

**ENVIRONMENTAL MANAGEMENT PLAN**

**EXTRACTIVE INDUSTRY**

**AT LOT 3 DP 567166 AND LOT 2 DP 510812**

**4713 AND 4751 OLD NORTHERN ROAD,**

**MARROOTA, NSW 2756**

**PREPARED FOR PF FORMATION**

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## Distribution and Revisions of EMP

### Distribution of EMP

LOCATION	RESPONSIBLE PERSONNEL	NUMBER OF COPIES
PF Formation, 1774 Wisemans Ferry Road, Maroota, NSW 2756	Joshua Graham, Joint Managing Director and Environmental Manager	1 electronic pdf copy
PF Formation, 1774 Wisemans Ferry Road, Maroota, NSW 2756	Peter Watts, Quarry Manager	1 electronic pdf copy
PF Formation, 1774 Wisemans Ferry Road, Maroota, NSW 2756	Joshua Graham, Environmental Manager	1 electronic pdf copy
Hornsby Shire Council	Rod Pickles or Cassandra Williams	Electronic pdf copy
Maroota	Maroota Residents Community Committee if required	Electronic pdf copies if required
Environmental Planning Pty Ltd, PO Box 6443, Silverwater, NSW 1811	Bruce Adcock	Master electronic copy

### Revisions of EMP

REVISION No.	ISSUE DATE	DESCRIPTION	RESPONSIBLE PERSON	APPROVAL
1	December 2011	EMP issued to Council	Bruce Adcock	Peter Cummins, General Manager
2	September 2012	Section 96 modifications. Attachment 6 replaced with Pollution Incident Response Management Plan. Monitoring reports included in AEMPs.	Bruce Adcock Joshua Graham	Peter Cummins, General Manager
3	August 2013	Land and Environment Court January 2013 Orders included in Attachment 1. Single occurrence checklist deleted.	Bruce Adcock Joshua Graham	Peter Cummins, General Manager
4	November 2016	Updated with modified Development Consent 578/2009B; updated EPA licence; updated Pollution Incident Response Management Plan; revised Dust Monitoring Plan; other minor edits.	Bruce Adcock Joshua Graham	Joshua Graham, Joint Managing Director and Environmental Manager
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## 1. Aims of Environmental Management Plan

The aims of this Environmental Management Plan (EMP) are to ensure that:

- Environmental effects of the site operations are identified.
- Environmental controls to be implemented are specified.
- Conditions of development consent including any modifications are specified.
- A monitoring program is specified.
- Responsible staff, target dates and reporting protocols are specified.
- Requirements of all relevant environmental NSW legislation are complied with.
- All conditions of approval including any modifications and PF Formation environmental policies, procedures and guidelines are implemented.

In addition, the EMP documents the conditions in development consent No. 578/2009B, Land and Environment Court orders and the requirements of Environment Protection Licence No. 3829 for the site.

## 2. General Description of Site and Operations

### 2.1 History and Description of Site

The Maroota area has been used for extractive industry by PF Formation since the 1980's. On 21 April 1998 Council approved Development Application No. 725/94 for stage 1 of an extractive industry development with dams and rehabilitation for market garden use on Lot 3 DP 567166, Old Northern Road, Maroota. Stage 1 of the development involved an extraction area of 5.25 hectares on the 50.59 hectare allotment. An estimated volume of 800,000 cubic metres of sandstone was to be extracted to an average depth of 15.5 metres from the site. The estimated period of extraction was for 15 to 20 years. In January 2000 and November 2004 Section 96(2) modifications to the development consent extended the time period for operations for 10 years from the date of the amended consent. The development consent lapsed on 22 November 2009.

The new extraction area is situated within Lot 3 DP 567166 (Pit 5) and the adjacent Lot 2 DP 510812 (Pit 15). The two lots have a combined area of approximately 60.7 hectares and are situated east of Old Northern Road approximately 2 km north of its intersection with Wisemans Ferry Road. The site geology is weathered Hawkesbury sandstone underlain by shale and both lots are included within the Maroota area of *Sydney Regional Environmental Plan No. 9 - Extractive Industry (No 2 - 1995)*.

