THE LAKES

SHIRE OF MUNDARING

GREAT SAND SUPPLIES



25 March 2013

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MANAGEMENT OF CLEARING - PROPOSED UPGRADE TO GOODS ROAD, THE LAKES

1.0 PURPOSE

The proposed clearing is to widen and seal the existing gravel on Goods Road, The Lakes to provide an extension of the existing seal along Flynn Road.

The widening is proposed to be 1 – 3 metres along the northern side of the road to increase safety and reduce environmental risk.

The sealing of the road is to service an approved sand excavation on Lot 5 Abercorn Road, The Lakes, in addition to providing access to clay excavation proposed by Brikmakers Pty Ltd.

The Brikmakers proposal for clay excavation on Lot 5 Abercorn Road is currently being assessed by the Western Australian Planning Commission. The Shire of Mundaring has recommended for approval of the clay excavation.

An offset planting program is attached at the end of this document.

Construction will be completed in accordance with the specifications prepared by McDowell Affleck Engineers.

Traffic management will be completed to the program outlined by Carrington Traffic Services.

2.0 BACKGROUND - PROPONENT

The proponent is Great Sand Supplies Pty Ltd who operate an approved sand excavation on Lot 5 Abercorn Road, The Lakes.

The sand excavation was approved by the State Administrative Tribunal on 30 June 2008, (2008 WASAT 151) for AGC Earthmoving Group Pty Ltd. Subsequently, during changes to company structure, the excavation is now owned and undertaken by Great Sand Supplies Pty Ltd. Access to Lot 5 along Goods Road was permitted by DEC.

As part of the approval, the transport route to Goods Road along Flynn Road has been sealed by Great Sand Supplies, to the satisfaction of DEC, DOW, Water Corporation and Shires of Mundaring and Northam.

Access to Lot 5 involved the upgrade of the section of Goods Road now proposed to be sealed, for which Clearing Permit (CPS 4046/1) was issued for 0.45 ha of Goods Road.

CPS 4046/1 was appealed by an adjoining sand excavator, but that appeal was dismissed by the Minister for the Environment on 13 June 2011 (Appeal Number C010 of 2011).

3.0 LOCATION

The proposed clearing of 0.7 ha along the edge of 2.7 km of Goods Road at the Lakes. See Figures 1 - 4.

Goods Road lies within the Helena Catchment that drains to Mundaring Weir, 16 kilometres away.

4.0 SITE DESCRIPTION

4.1 Geology and Geomorphology

The site lies on the southern side of a broad east west valley draining from east to west. Elevation of the local land surface varies around 230 - 240 metres AHD.

The land surface is sandy, on the southern edge of a palaeochannel filled with sand and clay over a granite basement at depths of up to 60 metres.

The site lies within the Helena Catchment which has been studied and described in *Department of Water 2007, Helena Salinity Situation Statement, Technical Resource WRT 34*. The geology is described in this document.

The age of the sands are thought to be Eocene. Capping the sand in small patches in the north east is a thin and intermittent laterite duricrust.

4.2 Soils

The soils are sands which form the top of the palaeochannel sediments. The sand has little topsoil, being a thin layer of greyish and gravelly sand overlying light brown sand.

Under vegetation there is a thin slightly brown grey upper surface that has been partly added to by the addition of small amounts of organic matter that colours the top 300 mm of sand light grey.

4.3 Climate

The local area has hot summers with cool moist winters. There are no nearby weather stations, but Northam provides some indication of the climate.

Average monthly maxima range from 17°C (July) maxima to 34°C (January) with average monthly minima ranging from 5°C (July) to 17°C (January).

Rainfall for the area is 433 mm for Northam but this is inconsistent with the local area of Bakers Hill, which has 586 mm and is likely to be more representative. On site the rainfall may be even higher.

Winds are from the east on summer mornings and south west in the afternoons. Winter winds are more variable. Some strong northerly winds occur ahead of weather changes and cause most of the wind risk.

4.4 Hydrogeology

The land surface varies from 230 – 240 metres AHD.

The hydrogeology is discussed in

- Department of Water 2007, Helena Salinity Situation Statement, Technical Resource WRT 34.

The deep sand and clay lies within a palaeochannel cut into the granite basement. The basement, which is granite saprock on granite, is bottomed in several drill holes sunk by Department of Water.

The palaeochannel is filled in the lower parts by groundwater. The groundwater is fresh to brackish on top of the aquifer and becomes more saline with depth. Water recharge and movement appears to be mainly from the top of the aquifer with the lower parts of the aquifer experiencing lesser water flow.

The water table is deep below the site and there are no expressions of wet conditions at the surface and no drainage lines or surface flows crossing the proposed clearing.

The water table is deep at 212.5 metres AHD in a nearby bore to the east on Lot 5 which places the water table over 20 metres beneath the site.

There are no expressions of wet conditions at the surface and no drainage lines or surface flows crossing the proposed clearing.

The Department of Water supported the extensive revegetation program conditioned on the approved sand extractive industry located on Lot 5 Abercorn Road. See attachments. The sand excavation is conducted by Great Sand Supplies and is the reason for the proposed widening.

4.5 Vegetation

Vegetation on site

The Flora and Vegetation is described in *Flora and Vegetation Assessment, Proposed Upgraded Goods Road, The Lakes, Landform Research, August 2012.*
The vegetation to be cleared is dominantly scattered trees along a section of Goods Road in a strip up to 3 metres wide.

The road was walked and all trees to be cleared listed for location, type and chest diameter. The results are shown in Table 1A of the Flora and Vegetation Assessment dated August 2012.

Community Types

The site consists of scattered Wandoo trees over an understorey dominated in places by *Stirlingia latifolia, Bossiaea eriocarpa, Dryandra lindleyana (Banksia dallanneyi)* and *Hibbertia huegelii.* See Figures 5 and 6.

The vegetation along the easement would have originally consisted of **Open Low Jarrah and Wandoo Woodland** of relatively sparse form because of the reduced availability of moisture during summer resulting from very porous soils. The understorey is all less than 0.5 metres and in some locations is very restionaceous with reduced dicotyledons.

Mattiske EM and Havel J J, 1998, Regional Forest Agreement Vegetation Complexes, Perth, Western Australia, list the vegetation as ;

> Pindalup (Pn Vegetation Complex; Open forest of *Eucalyptus marginata* subsp *thalassica-Corymbia calophylla* on slopes and open woodland of *Eucalyptus wandoo* with some *Eucalyptus patens* on the lower slopes in semi-arid and arid zones.
>
> The vegetation is classified by *Beard J, 1973, in vegetation Survey of Western Australia 1: 1 000 000, Swan sheet, University of Western Australia* as;

Jarrah Marri Forest with Wandoo

In the Perth Sheet mapping Beard classified the vegetation as Jarrah – Wandoo Woodland. (Beard, 1979, The Vegetation of the Perth Area Western Australia 1 : 250 000 Series, Vegmap).

In the NRM mapping through the Department of Agriculture and Food database the vegetation is listed as below.

Western Half of Goods Road

Vegetation Type 1891 Type 2, Description - Medium forest: Jarrah and Marri on laterite with Wandoo in valleys and sandy swamps of Teatree and Banksia.

Vegetation Association – 3003.1, Medium forest: Jarrah and Marri on laterite with Wandoo in valleys and sandy swamps of Teatree and *Banksia*.

Eastern Half of Goods Road and Powerline Easement

Vegetation Type 1042, Description - Medium woodland: Marri, Wandoo.

Vegetation Association – 4.4 – Medium woodland Marri and Wandoo

- **Road Verge Clearing**

On the road verges to be cleared the understorey is relatively sparse being is all less than 0.5 metres and in some locations is very restionaceous with reduced dicotyledons.

The area to be cleared is a narrow edge strip along the road. In most cases there is no understorey or ground cover, but rather the stems of trees.

In the occasional places where there is any understory there are elements from the species listed.

A list of the trees to be taken is included in the Flora and Vegetation Plan dated August 2012.

- **Powerline Easement**

The road is proposed to run along the powerline easement which already has a track located on it. This disturbance is approximately 8 metres wide over a length of 600 metres which equates to 0.48 ha. However, considering an access track already exists along the alignment, the amount of clearing required is closer to 0.33 ha.

The vegetation along the powerline is low shrubs and groundcovers, maintained by Western Power who have previously removed all trees and taller and medium shrubs.

The area to be cleared is a narrow edge strip along the road. In most cases there is no understorey or ground cover, but rather the stems of trees.

In the occasional places where there is any understory there are elements from the species listed.

Along the power line there are no trees because they have been cleared, and only ground cover and low shrubs remain.

A species list of the vegetation to be taken is included in the Flora and Vegetation Plan dated August 2012.

Vegetation Condition

The existing road verges have been subjected to edge effects and intermittent clearing of understorey for a number of years with little remaining. What does remain is classed as being in Degraded Condition. See Figure 5.

The powerline alignment has been periodically cleared of all taller vegetation. Overall the vegetation is listed as Good, but ranges from Degraded to Very Good. See Figure

Significant Vegetation

No Declared Threatened, Priority Species, Significant flora or vegetation communities were identified during the site inspections.

No plant taxa or vegetation communities are listed as a Threatened Ecological Community or taxa under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. The species present are common species. See the Flora and Vegetation Assessment dated August 2012.

5.0 PROPOSAL AND IMPACT

5.1 Disturbance

In total approximately 0.7 hectares of vegetation is proposed to be cleared. A Clearing Permit (CPS 4046/1) has been applied for to cover the proposed clearing and excavation.

The end use is to be a bitumen road suitable for the existing truck traffic from the approved sand excavation and a potential clay pit on Lot 5 Abercorn Road.

- **Powerline Easement**

The road is proposed to run along the powerline easement which already has a track located on it. This disturbance is approximately 8 metres wide over a length of 600 metres which equates to 0.48 ha.

Considering an access track already exists along the alignment, the amount of clearing is closer to 0.33 ha.

The vegetation along the powerline is low shrubs and groundcovers, maintained by Western Power who have previously removed all trees and taller and medium shrubs. See the attached Figure 6.