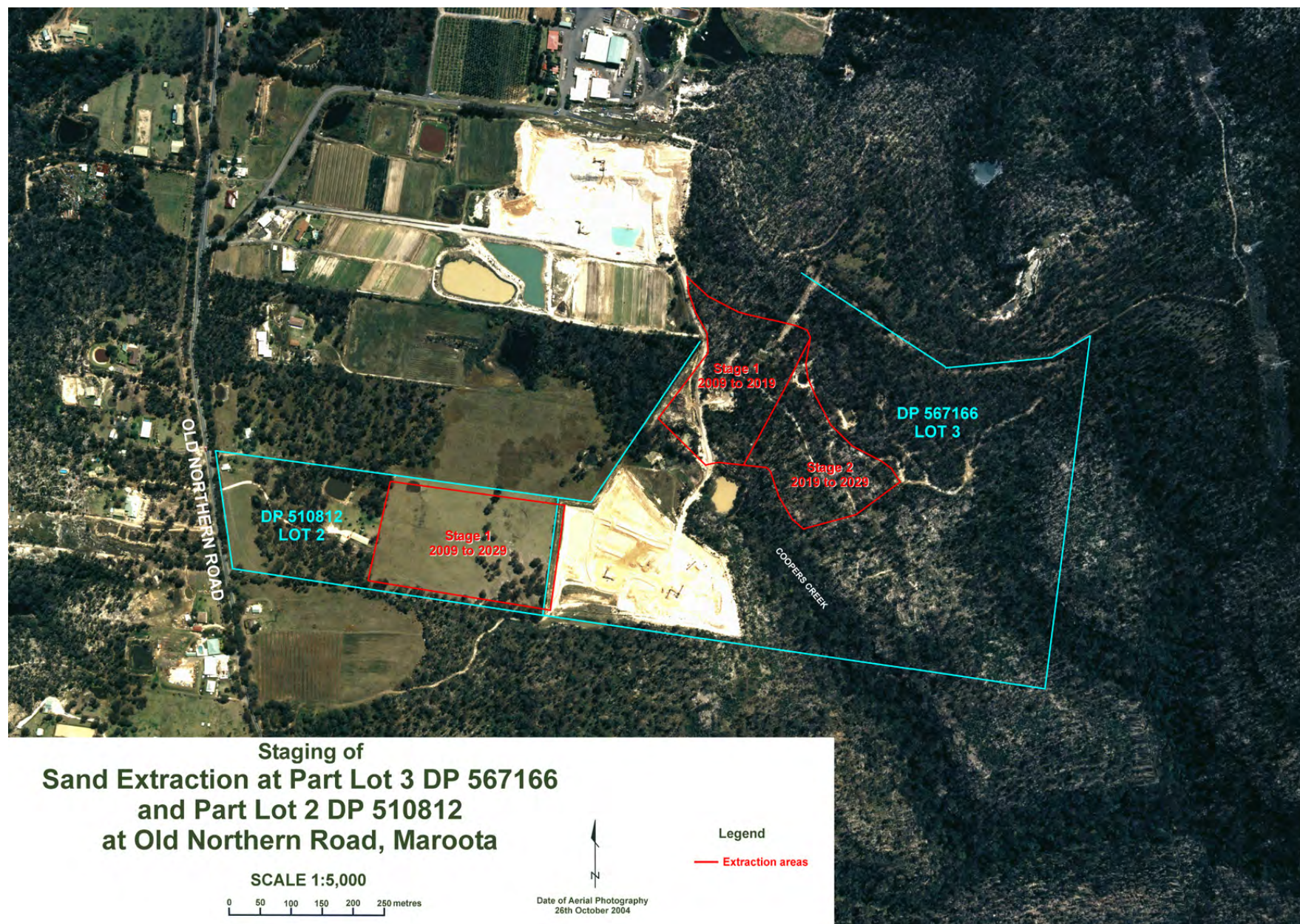
Lot 3 DP 567166 is a battle-axe shaped lot with an area of 50.59 hectares and has a dwelling house located at the front of the property near Old Northern Road. Further east within the site are two dams which support market gardening on rehabilitated land previously used for extractive industry. Lot 2 DP 510812 owned by a legal entity linked with PF Formation is a rectangular shaped lot with an area of 10.12 hectares and frontage to Old Northern Road. A dwelling house is located within the property as well as a dam and cleared grazing land.

A natural watercourse known as Coopers Creek crosses the site and flows in a south-east direction into the adjoining Marramarra National Park. Coopers Creek drains into the Hawkesbury River approximately 4 km to the east. The flow of water in Coopers Creek is affected by agricultural use. The surrounding area has rural land uses characterised by areas of sand extraction, bushland and market gardens. Annual rainfall in the area averages 839mm.

The extraction area and land to the north, west and south occupy freehold land. The eastern boundary and a small section of the southern boundary abut Marramarra National Park. Part of the site to the north is undergoing sand extraction, the remainder of it being undeveloped bushland on moderate to steep sloping sandstone hills and gullies traversed by an access track to a transmission line to the east. Land to the south is partly cleared.