- **Road Widening**

2.7 km of Goods Road is required to be widened by 1 – 3 metres. In this section there is little or no understory to be cleared apart from small patches in degraded condition. This represents approximately 0.3 - 0.4 hectares of scattered trees to be cleared. See the attached Figure 5.

6.0 PROPOSED MANAGEMENT OF CLEARING DISTURBANCE

6.1 Summary

1 Great Sand Supplies Pty has applied for a Clearing Permit, CPS 5314/1.

2 Officers from DEC have inspected the proposed clearing.

3 The alignment of Goods Road has been selected to minimise clearing. Large and potential habitat trees are proposed to be retained.

4 Logs, hollows and other vegetation to be cleared will be placed in disturbed adjoining forest to assist in habitat creation.

5 An offset package is to be developed between Great Sand Supply and DEC to compensate for the clearing of approximately 0.7 hectares.

6.2 Concept Road Construction

Construction will be completed in accordance with the specifications prepared by McDowell Affleck Engineers.

Traffic management will be completed to the program outlined by Carrington Traffic Services.

Photographs of the existing portion of Goods Road are sown in Figure 5. Goods Road is a gravel road that is formed by grading into the natural surface and then by the addition of gravel.

On gently rises the road is set slightly below natural ground level, but on the lower elevations the road surface is at or just above the natural surface.

When the vegetation is cleared, the topsoil will be removed as described 6.3 and 6.4.

The substandard subsoils will be pushed from the cleared ground and retained for rehabilitation works on site to prevent the risk of dieback being spread if present as described in 6.4.

Gravel will be imported from Lot 5 and formed across the existing and new portion of road as sub-base and base.

The laid bases will be compacted and rolled using the addition of water to achieve better binding.

The base of the road is then to be graded and formed to comply with the design criteria for sub-base, base and prepared for sealing.

Sealing can only be completed in relatively dry conditions and therefore is proposed to be completed prior to winter to prevent the spread of dieback by working with dry soils.

Sealing will be through bitumen with coarse aggregate.

Swale drains and runoff points are to be formed as part of the road construction.

6.3 Treatment of Cleared Vegetation

1. The number of trees and vegetation to be cleared has been minimised. The road is aligned to enable as few trees as possible to be taken. In one part a tree is retained by allowing the two lanes of the road to skirt either side of the tree.

2. Locating one lane of the road along the powerline alignment reduces the number of wandoo trees to be cleared and will necessitate the two lanes of the road being separated as one way lanes.

3. The trees have been examined and where possible the smallest trees and regrowth will be taken, to allow for the preservation of larger, older, trees with hollows and more significant trees.

4. Two trees with hollows were identified during the vegetation survey. The clearing at both locations has been moved the the opposite side of the road to ensure that both tress are protected.

5. Only one tree with a diameter greater than 500 mm will be required to be removed.

6. Logs, timber or hollows will be saved and laid on adjoining areas to provide additional ground habitat.

7. Topsoil and vegetation recovered from clearing will be used to rehabilitate disturbed areas by laying and spreading the fragments on the ground surface.

8. DEC and Great Sand Supplies have developied an offset program to rehabilitate a disturbed area of forest to local native species.

6.4 Treatment of Soil

1. Overburden, which constitutes the top 300 mm plus, is to be transferred to a storage area on Great Sand Supplies land.

2. Soil clearing and reconstruction is to be undertaken in drier months to minimise the potential for spread of dieback spores.

Revegetation - Applicable Legislation / Policies
• *Relevant road construction standards.* • *Clearing Permit CPS 4046/1.*
Commitments to Revegetation Management
• Great Sand Supplies will manage the vegetation as described above. • The weed and dieback polices will be implemented.

7.0 DUST MANAGEMENT PLAN

Excessive dust has the potential to impact on both the workers and the adjoining land.

Dust can originate from a number of operations and may impact on onsite workers, or travel offsite. Potential dust impacts are addressed by reducing the dust generated from the quarrying, processing and transport operations.

Dust emissions fall under the *Guidance for the Assessment of Environmental Factors, EPA, March 2000*. Assessments of the potential dust risk are normally made using the Land development sites and impacts on air quality, *Department of Environmental Protection and Conservation Guidelines, November 1996*. A draft Dust Management Guideline on the development and implementation of a dust management program has just been released by the Department of Environment and Conservation (May 2008). This mainly relates to monitoring.

The category of dust risk is included in *DEC 2011 Guideline for Managing the Impacts of Dust and Associated Contaminants from Land Development Sites, Contaminated Sites Remediation and other Related Activities.* This document is not really applicable to mining because the document relates to sites that do not use any mitigation.

An assessment of the dust risk can be made using the *Land development sites and impacts on air quality*, Department of Environmental Protection Guidelines, November 1996 which reveal that the risk of dust impacting on the closest dwellings is negligible.

Occupational dust associated with the quarrying processes falls under the *Mines Safety and Inspection Act 1994 and Regulations 1995* overseen by the Department of Mines and Petroleum.

Even so there are a number of management actions that can be taken to minimise dust generation or travel and these will be used wherever possible.

The general management actions are summarised below together with the potential dust risk issues that relate to this site. The actions will be used where applicable and as the opportunity presents to minimise dust on this site.

A water tanker will be available on site for watering the road and earthworks area as necessary to minimise dust generation.

Dust could be a potential problem during land clearing and reinstatement, and during excavation and crushing in the summer months.

The generation of dust will be minimised as follows;

1. It has been found that the gravel soils stay partially moist through summer prior to disturbance.

2. Dust is more likely to be generated by traffic across the disturbed and traffic areas during site activities. This will be managed as described in the attached risk table using water to suppress dust in the same manner as all road construction.

3. Perimeter vegetation helps to reduce the speed of the winds entering the property and acts as a filter for airborne dust particles. Belts of vegetation and ridges separate the excavation from surrounding properties. Dust particles fall out from the air as the wind speed drops on travelling through perimeter and other vegetation.

4. All workers will continue to have access to efficient dust protection equipment for use as required.

5. Completed sections of the clearing will be formed and stabilised as soon as practicable to reduce the area of open ground and help reduce wind speed.

6. The disturbance areas will be watered as required to reduce dust generation.

The generation of dust will be minimised by;

ACTIVITY	POSSIBLE RISK SEVERITY and FREQUENCY	BEST PRACTISE OPERATIONAL PROCEDURES	COMMITMENTS ON ACTIVITIES CONDUCTED ON SITE	RISK AFTER MANAGEMENT
GENERAL				
Legislation	----	• Comply with the provisions of the Mines *Safety and Inspection Act 1994 and Regulations 1995* and *Environmental Protection Act 1984.*	• Great Sand Supplies will comply with the Act and Regulations and any Conditions imposed.	----
Buffers	----	• Maintain adequate buffers to sensitive premises.	• There are no close sensitive premises (>500 metres). • The existing road is gravel and will be formed to bitumen seal coat. • Dust particles fall out from the air as the wind speed drops on travelling through perimeter vegetation.	----
Landform	----	• Locate activities behind natural barriers, landform and vegetation.	• This is an existing road and it will not be possible to undertake screening earthworks. • There are no nearby dwellings and the only traffic is quarry traffic and access to one dwelling. • Clearing and reinstating topsoil and overburden will be confined to the drier months, to prevent dieback spread.	----
Landform	----	• Work below natural ground level.	• This is an existing road and it will not be possible to undertake screening earthworks.	----
		• Push overburden and interburden dumps into positions where they can form screening barriers.	• This is an existing road and it will not be possible to undertake screening earthworks.	----
Staging	----	• Design operational procedures and staging, to maximise the separation to sensitive premises.	• The works will be completed as one campaign	----
MANAGEMENT				
Occupation	----	• Provide air conditioned closed cabins on plant as appropriate.	• Mobile manned plant is airconditioned.	----
Monitoring	----	• Provide monitoring and supervision of the processing and other practices on site.	• A monitoring system is proposed. see below "Trigger Conditions".	----
Trigger conditions	----	• Trigger conditions are used to determine when additional dust management is required.	• Most dust generated from land clearing and transport has a very large visible component. • The trigger for dust management is to be the generation of visual dust. • When excessive dust is noted dust management measures will be implemented to treat the dust or manage the situation.	----

			• Great Sands Supplies operates so that visible dust does not normally travel more than 20 metres. • A water truck is available as required.	
Adverse weather	Moderate to high - Can occur on summer mornings	• When winds are sufficiently strong, or other weather conditions are unacceptable, to negate the effects of dust management, operations will cease until conditions improve and compliance can be achieved.	• These adverse conditions are more likely to occur on summer mornings. • This policy is committed to, to minimise impact on adjoining land holders.	Low
Equipment failure	Low - Uncommon	• In the event of dust management not being able to be achieved through equipment failure operations will cease until full capability is restored.	• This is used.	Low
Loading	Moderate - Occasional; about once per hour	• Work in sheltered areas Loading is low impact with a loader and truck.	• A loader will load topsoil and overburden to a truck for movement or the loader will transport the cleared material in the bucket.	Low
Transport	Moderate to high - Occasional; about once per hour	• Cover or wet down loads.	• Transport of overburden and topsoil will either be via road trucks or the loader bucket. The loads are proposed to be covered as necessary if transport along public roads to a rehabilitation area is required. • The access road to Great Eastern Highway, Flynn Road, is sealed.	Low
Complaints	----	• Provide a complaints recording, investigation, action and reporting procedure.	• This is committed to.	----
EARTHWORKS				
Land Clearing	Once	• Schedule activities such as vegetation removal or topsoil stripping at times when the materials are less likely to blow or during suitable wind conditions.	• Normally the stripping of overburden and topsoil and their subsequent use in rehabilitation is undertaken in the drier months when the soils are still moist enough to suppress dust but not wet. • Completed sections of the earthworks will be progressively formed and stabilised as soon as practicable.	Low
ROAD CONSTRUCTION				
Construction	High One campaign	• Excavate and construct using techniques that minimise the crushing or presence of dry matter.	• Most dust is created from traffic. • Reduced speed will be used to minimise dust generation. • Materials will be moistened during disturbance.	Low
Preparation	High During construction	• Ensure that products to be loaded or worked when moist.	• As noted above most dust is created by traffic on the floor of the pit and not the material being excavated.	Low
Haulage	High - Small regular volumes	• Maintain road and hardstand surfaces in good condition (free of potholes, rills and product spillages) and with suitable grades and keep moist.	• Haul routes to stockpiles and the active areas are to be short. • The working areas and roads are wetted down as required with the on site water tanker.	Low

		• Providing speed management on hardstand and the road network.	• This is proposed.	
		• Treat access roads, hardstand and stockpile transport and loading areas with dust suppression sealant, water or seal coat.	• Treatment with water is used as required to minimise dust lift off. • Locate plant and approach with respect to wind directions will be used to minimise impact on operators. • The roads are to be graded as required to minimise dust.	

Dust Management - Applicable Legislation / Policies

- *Guidance for the Assessment of Environmental Factors, EPA, March 2000.*
- *Land development sites and impacts on air quality, DEP, 1996.*
- Department of Environmental Protection Guidelines, November 1996 and *DEC 2008, A guideline for the development and implementation of a dust management plan*

Commitments to Dust Management

- Great Sand Supplies will take the necessary steps to manage and contain dust by implementing and maintaining the Dust Management Plan.

8.0 WATER QUALITY PROTECTION PLAN

8.1 Background

The protection of water, whether groundwater or surface water, is an important part of the management of road works because the site lies within the Helena Catchment that supplies Mundaring Weir.

The working of gravel for road works is a clean operation in the nature of the risk to groundwater. No chemicals are used apart from normal lubricants. Bitumen seal coat chemical characteristics are well known, and they are permitted to be laid in water catchments where they form stable compounds.

Guidance on the quality of water can be found in;

- *Western Australian Water Quality Guidelines for Fresh and Marine Waters, EPA Bulletin 711, 1993.*
- *ANZECC, 1992, Australian Water Quality Guidelines for Fresh and Marine Waters.*

A number of documents provide guidance on the management and disposal of surface water that can lead to waterways, wetlands and underground water systems. These mainly apply to urban development but the methods are also applicable to the road construction.

- *Engineers Australia 2003, Australian Runoff Quality, National Committee on Water Engineering.*
- *Stormwater Management Manual for Western Australia, Department of Environment WA, 2004.*
- *Guidelines for Groundwater Protection in Australia, ARMCANZ, ANZECC, September 1995.*
- *Environmental Protection Authority Victoria Melbourne Water, undated, Urban Stormwater, Best Practice Environmental Management Guidelines*
- *Water and Rivers Commission, 1998, Manual for Managing Urban Stormwater Quality in Western Australia.*

Road construction is a very clean industry using a loader, working directly with road trucks, graders, loaders and other mobile plant. Excavation and road works are some of the few land uses permitted by the *Department of Environment and Conservation in Priority 1 Public Drinking Water Source Areas*, where excavation can occur within 3 metres of the water table.

Documents specific to the mining and construction operations that relate to gravel and sand extraction and road construction include DOW – DMP Water Quality Protection Guidelines for Mining and Mineral Processing;

- *1 Overview*
- *Minesite stormwater*
- *Mechanical servicing and workshop facilities*
- *10 Above-ground fuel and chemical storage*
- *11 Mine dewatering*

A list of Best Practice management actions which are contained in the above documents is provided below. The actions will be used where applicable and as the opportunity presents to maintain water quality on this site.

- Contain all stormwater on site.
- Maintain all plant in good condition
- Maintain road, earthworks and hardstand surfaces in good condition (free of potholes, rills and product spillages) and with suitable grades, and direct runoff to trapping and filtration devices

- Recycle water through sediment settling ponds if possible
- Provide an approved serviced portable toilet system
- There will be no vehicle washdown on site
- Implement a site code outlining requirements for operators and drivers
- Avoid spillages on roads and clean up promptly
- Conduct training programs on pollution minimisation practices
- In the event of a spill or adverse incident, activities will be stopped in that area until the incident is resolved
- All significant adverse incidents are to be recorded, investigated and remediated. A record is to be kept of incidents and the Department of Water, Water Corporation, Local Authority and Department of Environment and Conservation notified within 24 hours
- See Refuelling and Maintenance for additional procedures

8.2 Water Source

Water is to be sourced from on site supplies, from a Licensed bore on Lot 5 Abercorn Road operated by Great Sand Supplies.

8.3 Hydrogeology

The deep sand and clay lies on the southern edge within a palaeochannel cut into the granite basement. The basement, which is granite saprock on granite, is bottomed in several drill holes sunk by Department of Water.

The palaeochannel is filled in the lower parts by groundwater. The groundwater is fresh to brackish on top of the aquifer and becomes more saline with depth. Water recharge and movement appears to be mainly from the top of the aquifer with the lower parts of the aquifer experiencing lesser water flow.

The water table is deep, over 20 metres below the site, (See Section 4.3) and there are no expressions of wet conditions at the surface and no drainage lines or surface flows crossing the proposed clearing.

The Department of Water supported the extensive revegetation program conditioned on the approved sand extractive industry located on Lot 5 Abercorn Road. See attachments. The sand excavation is conducted by Great Sand Supplies and combined with the proposed clay excavation on Lot 5, is the reason for the proposed widening.

8.4 Surface Water Protection during Construction

In drier summer months there is no surface water near site or in the watercourses apart from seepage in the watercourse 250 metres north of Goods Road

Under normal weather conditions most of the precipitation penetrates the gravels and sand and this is the likely scenario post construction.

Precipitation falling on the proposed road upgrade now either soaks into the sandy soil or in heavy events runs off to the watercourse several hundred metres north of Goods Road. From past observation, the soils do not allow excessive runoff apart from heavy storm events.

The following management will be used at all times to ensure that surface water is retained on site or adjacent to the road verge.

- The road construction area will have low slopes that are up to 1 : 10 vertical to horizontal at the steepest point.

- No alteration to drainage lines, surface water or ground water, is proposed or anticipated.
- Rehabilitated areas are formed to maximise infiltration and reduce surface runoff, with contour banks potentially being used in difficult areas.
- The methods outlined for groundwater above will also protect surface water, in addition to those listed below.
- Surface water runoff will be directed to edge swale drains to enable soakage and minimise wet soils in adjacent native vegetation.
- Excess water will be directed to runoff points and small soakage swales set into the natural soils.
- The disturbance areas are small compared to the existing road surface.
- It is important to note that the road currently exists and that overall there will be no significant increase in the drainage requirements. The constructed facilities will simply replace the existing facilities.

8.5 Groundwater Protection

There is no evidence of groundwater closer than 20 metres from the local land surface.

8.6 Recharge

Most water used for dust suppression will evaporate.

Potable water is to be brought to the site as needed.

The road construction area is based on degraded and partially cleared sparse forest.

Recharge to groundwater existing and pre-clearing will probably have been in the order of 3% rainfall considering the soils and depth to the water table.

With clearing, recharge will increase as a result of reduced evapotranspiration from trees.

The post clearing recharge in this environment may be in the order of 10% considering the depth to groundwater.

The constructed road hard surface will have a runoff rate of up to 90% from the hard surface.

Recharge changes are therefore not regarded as significant based on the small areas of disturbance. Any increases will be more than compensated by the offset tree planting on Lot 5 that is outlined as an attachment to the Flora and Vegetation Assessment dated August 2012.

8.7 Salinity

Local groundwater is deep, some 20 plus metres below current ground level.

Surface water runoff is generally fresh to slightly brackish under natural conditions. There is no evidence that the soils on site that will be disturbed contain salt. based on soil examination, their elevation and the vegetation species growing on the disturbance areas.

8.8 Dewatering

Dewatering is not proposed.

8.9 Acid Sulfate Risk

There has been an increased interest in acid sulfate soils since the release of WAPC Planning Bulletin 64.

The most definitive survey procedure is produced by the Acid Sulfate Soil Management Advisory Committee NSW, 1998, in their *Acid Sulfate Manual.* This Manual forms the basis for much of the assessment procedures in Australia, including those adopted by the Western Australian Planning Commission and the Department of Environment and Conservation. The *Acid Sulfate Manual* adopts the procedure of reviewing the published data followed up by field assessment, which has been completed for this site. If a geological risk is determined, then a Preliminary Acid Sulfate Assessment is conducted.

Acid Sulfate Soils can potentially form under reducing conditions when there is a source of carbon and a source of sulfur (normally from sea or saline water). Micro-organisms are thought to play an important role in reducing the sulfates within the sediments to form the iron sulfide. It is a natural phenomena, that can be exacerbated by disturbance.

Potential acid sulfate conditions most commonly form under reducing conditions, under current or past estuarine conditions, peaty conditions, some organoferricretes, and may also result from weathering of some geological formations and situations which contain sulfides. Carbon is normally required and a lack of oxygen is always required to create the reducing conditions.

The site has been investigated on a number of occasions by Lindsay Stephens of Landform Research when inspecting the sand operations on site.

On this site the soils are highly and deeply weathered within the Tertiary weathering regime that has produced the gravels. Gravels are highly oxidised and any sulfur will only be present as sulfate or another oxidised form. That is, there is no potential for acid conditions to develop and that is shown in all the past excavations.

The proposal complies with all Department of Environment and Conservation Guidelines.

8.10 Waste Materials

- **Unauthorised Access and Illegal Dumping**

The potential for rubbish to be dumped relates mainly to unauthorised access and is low as the site is set located in a less popular part of the forest.

There may be times when materials are dumped on weekends or at other times.

Illegally dumped materials are removed promptly to an approved landfill or other suitable site, depending on the nature of the material.

- **Solid Domestic and Light Industrial Wastes**

All solid domestic and light industrial wastes are stored in commercial waste storage containers or appropriate facility and periodically removed to an approved landfill facility. These will be incorporated into the normal operational procedures for the quarry on Lot 5.