**Figure 1 Aerial View of Site Extraction Areas and Staging**

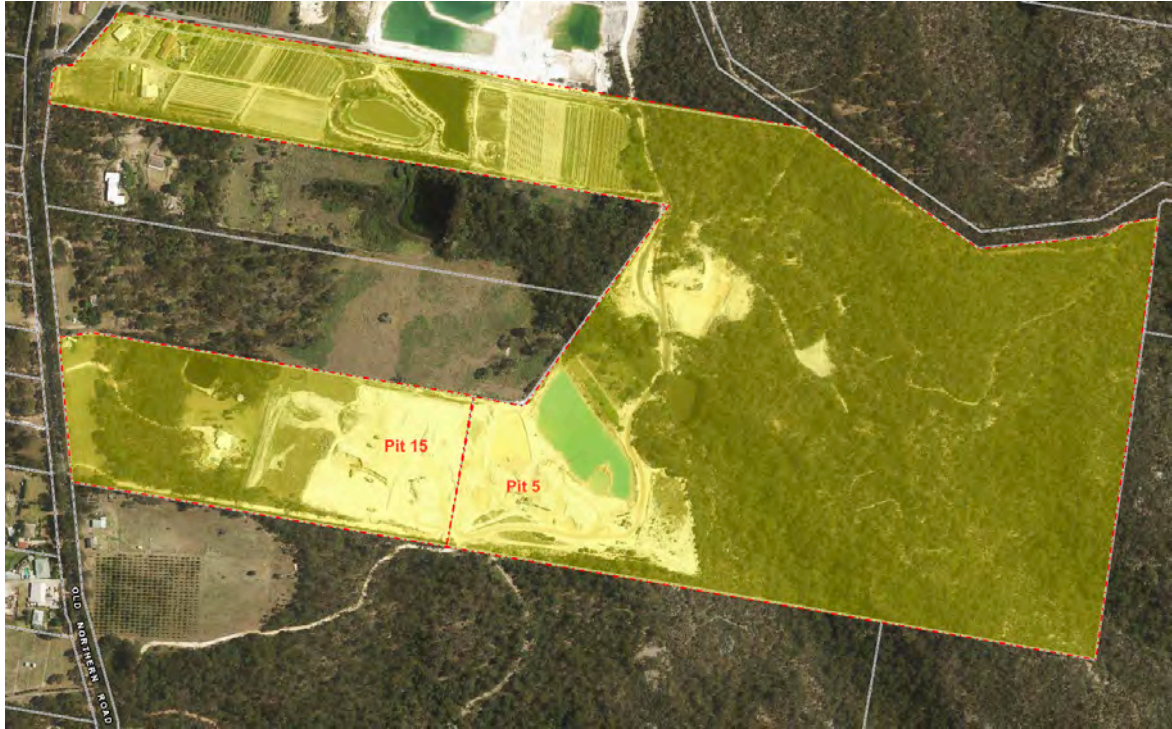




## 2.2 Site Operations

Figure 1 provides an aerial view of the approved site extraction areas and staging. Stage 1 extraction of material and processing commenced in January 2013 and the consent runs until March 2032. Figure 2 shows another more up to date aerial view of the land with the area within the two lot boundaries shaded in green.

**Figure 2 Aerial View of Pits 5 and 15**



Source: Six Maps 2016

Development consent No. 578/2009 for extractive industry on Lot 2 DP 510812 and Lot 3 DP 567166 at Old Northern Road, Maroota was determined by Hornsby Shire Council on 3 March 2010. Development consent No. 578/2009A modifying conditions 2, 8, 11, 12, 15, 17, 18, 53, 60, 62 was determined by Hornsby Shire Council on 28 March 2012. Development consent conditions 66 and 72 were modified by the Land and Environment Court in January 2013. Development consent No. 578/2009B modifying condition 10 was determined by Hornsby Shire Council on 3 November 2016 (see Attachment 1). Environment Protection Authority (EPA) Licence No. 3829 requirements also apply to the site operations (see Attachment 1).

PF Formation will extract friable sandstone from the land in two stages covering 11.8 hectares down to 177 metres AHD with a 2 metre buffer above the wet weather high water table whichever is the higher level. Approximately 3.5 million tonnes of sand will be processed over 20 years. The maximum quantity of material to be extracted and processed will not exceed 195,000 tonnes per annum although actual production rates will be variable and dependent on market demand. Sand will be extracted from two areas of Lot 3 DP 567166 (total 6.8 hectares of mainly bushland) with one area being active between 2012 and 2022 and the other being active between 2022 and 2032. In addition sand will be extracted from part Lot 2 DP 510812 (4.96 hectares of cleared grazing land) between 2012 and 2032.