Wastes generated are recycled wherever possible and periodically disposed of at an approved landfill site. Any illegally dumped materials are removed promptly to an approved landfill or other suitable site, depending on the nature of the material.

Waste storage containers on Lot 5 and at the works are to be sealed so that rainfall cannot enter, therefore preventing the formation of leachates.

Regular inspections (at least daily during the working week) are to be conducted to ensure no wastes, litter and the like are present in or around the construction area and road.

- **Domestic Wastewater Disposal**

An approved septic system is installed on Lot 5 as part of the quarry operation. If this becomes unavailable a serviced portable waste water unit will be installed.

8.11 Maintenance Plan

Hydrocarbon is managed in accordance with the procedures specific to fuel and maintenance in the DOW – DMP Water Quality Protection Guidelines for Mining and Mineral Processing.

- *Mechanical servicing and workshop facilities*
- *Above-ground fuel and chemical storage*

Great Sand Supplies has in place safety and pollution management procedures for all their operations and on Lot 5 and the same actions will be used.

All equipment is mobile and moves across the site as construction proceeds. A permanent refuelling facility therefore is not appropriate and is not proposed. Refuelling will be undertaken on Lot 5 using the same facilities as the sand excavation activities using refuelling from mobile tankers.

Soils such as this are highly porous and adsorptive. The main risk of contamination is the minor drips that occur during the removal of hoses etc. Minor spills are quickly degraded by soil microbial matter.

The only other risk is from a tank rupture, but tanks are designed to manage this eventuality. Liners are normally only used for static tanks which include trailer mounted tanks such as those outlined in *DOW – DMP Water Quality Protection Guidelines Mining and Mineral Processing* and the *Dangerous Goods Safety Act 2004*.

All significant adverse incidents are to be recorded, investigated and remediated. A record is to be kept of incidents and the Department of Water, Water Corporation, Local Authority and Department of Environment and Conservation notified within 24 hours

- **Servicing and Maintenance**

1. All major servicing of vehicles will continue to be conducted off site. Wastes generated from servicing will be collected and removed off site weekly to an approved landfill site.

2. Vehicle washdown is not proposed.

3. Waste oil and other fluids derived from the routine maintenance of mobile machinery, will be transported off site and recycled where possible or disposed off at an approved landfill site. Grease canisters, fuel filters, oil filters and top-up oils will be stored in appropriate containers in a shed or brought to the site as required.

4. Any waste chemicals derived during routine maintenance activities will be stored in appropriate sealed containers and removed as the maintenance vehicle leaves. Oils and other recoverables will be recycled.

5. As there is no large scale maintenance proposed, apart from mobile vehicle based units similar to those used in all quarries and construction sites, no management facilities are required.

6. Oil and grease traps are therefore not required. All storage facilities for lubricants and oils will comply with requirements of AS1940.

7. On site vehicle washdown is not proposed.

8. An accidental spill containment and cleanup protocol is in place.

9. Regular inspections and maintenance of fuel, oil and hydraulic fluids in storages and lines will continue to be carried out for wear or faults.

10. Servicing plant and equipment will be dealt with in accordance with a maintenance schedule.

11. Rubbish dumped illegally around the boundaries by members of the public is to be removed promptly.

12. All surface water runoff from the site is collected and retained in the pit for infiltration.

- **Fuel Management Plan**

1. Fuel and maintenance will continue to use the same processes as the sand excavation through the use of mobile tankers refueling on Lot 5. No fuel will be stored on site.

2. The DOW – DMP Water Quality Protection Guidelines for Mining and Mineral Processing, *Mechanical servicing and workshop facilities* and *Above-ground fuel and chemical storage* provide guidance although there will be no major servicing conducted on site. Fuel and other flammable fluids will be managed according to the *Dangerous Goods Safety Act 2004*.

3. The sand and gravel of the construction area is adsorptive. The main risk of contamination is the minor drips that occur during the removal of hoses etc. Minor spills are quickly degraded by soil microbial matter.

4. Refuelling and lubricating activities are to occur in designated disturbed and operational areas, and equipment for the containment and cleanup of spills is to be provided.

5. Spillage will be contained in plant and working areas by shutting down plant or equipment if the plant or equipment is the source of the spill (provided it is safe to do so).
6. Any spills will be contained by the sand or gravel. Soil and gravel will quickly be placed around the spill to contain it in as small an area as possible. When contained, the contaminated material will be scooped up and removed to an approved landfill or other approved site.
7. Fuel spill emergencies are to be included within on site training and inductions.

8.12 Monitoring

Monitoring will concentrate on visual monitoring of site activities. That is being observant to any spills or wastes and being diligent on their collection.

Water Management - Applicable Legislation / Policies
DOW – DMP Water Quality Protection Guidelines for Mining and Mineral Processing • *Overview* • *Minestite water quality monitoring* • *Minesite stormwater* • *Mechanical servicing and workshop facilities* • *Mine dewatering*
Commitments to Water Management
• Great Sand Supplies will adhere to a site code outlining requirements for operators and drivers. • Great Sand Supplies will maintain the water quality protection measures listed above.

9.0 DIEBACK MANAGEMENT PLAN

It is not clear if dieback is present, even so the dieback principles will be used *Phytophthora*.

The access road is bitumen and gravel. Construction is proposed to be undertaken using practices recommended by CALM. See *CALM Dieback Hygiene Manual 1992* which is more practical and *CALM Best Practice Guidelines for the Management of Phytophthora cinamomi, draft 2004.* See also *Dieback Working Group 2005, Management of Phytophthora Dieback in Extractive Industries.*

The aim of dieback management during excavation is to minimise the risk of entry of dieback into the site.

In many ways the management of the site for dieback is similar to that for the management of weeds, and the two management practices should be considered together.

1. All gravel to be used to construct the road will be dieback free.
2. Construction work will take place summer – autumn months when the soils are dry.
3. Maintain the site to prevent the spread or introduction of Dieback Diseases according to the above points.
4. Construction on site is proposed to comply with *CALM Best Practice Guidelines for the Management of Phytophthora cinamomi, draft 2004 and* Dieback Working Group 2005, Management of *Phytophthora* Dieback in Extractive Industries.
5. The disturbance areas will be formed to prevent water from leaving the site and pooling in adjacent remnant vegetation.
6. The disturbance areas will be clearly marked with flagging and stakes prior to commencement and disturbance.
7. Restrict all construction vehicles to the disturbance area.
8. Prohibit vehicle traffic from the vegetation ahead of disturbance.
9. Maintain a hygienic site by not bringing any soil or plant material onto the site.
10. Maintain procedures for the prompt removal of any rubbish or dumped materials.
11. All operational vehicles are required to be clean on entry to the site and are to be free of soil and plant particles.
12. Stockpiles will be contained on the floor of disturbed or cleared areas.

Dieback - Applicable Legislation / Policies

- *DEC (CALM) Dieback Hygiene Manual 1992.*
- *DEC (CALM) Best Practice Guidelines for the Management of Phytophthora cinamomi, draft 2004.*
- Dieback Working Group 2005, *Management of Phytophthora Dieback in Extractive Industries.*

Commitments to Dieback Management

- Great Sand Supplies will not impact on the adjoining remnant vegetation by the proposed excavation.

- Great Sand Supplies will maintain a Dieback Management Policy.

10.0 WEED MANAGEMENT PLAN

In many ways the management of weeds will be conducted in conjunction with dieback management.

Weeds are not present on site based on the vegetation studies conducted by Landform Research.

The main weed prevention measures are listed below.

1. Comply with the dieback Management Program.
2. All operational vehicles are required to be clean on entry to the site and are to be free of soil and plant particles.
3. Do not bring plant, soil or fill material to the site.
4. Maintain security of the site to prevent illegal dumping of rubbish.
5. Remove all rubbish promptly.
6. Regularly monitor the site for the introduction of Declared weeds and those that have the potential to become a local pest.
7. Treat any Declared or environmental weeds promptly no matter how few there are. For example several weeds pulled out by hand and destroyed, may save many dollars in spraying at a later stage. It is better to work from the least weed affected areas to the most weed affected, which therefore gives a smaller area to treat with spray or earthworks.
8. If weeds do gain access to the site they will be treated as below;
    - Larger weeds will be grubbed out, and/or sprayed.
    - Follow up spraying by a licensed contractor will be undertaken and repeated as necessary.
    - Small weeds will be sprayed by a licensed contractor and repeated as necessary.

Weed - Applicable Legislation / Policies

- *Agriculture and Related Resources Protection Act 1976.*

Commitments to Weed Management

- Great Sand Supplies will comply with the weed policy to control the spread of Declared, Environmental or other weeds on the site.

REFERENCES - READING

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Dieback Working Group 2005, Management of *Phytophthora* Dieback in Extractive Industries.

Environmental Protection Authority, 2004, Guidance Statement, *Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia,* No 5,1 June 2004.

Environmental Protection Authority, 2007, *State Of the Environment Report Western Australia*

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OFFSET REVEGETATION PROGRAM

Background

1. DEC and Great Sand Supplies have worked together to develop an offset package to plant local provenance trees on degraded areas on Goods Road.

2. The areas selected by DEC are shown on the attached plan. These area show occasional Wandoo (Eucalyptus wandoo) trees separated by bare ground. See attached photographs.

3. It has been agreed that Wandoo trees will be planted in the bare ground in winter 2013 using tubestock.

4. The area of revegetation is greater than the proposed clearing at approximately 1.2 hectares.

5. To revegetate the bare soils to Wandoo Woodland a total of 800 tube plants (650 per hectare). See the attached list.

6. Seeding with understory species will be used, with approximately 1 kg seed to be used on the 1.2 hectares.

7. See the attached species list.

8. Wandoo is a local species that is very suitable of growing in compacted clay soils.

9. A completion criteria of 500 trees surviving at 3 years is proposed.

Planting Methods

10. The revegetation will use methods that have proved successful on other revegetation offset areas and in revegetation of hard rock and other quarries.

11. A most important aspect of revegetation is that the planting must be completed within the first year of breaking up the soil. Planting in compacted ground reduces the success greatly.

12. Planting should be undertaken at the most suitable time and can vary greatly depending on individual site conditions and the season. The commitment is therefore to establish the vegetation within the first autumn/winter following all approvals being obtained and roadworks being undertaken. That is in winter 2013.

13. The bare ground will be scarified or lightly ripped to assist seed germination and seeding growth.

14. The revegetation offset are will be deep ripped to between 0.5 – 1.0 metres deep in a cross pattern at intervals of 1 – 2 metres spacing. This will provide soil ripping ever 1 to 4 m^2, which will provide good substrate for tube planting and seeding.

15. Any weeds likely to significantly impact on the rehabilitation will be sprayed with Roundup or similar herbicide or grubbed out, depending on the species involved. Weed management will be to the weed management plan contained in the Management Plan for Clearing that accompanies this document.

16. Rehabilitation will take place during the first winter months (2013) following the earth works. Leaving the completed earth works for one season will reduce the success of rehabilitation by at least 50 %, due to compaction effects.

17. The tube plants will be located between the existing Wandoo, planted into the currently bare ground that will be deep ripped prior to planting.

18. The seeding will be scattered across the deep ripped and scarified ground.

19. A decision to use additional fertiliser will be made on a site specific basis. A 10 g plant tablet containing low nitrogen but including trace elements will be installed at the base each plant to assist the plant but minimise influencing of any exotic species that may be present.

20. Trees will be installed as tube plants during June - August on the prepared land surface and located into the rip lines.

21. Tube plants will have the soil packed around each tube and a thin layer across the top of the tube plant soil to minimise evaporation from the tube soil.

22. Seeding will occur in Autumn (March to April) or early spring, (August) and be spread across the ground using dieback free sand or other bulking factor.

23. In autumn each year the planting sites will be inspected for success of the planting, the presence of weeds and plant mortality.

24. Any plants that have not survived will be replanted to ensure that there is a completion number of 500 plants in total. That is a plant density of 1 tube plant established Wandoo tree per $25m^2$ or four plants per 100 m^2 (10 m x 10 m).

Management of the Revegetation

25. Monitoring of the plant survival will be carried out annually until all areas meet the completion criteria and have demonstrated sustainability for a period of three years.

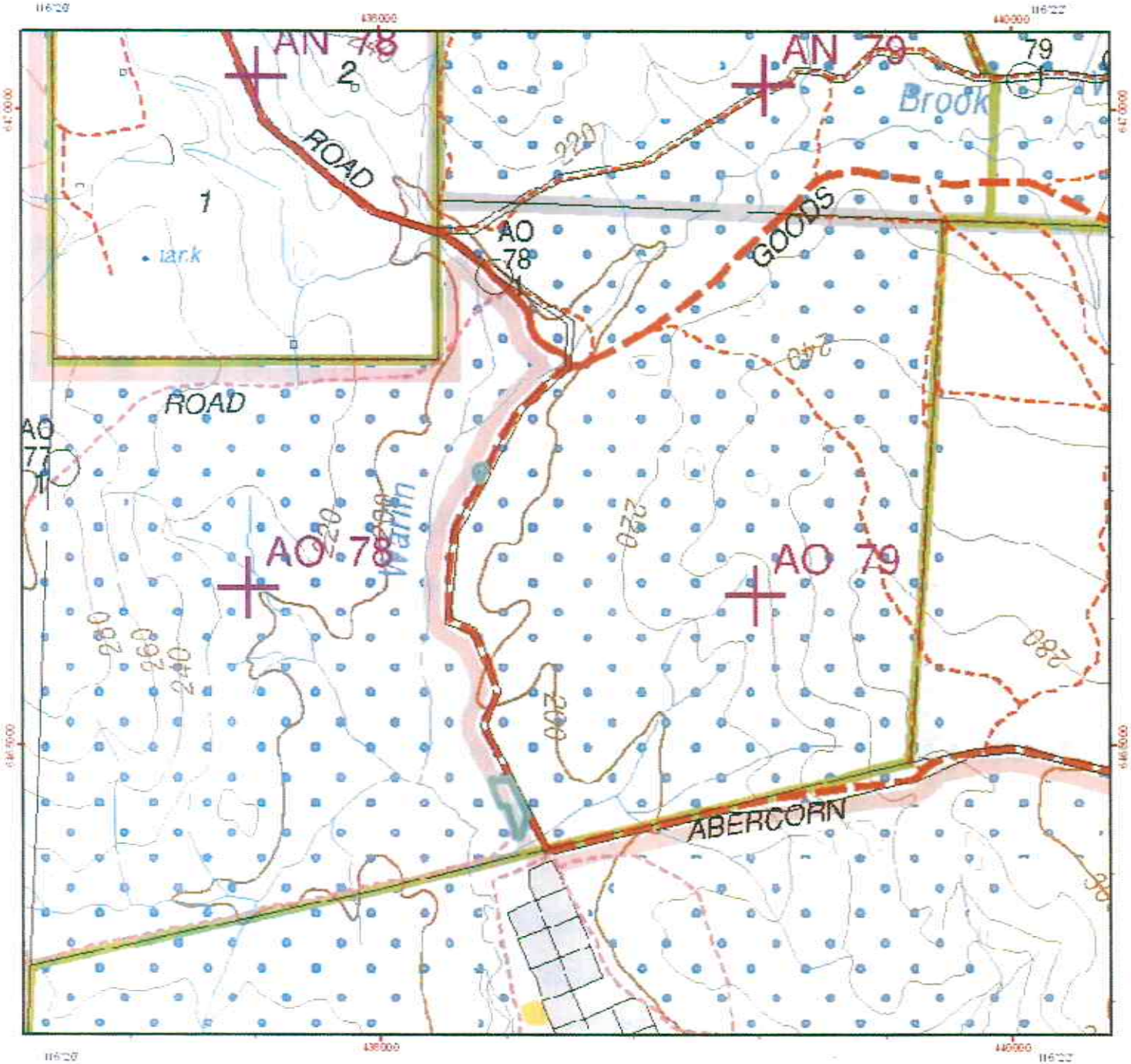
26. Logs and suitable barriers will be placed in strategic locations to minimise vehicle impacts. These will consist of the trunks, (boles), of trees to be cleared as part of the roadworks to upgrade Goods Road.

Suggested planting list

FAMILY	GENUS - SPECIES	TUBE PLANTS	SEEDS
Casuarinaceae	*Allocasuarina humilis*		50 g
	Allocasuarina huegeliana		50 g
Mimosaceae	*Acacia saligna*		100 g
	Acacia microbotrya		100g
Myrtaceae	*Calothamnus hirsutus*		50 g
	Corymba (Eucalyptus) calophylla	100 plants	50 g
	Eucalyptus marginata	100 plants	50 g
	Eucalyptus wandoo	600 plants	
	Leptosperma erubescens		50 g
	Gastrolobium spinosum		50 g (scarified)
Proteaceae	*Banksia grandis*		100 seeds
	Dryandra(Banksia) bipinnatfida		100 seeds
	Dryandra (Banksia) sessilis		100 seeds
	Dryandra(Banksia) squarrosa		100 seeds
	Hakea prostrata		50 g

Other local species may be substituted if a species is unavailable.

Proposed Offset locations



N

0 0.05 0.1 0.2 0.3 0.4 Kilometers

1:16,965 (A4)

Projection: Universal Transverse Mercator
MGA Zone 50. Datum: GDA94



Produced by the Department of Environment and Conservation

Produced at 9:53am, on February 6, 2013

Grid is shown at 2 minute intervals
Grid is shown at 2000 metre intervals

The Dept. of Environment and Conservation does not guarantee that this map is without flaw of any kind and disclaims all liability for any error, loss or other consequence which may arise from relying on any information depicted

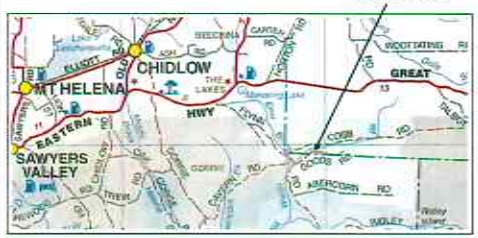




Areas to be rehabilitated to Wandoo Woodland on Goods Road



GOODS ROAD



NOTE

The area of clearing is adjacent to the existing road.
The numbering on the plan is set back from the road to enable the existing vegetation to be viewed.

See text for description of the vegetation.

COMMITMENTS

1 The number of trees and vegetation clearing will be minimised.

2 Any logs, timber or hollows will be saved and laid on adjoining areas to provide additional ground habitat.

3 Topsoil and vegetation recovered from clearing will be used to rehabilitate existing disturbed areas by laying and spreading on the ground surface.



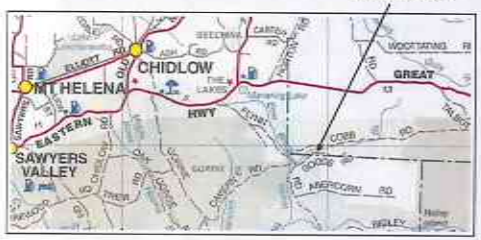


Figure 1

GREAT SAND SUPPLIES	
WIDENING OF PART OF GOODS ROAD, THE LAKES	
Landform Research	August 2012
Basemap Nearmap and Landgate	Scale: See Map



GOODS ROAD



NOTE

The area of clearing is adjacent to the existing road. The numbering on the plan is set back from the road to enable the existing vegetation to be viewed.

See text for description of the vegetation.

COMMITMENTS

1 The number of trees and vegetation clearing will be minimised.

2 Any logs, timber or hollows will be saved and laid on adjoining areas to provide additional ground habitat.

3 Topsoil and vegetation recovered from clearing will be used to rehabilitate existing disturbed areas by laying and spreading on the ground surface.



Figure 4



Road widening along Western Power alignment

GREAT SAND SUPPLIES	
WIDENING OF PART OF GOODS ROAD, THE LAKES	
Landform Research	August 2012
Basemap Nearmap and Landgate	Scale See Map



Type of vegetation to be cleared to make road wider and safer



Type of vegetation to be cleared to make road wider and safer



Type of vegetation to be cleared to make road wider and safer



Type of vegetation to be cleared to make road wider and safer



Type of vegetation to be cleared to make road wider and safer



Type of vegetation to be cleared to make road wider and safer



Wandoo with hollows at about 2.0 metres to be removed. The trunk will be placed on the ground to provide ground hollow log habitat.