The staged extraction areas have taken into account a 40 metre setback from Coopers Creek, a 10 metre setback from property boundaries, 20 or 40 metre buffer areas around known Aboriginal sites, general avoidance of the two areas zoned Environmental Protection B (River Catchment) and the presence of a core area of the threatened flora species *Tetratheca glandulosa*. After extraction the land will be progressively rehabilitated in stages for agricultural use including dams for water storage and rehabilitated bushland.

The hours of operation will be from 7am to 6pm Monday to Saturday. It is anticipated that the site will operate for around 275 days a year. An average 35 truck loads will be removed from the site

per day, averaged over one month. In addition, a maximum of 10 laden vehicles is permitted to enter and leave the site between 6am and 7am Monday to Saturday excluding Sundays and public holidays. The existing processing plant will continue to operate on the site to screen material won from the extraction area. A mobile crusher will be used on-site for an average of one day per week if the noise criterion cannot be met.

The workforce on-site will generally include 3 or 4 persons operating a bulldozer, front end loader, dry screening plant, power screen (rinsing unit), radial conveyors, pumps, water cart and mobile crusher. These vehicles, mobile plant and equipment are fuelled on-site from a 26,500 litre storage vessel complying with AS 1940-2004 *The storage and handling of flammable and combustible liquids*. A cleared maintenance area located within the southern portion of Pit 5 is used for workforce amenities including a pump-out toilet facility. No hazardous materials will be used in operations. Administration of the site is carried out from PF Formation's main processing plant and offices at 1774 Wisemans Ferry Road, Maroota approximately 4 km from the site.

Access to the site processing area will continue (as per the vehicular access to the existing quarry) to be via Old Northern Road, along approximately 100 metres of a sealed Crown road and then approximately 1 km of unsealed internal access or haul road to Lot 3 DP 567166 and Lot 2 DP 510812. No site access will be permitted off Old Northern Road to Lot 2 DP 510812 except for use by residents and visitors to the dwelling and for light vehicles in an emergency. Lot 2 DP 510812 is owned by a legal entity linked with PF Formation and the dwelling will be retained for residential use by an employee's family. A 2 metre high and 3 metre wide bund using site topsoil has been located along the western boundary of Lot 2 DP 510812 to provide acoustic and visual screening for residents of the nearby dwelling.

Attachment 2 shows the general sequence of works, rehabilitation and final landform for the sand extraction operations.

## **2.3 Responsible Personnel**

The responsible person for operation of the site is the Quarry Manager assisted by the Environmental Manager and Joint Managing Director as required. These personnel are all located at 1774 Wisemans Ferry Road, Maroota and part time on-site. Their positions, contact names and numbers are listed below.

*Joint Managing Director and Environmental Manager* Mr Joshua Graham  
Phone No. (02) 4566 8314  
Mobile Phone No. 0418 439 923  
Fax No. (02) 4566 8349

*Quarry Manager* Mr Peter Watt (alternative Mr Luke Graham)  
Phone No. (02) 4566 8314  
Mobile Phone No. 0418 279 624  
Fax No. (02) 4566 8349

## **3. Environmental Management System**

### **3.1 Environmental Policies**

PF Formation's environmental goal is to carry out its extractive industry operations in a legally compliant and environmentally responsible manner. The goal is supported by the environmental operating philosophy of PF Formation being committed to continuous improvement in extractive industry technology and protection of the environment. The environmental goal is reinforced by PF Formation's work, health, safety and environmental policies which are as follows.

The management of PF Formation is committed to:

- Maintaining a safe and healthy place to work.
- Giving each employee and contractors as much responsibility as possible for the safe performance of their job.
- Providing safe plant, machinery and equipment.

- Reducing, eliminating and controlling risks to the health and safety of employees and contractors.
- Having employees and contractors work in a responsible manner and minimise environmental pollution particularly noise and dust.
- Encouraging employees and contractors to report environmental pollution, safety hazards and unsafe acts by others.

The work, health, safety and environmental policies will be met by operating and managing the plant and processing all clay and sand product with minimal environmental impact, while being a responsible corporate citizen and meeting all relevant legislative requirements.

The aims of the work, health, safety and environmental policies are to ensure that:

- conditions of approval in the Shire of Hornsby development consent and EPA licence requirements for the site are implemented and complied with.
- the requirements of all relevant NSW environmental legislation are complied with.
- the site is operated and managed to minimise any adverse impacts and pollution on the surrounding environment and community.

PF Formation and all of its employees and suppliers have legal obligations to ensure the plant operates in an environmentally sustainable manner now and in the future. PF Formation has operated extractive industries in the Maroota area since 1983 with no significant environmental impact or harm and has successfully rehabilitated land previously used for extractive industry.