Type of vegetation to be cleared to make road wider and safer
Two Xanthorrhoea preissii to be removed



Type of vegetation to be cleared to make road wider and safer

Figure 5





Single lane road to be located along the powerline easement.



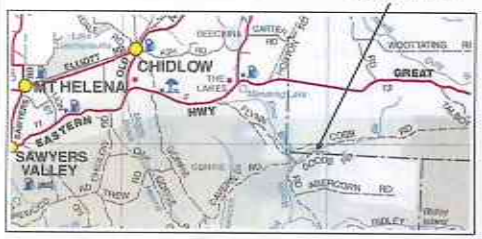


Single lane road to be located along the powerline easement.

Figure 6



GOODS ROAD



NOTE

The area of clearing is adjacent to the existing road. The numbering on the plan is set back from the road to enable the existing vegetation to be viewed.

See text for description of the vegetation.

COMMITMENTS

1 The number of trees and vegetation clearing will be minimised.

2 Any logs, timber or hollows will be saved and laid on adjoining areas to provide additional ground habitat.

3 Topsoil and vegetation recovered from clearing will be used to rehabilitate existing disturbed areas by laying and spreading on the ground surface.

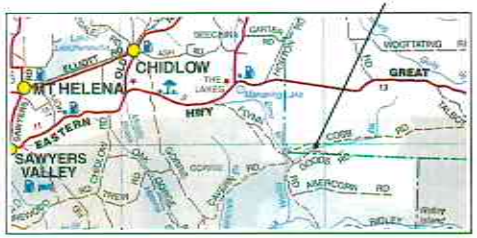


Figure 2

GREAT SAND SUPPLIES	
WIDENING OF PART OF GOODS ROAD, THE LAKES	
Landform Research	August 2012
Basemap Nearmap and Landgate	Scale See Map



GOODS ROAD



NOTE

The area of clearing is adjacent to the existing road. The numbering on the plan is set back from the road to enable the existing vegetation to be viewed.

See text for description of the vegetation.

COMMITMENTS

1 The number of trees and vegetation clearing will be minimised.

2 Any logs, timber or hollows will be saved and laid on adjoining areas to provide additional ground habitat.

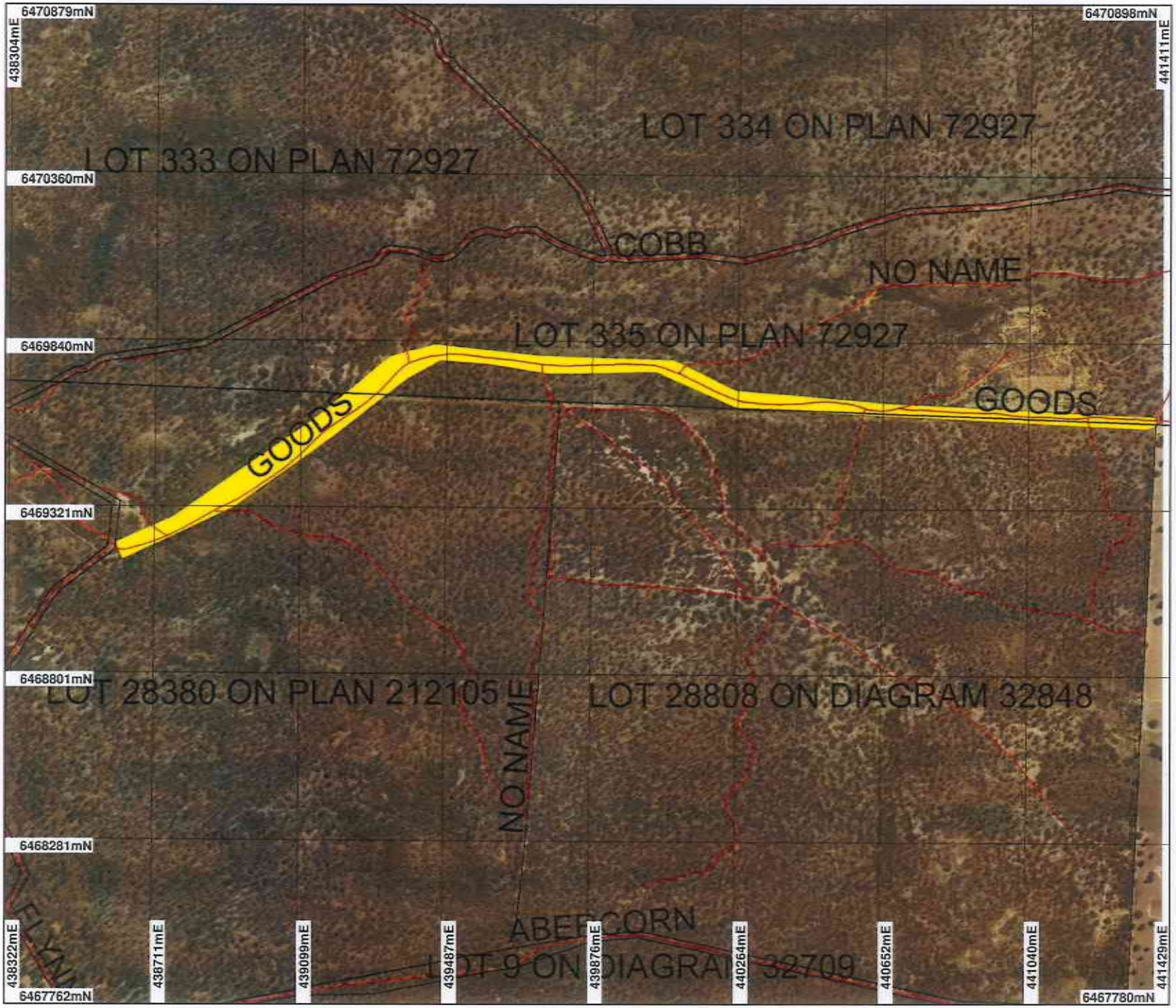
3 Topsoil and vegetation recovered from clearing will be used to rehabilitate existing disturbed areas by laying and spreading on the ground surface.



Figure 3

GREAT SAND SUPPLIES	
WIDENING OF PART OF GOODS ROAD, THE LAKES	
Landform Research	August 2012
Basemap Nearmap and Landgate	Scale See Map

Plan 5314/1



LEGEND

Clearing Instruments

Areas Approved to Clear

Road Centrelines

Cadastre

Perth Metropolitan Central 15cm Orthomosaic - Landgate 2011

N

0 375 m

Scale 1:15000

(Approximate when reproduced at A4)

Geocentric Datum Australia 1994

Note: the data in this map have not been projected. This may result in geometric distortion or measurement inaccuracies.

Date 16/5/13

M Warnock

Officer with delegated authority under Section 20 of the Environmental Protection Act 1986

Information derived from this map should be confirmed with the data custodian acknowledged by the agency acronym in the legend.

Department of Environment and Conservation

Our environment, our future

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Department of Environment and Conservation

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 5314/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Great Sand Supplies Pty Ltd**

1.3. Property details

Property: LOT 335 ON PLAN 72927 (WOOTTATING 6562)
LOT 28808 ON DIAGRAM 32848 (THE LAKES 6556)
LOT 28380 ON PLAN 212105 (THE LAKES 6556)
Local Government Area: Shire of Northam; Shire of Mundaring
Colloquial name: Goods Road

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
0.73		Mechanical Removal	Road construction or maintenance

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 16 May 2013

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description
The vegetation under application is mapped as:

Beard vegetation association 3003: Medium forest; jarrah & marri on laterite with wandoo in valleys, sandy swamps with teatree and Banksia; and Beard vegetation association 4: Medium woodland; marri and wandoo (Shepherd et al., 2001)

Mattiske vegetation complex Pindalup (Pn): Open forest of Eucalyptus marginata subsp. thalassica-Corymbia calophylla on slopes and open woodland of Eucalyptus wandoo with some Eucalyptus patens on the lower slopes in semiarid and arid zones. (Mattiske and Havel, 1998)

Heddle vegetation complex Pindalup and Yarragil Complex in Low to Medium Rainfall (Heddle et al., 1980)

Clearing Description
The vegetation proposed to be cleared is within Mundaring State Forest (Lot 335 on Plan 72927 - Reserve 6203, Woottating, Lot 28380 on Plan 212105 and Lot 28808 on Diagram 32848, The Lakes).

The application is to clear up to 0.73 hectares within a larger footprint for the purpose of widening the western end of Goods Road to increase safety for truck movements from sand quarries, and to seal the road for better environmental management (Landform Research, 2012a).

The proponent was granted a clearing permit for 0.45 hectares for the widening and upgrades of the eastern end of Goods Road in 2011 (CPS 4046/1).

Along the western approximately 2.7 kilometres of the application area, widening of the existing road is required by 1 to 3 metres (Landform Research, 2012a). Vegetation along this section is described as wandoo / jarrah forest over gravelly soils, with the vegetation including Eucalyptus marginata, Eucalyptus wandoo, Corymbia calophylla, Xanthorrhoea sp., Macrozamia riedlei and Allocasuarina sp (DEC, 2012).

The vegetation adjacent to the current road surface shows signs of disturbance from the road usage, including cleared areas, weed invasion and dust coating and is predominantly in degraded (Keighery, 1994) condition (DEC, 2012). In some areas the vegetation is covered in dust for several metres back from the road (DEC, 2012).

Supporting documentation with the application calculated that between 0.3 and

Vegetation Condition
Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, 1994)

Completely Degraded: No longer intact; completely/almost completely without native species (Keighery, 1994)

Comment
The vegetation condition and clearing description is based on information obtained during a site inspection by DEC officers undertaken on 13 November 2012 (DEC, 2012).

0.4 hectares of clearing may be required in this area (Landform Research, 2012a). During a site visit with Department of Environment and Conservation (DEC) personnel, the applicant identified numerous locations where clearing will not be required as the road is already of sufficient width (DEC, 2012).

Instead of widening the existing road, a second, separate, road is proposed to be constructed to the south of the existing road, along the eastern approximately 600 metres of the application area (Landform Research, 2012a). This is to avoid clearing roadside trees and will make use of a powerline easement that contains a small track and has been previously cleared and maintained to prevent the regrowth of over storey vegetation (Landform Research, 2012a).

This will require approximately 8 metres of disturbance along the 600 metre section, however considering the presence of an existing cleared track through this area, the proponent calculated 0.33 hectares of clearing will be required in this area (Landform Research, 2012a).

Vegetation in this area is relatively healthy, regrowth understory woodland / forest vegetation, however the structure is severely altered and missing the overstorey and therefore is in degraded to good (Keighery, 1994) condition (DEC, 2012).

3. Assessment of application against clearing principles

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

Comments

Proposal is not likely to be at variance to this Principle

The amended application is to clear up to 0.73 hectares of native vegetation within a larger footprint, for the purpose of widening Goods Road to increase safety for truck movements from sand quarries, and to seal the road for better environmental management (Landform Research, 2012a).

The proposed clearing is in within State Forest 13 (Mundaring State Forest). There is approximately 75 percent native vegetation remaining in the local area (10 kilometre radius), approximately half of which is within land managed by the Department of Environment and Conservation (DEC).

There are numerous records of priority flora recorded within a 10 kilometre radius, however, the area under application is small (0.73 hectares), in a mostly degraded (Keighery, 1994) condition (DEC, 2012) and surrounded by extensive state forest. One rare flora species is known from the local area, however it is unlikely to occur within the area under application as it does not contain the preferred habitat for this species, which is granite outcrops (Brown et al, 1998). Therefore, the proposed clearing is not likely to have a significant impact on flora of conservation significance.

There are no threatened or priority ecological communities in the local area and fauna habitat within the application area is well represented in the surrounding state forest.

Given the above the vegetation under application does not comprise a high level of biological diversity and the proposed clearing is not likely to be at variance to this principle.

Methodology

References:
Brown et al, 1998
DEC, 2012
Keighery, 1994
Landform Research., 2012a
GIS databases:
- DEC Tenure
- NLWRA, Current Extent of Native Vegetation
- Perth Metropolitan Central 15cm Orthomosaic - Landgate 2012
- SAC Bio Datasets 31/10/2012

(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

Proposal is not likely to be at variance to this Principle

Seven fauna that are listed as Rare or Likely to Become Extinct under the Wildlife Conservation Act 1950 (WC Act) have been recorded within the local area (10 kilometre radius), being:
- Calyptorhynchus latirostris (Carnaby's cockatoo)
- Calyptorhynchus banksii subsp. naso (forest red-tailed black cockatoo)
- Calyptorhynchus baudinii (Baudin's cockatoo)
- Dasyurus geoffroii (chuditch)
- Leipoa ocellata (malleefowl)
- Myrmecobius fasciatus (numbat)
- Phascogale tapoatafa subsp. tapoatafa (southern brush-tailed phascogale)

(DEC, 2007-)

There are records of a further seven fauna species of conservation significance, including priority, protected under international agreement and other speciality protected species, from the local area (DEC, 2007-).

The vegetation under application is within the modelled breeding range (SEWPAC, 2012) and an unconfirmed breeding area for Carnaby's cockatoo, which is also listed as endangered under the federal Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). The application area is within the main wintering area for Baudin's cockatoo, which is also listed as vulnerable under the EPBC Act, and forest red-tailed black cockatoo (vulnerable, EPBC Act) may breed in the area (SEWPAC, 2012).

Black cockatoos breed in hollows in very long-lived trees (SEWPAC, 2012). The Department of Environment and Conservation (DEC) visited the application area on 13 November 2012 and observed mature jarrah, marri and wandoo trees within and surrounding the application area, some of which contain hollows or have the potential to develop hollows in the future (DEC, 2012).

Supporting information provided with the application states one tree with hollows is proposed to be cleared, however it will be saved and used as on ground habitat (Landform Research, 2012a). The applicant has advised they will adopt the Construction and Ongoing Maintenance Environmental Management Plan that was previously approved for Clearing Permit CPS 4046/1 for the clearing and construction of Goods Road (Great Sand Supplies, 2012), which includes commitments to mark and retain habitat trees where practicably possible, as agreed and signed off by the local DEC district manager (360 Environmental, 2010). Considering the above and the extensive surrounding vegetation in state forest, the proposed clearing is unlikely to be significant as habitat for native fauna.

While the application area contains some valuable fauna breeding habitat, considering the local area is extensively vegetated, the potential habitat trees within the application area are unlikely to be significant for local fauna.

Methodology

References:
360 Environmental, 2010
DEC, 2012
DEC, 2007-
Great Sand Supplies, 2012
Keighery, 1994
Landform Research, 2012a
SEWPAC, 2012
GIS databases:
- Carnaby's Cockatoo Breeding Areas Unconfirmed
- DEC, Tenure
- SAC Bio Datasets 31/10/2012

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

Comments

Proposal is not likely to be at variance to this Principle

There are records of one rare flora species in the local area (10 kilometre radius).

This species grows on and around granite outcrops, often in rock crevices (Brown et al, 1998). Given the application area does not contain granite outcrops (DEC, 2012) it is unlikely to support this species.

Considering the above, the proposed clearing is not likely to be at variance to this principle.

Methodology

References:
Brown et al, 1998
DEC, 2012

GIS databases:
- SAC Bio Datasets 31/10/2012

(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

Proposal is not likely to be at variance to this Principle

The closest records of threatened ecological communities (TEC) are over 28 kilometres west of the application area and are in a different IBRA bioregion and on different mapped vegetation and soil types to the application area.

Considering the above, the vegetation under application to be cleared is unlikely to represent or be necessary for the maintenance of a TEC and the proposed clearing is not likely to be at variance to this principle.

Methodology

GIS databases:
- IBRA Australia
- Perth Metropolitan Central 15cm Orthomosaic - Landgate 2012
- SAC Bio Datasets 31/10/2012

(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

Proposal is not likely to be at variance to this Principle

Beard Vegetation Association 4 (Medium woodland; marri and wandoo) is mapped over approximately a third of the application area (Shepherd et al., 2001) and retains approximately 28 percent (293,207 hectares) of the pre-European extent in the Jarrah Forest IBRA bioregion (Government of Western Australia, 2013). This is below the national 30 percent target for biodiversity conservation in Australia (Commonwealth of Australia, 2001).

The vegetation proposed to be cleared is scattered roadside trees, a small amount of highly disturbed regrowth vegetation along the road edges and a strip of regrowth vegetation in a powerline easement that has been maintained to be free of overstorey species and is mostly in degraded (Keighery, 1994) condition (DEC, 2012). Given this, the vegetation proposed to be cleared is not considered to be representative of the mapped Beard 4: Medium woodland; marri and wandoo vegetation type.

The proposed clearing is in a highly vegetated area. There is approximately 75 percent native vegetation remaining in the local area (10 kilometre radius), with approximately half within DEC managed lands.

Considering the above, the vegetation under application is unlikely to be significant as a remnant of native vegetation in an extensively cleared area and the proposed clearing of 0.73 hectares is not likely to be at variance to this principle.

	Pre-European (ha)	Current Extent (ha)	Remaining (%)	Extent in DEC Managed Lands (%)
IBRA Bioregion*				
Jarrah Forest	4,506,656	2,473,559	54	67
Shire*				
Mundaring	64,377		67	51
Northam	143,126	43,407 33,909	23	23
Beard Vegetation Association in Bioregion*				
3003	66,451	39,495	59	45 (18,131ha)
4	1,022,712	293,207	28	22 (65,219ha)
Heddle Vegetation Complex **				
Pindalup and Yarragil Complex in Low to Medium Rainfall	181,773	140,532	77	56 (102,054ha)
Mattiske Vegetation Complex **				
Pindalup (Pn)	166,695	131,751	79	60 (101,115ha)

* Government of Western Australia, 2013
** Shepherd, 2007

Methodology

References:
Commonwealth of Australia, 2001

DEC, 2012
Government of Western Australia, 2013
Keighery, 1994
Shepherd et al., 2001
Shepherd, 2007
GIS databases:
- DEC Tenure
- Heddle Vegetation Complex
- IBRA Australia
- Mattiske Vegetation Complex
- NLWRA, Current Extent of Native Vegetation
- Perth Metropolitan Central 15cm Orthomosaic - Landgate 2012
- 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

Proposal may be at variance to this Principle

Minor watercourses are mapped as crossing the application area in two locations (at western end and near centre). These watercourses are tributaries to the Wariin Brook, which is approximately 15 metres to the north of the application area. Wariin Brook is a tributary of the Helena River.

The proposed clearing may include some vegetation growing in association with a watercourse and may be at variance to this principle. However considering the proposed clearing is linear and small in scale, impacts are likely to be minimal.

Methodology

GIS databases:
- Hydrography, linear
- Rivers

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

Comments

Proposal is not likely to be at variance to this Principle

The soils mapped over the application area are described as gravels with some leached sands and red earths (Northcote et al., 1960 - 1968).

The applied area has a very gentle slope (Wells, 1998) from east to west that would generally have a low susceptibility to soil erosion.

The proposed clearing is linear, small in scale and in area with existing clearing and disturbance due to the existing road. Road drainage will be incorporated in the road upgrade, which will reduce the impact of the clearing on soil erosion.

Considering the above it is unlikely that the proposed clearing would result in appreciable land degradation impacts and is not likely to be at variance to this principle.

Methodology

References:
Northcote et al., 1960 - 1968
Wells, 1998
GIS databases:
- Soils, Statewide

(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

Proposal may be at variance to this Principle

The vegetation under application is within the Mundaring State Forest.

Disturbance associated with the removal of native vegetation in this relatively high (800 millimetre) rainfall area poses a high risk of the introduction or spread of weeds and dieback (Phytophthora cinnamomi) to the surrounding Mundaring State Forest.