### **3.2 Ecologically Sustainable Development**

The principles of ecologically sustainable development as detailed in the *Environmental Planning and Assessment Act, 1979* and a response in relation to the operations and environmental policies for the site follow and in partial fulfilment of condition 11 of the development consent.

*(a) The precautionary principle - namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by:*

- (i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and*
- (ii) an assessment of the risk-weighted consequences of various options.*

There are no known threats of serious or irreversible environmental damage associated with the site; hence lack of full scientific certainty has not been used as a reason for postponing any of the safeguard measures outlined in the EIS, development consent conditions and EPA licence requirements to prevent environmental degradation. Site operations will follow the precautionary principle by ensuring that the environmental risks have been considered and relevant safeguards implemented to reduce any uncertainties and to avoid serious or irreversible damage to the environment (for example, use of monitoring, landscaped mounds, setbacks from site boundaries and Coopers Creek tributaries, maximum extraction depths, rehabilitation of extraction areas, and protection of *Tetratheca glandulosa* habitat). The Maroota sand deposit including the land has been identified as a major source of sand within the Sydney region and this has been reinforced by the Department of Planning and Environment with the provisions of *Sydney Regional Environmental Plan No. 9 Extractive Industry (No. 2 - 1995)*.

*(b) Inter-generational equity - namely, that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.*

Site operations have been designed for future needs with the capacity to meet expected extraction rates for at least the next 20 years. Progressive rehabilitation of the site will take place for the next generation and future uses including agricultural uses such as market gardening and bushland. The health, diversity and productivity of the environment will be maintained for the benefit of future generations with implementation of the safeguards, development consent conditions and EPA licence requirements. The project will continue to contribute to the local and regional economy and



have medium term benefits for future generations by providing a secure sand and clay resource close to the metropolitan Sydney market with acceptable environmental impact.

*(c) Conservation of biological diversity and ecological integrity namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration.*

The project will help conserve biological diversity and ecological integrity by retaining existing areas of *Tetratheca glandulosa* habitat. Site rehabilitation will conserve biological diversity and ecological integrity with use of locally indigenous species in rehabilitation and revegetation of the site. Other mitigation measures including monitoring will be implemented to minimise any adverse impacts on soils, waterways, groundwater, water and air quality, noise and vibration, landscape and visual qualities, and the nearby Maroota rural community. The water cycle for the site is self-enclosed.

*(d) Improved valuation, pricing and incentive mechanisms namely, that environmental factors should be included in the valuation of assets and services, such as:*

- (i) polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,*
- (ii) the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste,*
- (iii) environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.*

The cumulative impacts of the site operations will be beneficial and manageable in the medium term. However, while prices for natural resources should be set to recover the full social and environmental costs for their use, many environmental values cannot be set in monetary terms. Nevertheless, the site's extractive resources will provide beneficial uses and economic benefits to the community with supply of product that is essential to the viability of the Sydney metropolitan building and construction industries. An on-site EMP will be continued to monitor any impacts and enable corrective actions. After completion of extraction the area will be rehabilitated for agricultural use and bushland to improve valuation of the site. Waste generation from the site will continue to be managed responsibly. In addition, based on extraction rates Section 94 contributions will be paid to Council for the maintenance and improvement of main roads in the Maroota area.

The value placed on environmental resources in and around the site is evident in the extent of previous environmental investigations, planning and design of impact mitigation measures to prevent irreversible damage of those resources. PF Formation currently undertakes environmental monitoring of the existing development and this will continue for the project life.

### **3.3 Legislation Applicable to Site**

The requirements of the following NSW legislation and their associated Regulations directly apply to the site and will be complied with:

- *Environmental Planning and Assessment Act, 1979*
- *Heritage Act, 1977*
- *National Parks and Wildlife Act, 1974*
- *Noxious Weeds Act, 1993*
- *Protection of the Environment Operations Act, 1997*
- *Rural Fires Act, 1997*
- *Soil Conservation Act, 1938*
- *Threatened Species Conservation Act, 1995*
- *Work Health and Safety Act, 2011*
- *Waste Avoidance and Resource Recovery Act, 2001*
- *Water Management Act, 2000.*

In addition, the site is subject to the following planning and legislative controls.