Considering the above, the proposed clearing may impact the environmental values of the Mundaring State Forest and may be at variance to this principle. Appropriate weed and dieback management would minimise this risk.

The applicant has advised they will adopt the Construction and Ongoing Maintenance Environmental

Management Plan that was previously approved for Clearing Permit CPS 4046/1 for the clearing and construction of Goods Road (Great Sand Supplies, 2012), which includes commitments for weed and dieback management (360 Environmental, 2010).

Methodology

References:
360 Environmental, 2010
Great Sand Supplies, 2012
GIS databases:
- DEC Tenure
- Rainfall, Mean Annual

(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

Proposal is at variance to this Principle

The application area is located approximately 15 metres south of Wariin Brook (a tributary of the Helena River) and is situated within Zone A of the Mundaring Weir Catchment Area, an area having a very high salinity risk.

This catchment area was proclaimed under Part IIA of the Country Areas Water Supply Act 1947, in 1978 to restrict any clearing of native vegetation that would cause salinisation of water resources (Department of Water, 2007). The Mundaring Weir Catchment Area has always been sensitive to even small areas of clearing, and recovery to potable salinity has required a series of revegetation (Smith et al., 2007). Most of the salt load (63 percent) comes in from the north-east of the catchment by way of the Helena River. Even though 97 percent of the catchment is forested, the salinity run off is very sensitive to the remaining 3 percent clearing. Land clearing remains the major evident risk to the reservoir salinity so the catchment requires a level of salinity management (Smith et al., 2007).

Given the above, the proposed clearing is likely to cause deterioration in the quality of surface and underground water and therefore is at variance to this principle.

The applicant has committed to revegetate approximately 1.2 hectares within Zone A of the Mundaring Weir Catchment Area in order to offset the impacts of the proposed clearing (Landform Research, 2013).

Methodology

References:
Department of Water, 2007
Landform Research, 2013
Smith et al., 2007
GIS databases:
- CAWSA Part IIA Clearing Control Catchments
- Hydrography, linear
- Perth Metropolitan Central 15cm Orthomosaic - Landgate 2012
- Rivers
- Salinity Risk LM 25m - DOLA

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

Comments

Proposal is not likely to be at variance to this Principle

The application area is long and linear and is located in a highly vegetated area with gravelly soils (Northcote et al., 1960 - 1968).

Considering this and the small amount of clearing proposed (0.73 hectares within a larger footprint), it is unlikely to result in increased flood risk and is not likely to be at variance to this principle.

Methodology

References:
Northcote et al., 1960 - 1968
GIS databases:
- Perth Metropolitan Central 15cm Orthomosaic - Landgate 2012
- Soils, statewide

Planning instrument, Native Title, Previous EPA decision or other matter.

Comments

The application is to clear up to 0.73 hectares of native vegetation within State Forest 13 (Mundaring State Forest) for the purpose of upgrading Goods Road to facilitate truck movement to a quarry site on Lot 5 Abercorn Road. The road is to be widened by 1 - 3 metres along the northern side of the road to increase safety and enable the road to be sealed (Landform Research, 2012a). The applicant increased the amount of clearing proposed from 0.7 hectares to 0.73 hectares during the assessment process in order to more accurately reflect the maximum amount of clearing calculated to be required by Landform Research (2012a).

The sealing of the road is to service an approved sand excavation on Lot 5 Abercorn Road, The Lakes, in addition to providing access to clay excavation proposed by Brikmakers Pty Ltd (Landform Research, 2012b). The Brikmakers proposed clay excavation on Lot 5 Abercorn Road was approved by the Western Australian Planning Commission on 28 March 2013 (WAPC, 2013).

The applicant operates the existing sand excavation on Lot 5 Abercorn Road. Approval from the Shire of Mundaring occurred as a result of the proposal for sand extraction being presented to the State Administrative Tribunal (SAT). On 30 June 2008 SAT approved the application by ACG Earthmoving (now Great Sand Supplies) for sand extraction subject to conditions as reforestation to mitigate groundwater and salt discharge to Wariin Brook, even though the proposal did not involve the clearing of native vegetation. It was also understood that clearing may be required along a 2 kilometre section of Goods Road to provide access for trucks and the applicant has committed to seal Flynn Road and Goods Road. A copy of the current Shire of Mundaring Approval for Extractive Industry Licence for Lot 5 Abercorn Road, the Lakes (Shire of Mundaring, 2012) has been received. The Management Plan approved as part of the Extractive Industry Licence has designated Goods Road as the access roads and outlines a commitment to upgrade Goods Road (Greg Rowe and Associates, 2010).

A permit to clear 0.45 hectares along the eastern approximately 900 metre section of Goods Road was granted to the applicant in 2011, for road upgrades. The applicant has advised they will adopt the Management Plan that was previously approved for Clearing Permit CPS 4046/1 for the clearing and construction of Goods Road (Great Sand Supplies, 2012). This includes commitments to mark and retain habitat trees where practicably possible, as agreed and signed off by the local DEC district manager (360 Environmental, 2010).

The applied area is located in close proximity to two applications that were refused a permit to clear. These applications were:

- CPS 365/1 application to clear 2 hectares of native vegetation for sand extraction, refused on 9 July 2007 with the proposal being seriously at variance to Principle (i). CPS 365/1 received an appeal against the refusal of the permit. The Minister's decision dated 27 March 2008 dismissed the appeal; and

- CPS 2962/1 application to clear 6.5 hectares (subsequently amended to 9.3 hectares) of native vegetation for sand extraction, refused on 3 December 2009 with the proposal being seriously at variance to Principle (i). CPS 2962/1 received an appeal against the refusal of the permit. The Minister's decision dated 3 December 2010 dismissed the appeal. The Minister suggested that the appellant first demonstrate that the potential salinity impacts can be mitigated and offset to the requirements of the Department of Water, prior to submitting a new application.

A complaint of unauthorised clearing of approximately 0.0202 hectares within Goods Road, at a location approximately one kilometre to the east of the application area, was investigated by the Department of Mines and Petroleum, in accordance with an administrative agreement with the Department of Environment and Conservation (DEC). On the 21 October 2010 a formal letter of warning was issued to ACG Earthmoving (now Great Sand Supplies).

The applied area is located within the Proclaimed Surface Water Area, Mundaring Weir Surface Water Area and any interference with bed and banks would require a licence from the Department of Water. The applied area falls within Zone A of the Mundaring Weir Catchment, which is subject to clearing controls under the Country Areas Water Supply Act 1947.

The Department of Water (DoW, 2012) advised the proposed works lies with Zone A, a very high salinity risk part of the Mundaring Weir Catchment Area, and that DoW policy and guidelines allows for clearing in Zone A subject to an equivalent area being reforested within the same or higher salinity risk zone (DoW, 2012). The DoW advised that the revegetated area must be maintained and protected in perpetuity (DoW, 2012). The DoW (2012) noted that this application is similar to clearing approved in March 2011 under Permit CPS 4046/1 for road widening of an adjacent part of Goods Road that was subject to offset establishment on nearby Lot 5 (DoW, 2012).

Lot 28808 on Diagram 32848 is vested with the Conservation Commission of Western Australia (CCWA). CCWA has endorsed the application, subject to the development and implementation of a Construction and Ongoing Maintenance Environmental Management Plan to the satisfaction of DEC and the implementation of a suitable revegetation offset for the impacts of the vegetation clearing to the satisfaction of DEC Perth Hills District.

The applicant has committed to revegetate approximately 1.2 hectares of wandoo woodland within Zone A of the Mundaring Weir Catchment Area, across two locations along a nearby section of Goods Road on Lot 28808 on Diagram 32848 (Landform Research, 2013).

The Water Corporation has provided support for the proposed clearing within Reserve 6203 (Lot 28380 on Deposited Plan 212105 and Lot 335 on Deposited Plan 72927).

The Shire of Northam (2012) advised that it has no objections to the proposed clearing.

No submissions have been received from the public,

The proposed clearing may impact the Helena River Aboriginal Site of Significance, which is in close proximity to the application area. The proponent has been advised of their obligations under the Aboriginal Heritage Act 1972.

Methodology

References:
360 Environmental, 2010
ACG Earthmoving, 2010
DEC, 2012
DoW, 2012
Greg Rowe and Associates, 2010
Landform Research, 2012a
Landform Research, 2013
Shire of Mundaring, 2012
Shire of Northam, 2012
WAPC, 2013
GIS Databases:
- Aboriginal Sites of Significance
- Cadastre
- CAWSA Part IIA Clearing Control Catchments
- RIWI Act, SurfaceWater Areas, Irrigation Districts

4. References

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Shire of Mundaring (2012) Extractive Industry Licence for 4975 (Lot 5) Abercorn Road, The Lakes. 12/07/2012. DEC Ref: A560522

Shire of Northam (2012) Direct Interest Submission for Goods Road, The Lakes. 7/11/2012. DEC Ref: A565346

Smith RA, Bari MA, Dixon RNM and Rowlands DW (2007) The Helena River Salinity Situation Statement, Water Resource Technical Series Report No. WRT 34, Department of Water, Western Australia.

WAPC (2013) Approval to Commence Development - Abercorn Road, The Lakes. 28/03/2013. Western Australian Planning Commission.

Wells, M. (1988) A Method of Assessing Water Erosion Risk in Land Capability Studies - Swan Coastal Plain & Darling Range. Resource Management Technical Report No. 73. Department of Agriculture, Western Australia. ISSN 0729 - 3135.

5. Glossary

Term	Meaning
BCS	Biodiversity Coordination Section of DEC
CALM	Department of Conservation and Land Management (now BCS)
DAFWA	Department of Agriculture and Food
DEC	Department of Environment and Conservation
DEP	Department of Environmental Protection (now DEC)
DoE	Department of Environment
DoIR	Department of Industry and Resources
DRF	Declared Rare Flora
EPP	Environmental Protection Policy
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
TEC	Threatened Ecological Community
WRC	Water and Rivers Commission (now DEC)