- *Environment Protection and Biodiversity Conservation Act, 1999* (Commonwealth)
- *Sydney Regional Environmental Plan No. 20 Hawkesbury-Nepean River (No. 2 - 1997)*
- *Sydney Regional Environmental Plan No. 9 Extractive Industry (No.2 - 1995)*
- *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007*
- *Hornsby Local Environmental Plan 2013*
- *Hornsby Development Control Plan 2013 – Part 2 Rural - Section 2.5 Extractive Industries*
- *Hornsby Shire Council Section 94 Development Contributions Plan 2014-2024*
- *Work Health and Safety (Mines and Petroleum Sites) Regulation 2014.*

### **3.4 Environmental Impact Assessment and Implementation**

The environmental impacts of the site operations were considered during preparation of an EIS (*Environmental Impact Statement for Sand Extraction at Part Lot 3 DP 567166 and Part Lot 2 DP 510812 at Old Northern Road, Maroota*, May 2009, Environmental Planning Pty Ltd). This included a number of environmental mitigation measures aimed at reducing the extent of the impacts. Approval for operations of the site was granted via conditional development consent No. 578/2009 in March 2010 as modified by conditional development consent No. 578/2009A in March 2012, Land and Environment Court orders in January 2013 and modified by conditional development consent No. 578/2009B in November 2016.

The environmental mitigation measures listed in the EIS, development consent No. 578/2009B modified conditions, Land and Environment Court orders and EPA licence requirements are addressed in this EMP which has been compiled to summarise all environmental undertakings by PF Formation for the site.

The EMP is a condition of consent to ensure all environmental controls developed during preparation of the EIS and listed in the development consent and EPA licence for the site are implemented during site operations and rehabilitation.

### **3.5 Amendments and Variations to the EMP**

The requirements of this EMP may need to be amended during operations of the site. This could be, for example, because of issues raised by neighbouring residents, changes in legislation and associated regulations, Section 96 modifications to the development consent or EPA licence. The need for variations may also occur as site operations progress and specific circumstances vary from those envisaged during the formulation of the mitigation measures in the EIS and the development consent for the site.

The procedure for amending the EMP, where requirements are considered not applicable, or additional requirements are needed, is a formal process in order to ensure that the environmental implications for any amendments are acceptable. The procedure outlined below will maintain the integrity of the EMP and ensure that any amendments are approved by the Environmental Manager.

For all amendments or variations to the EMP, the Environmental Manager will be notified, the reasons for the amendment explained and approval sought. Following approval by the Environmental Manager with notification to the neighbouring residents and Hornsby Shire Council, the amendment together with the responsibility and timing will be issued by the Environmental Manager and documented in Section 8.3. Any revisions will be referenced on page *iii* of the EMP and new pages issued to those on the distribution list. The revised contents of Section 8.3 will then be treated the same as the requirements of Section 8.2 in relation to checking procedures.

## 4. Safeguards

Safeguards and/or environmental mitigation measures were developed during the assessment of impacts on the environment during preparation of the EIS, issuing of the development consent and EPA licence. The safeguards generally follow the format of development consent No. 578/2009B, EPA licence plus other requirements. The safeguards are summarised in Section 8.3 - Schedule of Environmental Actions for the following key issues and activities.

- Hornsby Shire Council operational conditions.
- Department of Water and Energy (now NSW Office of Water) conditions.
- Department of Environment, Climate Change and Water (now EPA) conditions.
- Department of Primary Industries Mineral Resources condition.
- Department of Environment and Climate Change (NPWS as part of Office of Environment and Heritage) conditions.
- Roads and Traffic Authority (now Roads and Maritime Services) conditions.
- Environment Protection Licence 3829 requirements.
- EIS mitigation measures.
- Other requirements.

## 5. Environmental Monitoring

The objectives and requirements for the monitoring programme are detailed below for the key issues and activities for the site. The results of the monitoring programme and audits will be included in Annual Environmental Management Plans (AEMPs). The first AEMP was produced in September 2012.

An automatic weather station located at the weighbridge at 1774 Wisemans Ferry Road, Maroota has monitored temperature, wind speed and direction, wind chill, rainfall, dew point and barometric pressure since December 1999. The weather station records are available for inspection at the weighbridge.

The following parameters will be regularly monitored by the Environmental Manager and Quarry Manager as designated.

### ***Operational***

- A maximum extraction depth of 177 metres AHD with a 2 metre buffer above the wet weather high water table whichever is the higher level.
- A maximum of 195,000 tonnes per annum of material to be extracted and processed.
- Setbacks of 40 metres from Coopers Creek, a 10 metre setback from property boundaries, 20 or 40 metre buffer areas around known Aboriginal sites and general avoidance of the two areas zoned Environmental Protection B (River Catchment).
- Progressive rehabilitation of the land in stages for agricultural use and bushland.
- Hours of operation from 7am to 6pm Monday to Saturday.
- A mobile crusher to be used only for an average of one day per week if the noise criterion cannot be met.
- No explosives or chemicals will be used in processing of material.

### ***Traffic***

- Daily records will be maintained by the weighbridge operator at 1774 Wisemans Ferry Road, Maroota recording each truck movement from the site in terms of date, time, vehicle registration number, type of material, mass/tonnage and job number.
- An average 35 truck loads removed from the site per day averaged over one month.
- A maximum of 10 laden vehicles to enter and leave the site between 6am and 7am Monday to Saturday excluding Sundays and public holidays.
- Monthly monitoring of production records held at 1774 Wisemans Ferry Road, Maroota by the Environmental Manager will establish the number of daily laden road vehicle trips.
- Trucks will only enter the quarry via the access road in Lot 3 DP 567166.

## **Water Quality**

- The erosion and sediment control strategy in Attachment 8 and the relevant measures in *Managing Urban Stormwater: Volume 2E Soils and Construction - Mines and Quarries and Soils and Construction 2004* (the Blue Book) will be implemented and monitored.
- All surface water run-off from site operations will be contained within the tailings ponds and sediment dams within the extraction areas of the site.
- No water will be drawn from Coopers Creek or groundwater for production.
- Each quarter the Environmental Manager will collect a water quality sample from an on-site tributary or Coopers Creek itself (when flowing) for testing by a private contractor at a NATA registered laboratory for pH, turbidity, oil and grease, total suspended solids and conductivity. Acceptable limits are the preferred EPA criteria and ANZECC guidelines for discharge of stormwater runoff.

## **Groundwater**

The level of groundwater on the site was monitored at the licensed bore PFL3MW1 located near the Pit 5 extraction area between April 1998 and 2013. Due to extraction activities a new licensed bore PFL3MW2 was established in 2014 in Pit 5 near the southern boundary of Lot 3 DP 567166 to further monitor groundwater. As agreed with DIPNR (now the NSW Office of Water) in 1998 groundwater quality will be monitored for:

- pH, electrical conductivity and total dissolved solids.
- calcium, magnesium, sodium and potassium.
- chloride, sulphate and bicarbonate.
- oil and grease.

Annual testing for the above analytes will be at a NATA registered laboratory. The water management and groundwater results will be included in the AEMPs with full documentation held at the site office and available for inspection. The results will be provided to the NSW Office of Water.

## **Air Quality**

The EPA endorsed a Dust Monitoring Plan dated May 2011. On 4 November 2011 the Office of Environment and Heritage (OEH) advised via email that they *"reviewed the document and in general the Plan appears to be a useful framework document to assist the applicant meet the stated objectives of the plan and of Project Approval condition 11 for development consent 578/2009 and licence conditions 54, 55, 64. However, OEH as a matter of policy OEH will not in general approve EMPs"*. A revised Dust Monitoring Plan dated November 2016 is provided in Attachment 7.

The air quality commitments in the Dust Monitoring Plan to be implemented and monitored are listed in Section 8.3 condition 64.

## **Noise**

EPA Licence 3829 for the site has a number of requirements including  $L_{Aeq (15 \text{ minute})}$  noise limits for 13 locations in the Maroota area and requires implementation of a Noise Management Plan for the area so that the limits are not exceeded. The closest noise monitoring location to Pits 5 and 15 is the western boundary of Lot 2 DP 510812 on Old Northern Road and the EPA Licence 3829 specifies a noise limit of 45 dB(A)  $L_{Aeq (15 \text{ minute})}$  during the day. Noise has been monitored quarterly at this location since October 2010 and the results will be provided in the AEMPs.

Daytime noise will be monitored at the western boundary of Lot 2 DP 510812 by the Environmental Manager for at least 15 minutes on one operating day each quarter using a calibrated noise meter and as specified in the EPA licence. Noise will be measured using Australian Standard AS 1055.1-1997 *Acoustics - Description and Measurement of Environmental Noise – General Procedures*. Instrumentation to be used is held at 1774 Wisemans Ferry Road, Maroota and includes a Class 1 Svan Sound Level Meter and a Class 1 Svantek Acoustic Calibrator. Instructions are available for the use of the equipment and the Environmental Manager has been trained in their use. Full documentation and results will be held at 1774 Wisemans Ferry Road, Maroota and available for inspection.



## **Waste Management**

The Environmental Manager will be responsible for monitoring all on-site waste management, ensuring that all waste disposal, recycling and reuse procedures are followed as shown in the Waste Management Plan in Attachment 9. No waste will be buried or burnt on site.

## **Rehabilitation**

The site will be progressively rehabilitated and monitored in accordance with the quarry rehabilitation plans shown in Attachment 2. The final land use for the extraction areas will be for agricultural purposes and bushland. The rehabilitation progress will be monitored by the Environmental Manager and the results will be summarised for inclusion in the AEMPs. Full documentation for site rehabilitation will be held at 1774 Wisemans Ferry Road, Maroota and available for inspection.

## **Community and Complaints**

Condition 11 of development consent No. 578/2009B specifies various monitoring and management requirements. Environmental monitoring requirements for the site are summarised above in this section 5 of the EMP. Condition 11 (h) requires consultation with community groups, nearby residents and monitoring of complaints received.

A Maroota Residents Community Committee was previously established for extractive industry on Lot 3 DP 567166 and met annually at 1774 Wisemans Ferry Road, Maroota. Before commencement of extraction on Pit 5 PF Formation contacted the neighbouring residents by letter requesting them if there were any issues to resolve and to inform them of the AEMPs which will be available on PF Formation's website at [www.pfformation.com.au](http://www.pfformation.com.au). Neighbouring residents were advised in the letter that PF Formation are happy to have communication by calling PF Formation direct if there are any issues or complaints rather than formal meetings.

Community complaints will be monitored and procedures implemented by the Quarry Manager and Environmental Manager to rectify any problems. A register of complaints is provided in Attachment 5 of the EMP and will be maintained by the Environmental Manager. The objective is to have nil complaints.

Environmental audits of the site, the EMP and its effectiveness and implementation may be completed as required. These audit reports would be confidential to PF Formation.

## **Contributions**

Section 94 contributions will be paid on a monthly basis depending on the rate of extracted material in accordance with condition 53 of the development consent.

## **6. Monthly Site Assessments**

Monthly site assessments will be completed on the listed environmental commitments. Environmental commitments completed during construction are included in Section 8.1. All environmental commitments and/or actions are summarised in Section 8.2 and detailed in Section 8.3 Environmental Checklist for Operations. After completion of the designated environmental commitments and/or operational actions listed in Section 8.3, the Environmental Manager is to sign off and date photocopies of the monthly Environmental Commitments Summary Checklist provided in Section 8.2. Comments and references can be completed as required. The completed monthly checklists will be held by the Environmental Manager at 1774 Wisemans Ferry Road, Maroota.

A number of site assessments on a monthly basis are required to be completed to assess the implementation and effectiveness of all actions specified in the Section 8.3 Environmental Checklist for Operations, as follows.

To ensure that all environmental commitments and controls are in place and are being implemented during operations they have been nominated as routine monthly site activities to be checked by the Environmental Manager. The monthly checklists will be accompanied by any comments, corrective actions (see below) and additional environmental requirements to ensure

that the safeguard measures are achieved. In addition, quarterly noise and water quality monitoring by the Environmental Manager will be included in the monthly checklists as they are obtained.

In the event that any environmental commitment or action is not implemented by the required date or any action does not conform or is ineffective, a Corrective Action Request will be completed by the Environmental Manager and issued to the responsible person for implementation. A register of Corrective Action Requests will be kept in Attachment 3.

A Corrective Action Request form is included in Attachment 4. The responsible person will respond to the person issuing the Corrective Action Request within seven days indicating what action will be carried out and a due date. The Environmental Manager will check that the corrective action has been fulfilled by the required date and sign off the completed Corrective Action Request form.

Any complaints received on site operations and associated corrective actions will be documented on the checklist and in the Register of Complaints in Attachment 5.

## **7. Responsibilities and Reporting**

### ***Environmental Manager***

- ensure implementation and maintenance of environmental actions and controls as provided in the Environmental Checklist for Operations in Section 8.3.
- ensure that where relevant all Environmental Checklists are also completed, signed and dated including the Quarry Manager and are included in the AEMPs.
- maintain a register of all completed monthly Environmental Checklists provided in Section 8.2 and include them in the AEMPs.
- issue and follow up on Corrective Action Requests, complaints, non-conformances and observations.
- report on effectiveness of safeguard measures.
- address any environmental or community complaints made about the site.
- activate the Pollution Incident Response Management Plan as required (Attachment 6).
- ensure daily records are maintained by the weighbridge operator recording each truck movement from the site in terms of date, time, vehicle registration number, type of material, mass/tonnage and job number.
- ensure that AEMPs are completed.
- ensure that all site personnel are aware of their environmental responsibilities in the management and implementation of safeguard controls and actions.
- ensure that site assessments by the Quarry Manager are being carried out and reported.
- ensure that corrective and preventative actions arising from internal assessments or environmental audits are implemented.
- address any environmental or community complaints made about the site.
- keep the neighbouring residents and Hornsby Shire Council informed of site operations via amendments to the EMP, AEMPs and at any meetings.

### ***Quarry Manager***

- ensure implementation and maintenance of environmental actions and controls as indicated in the Environmental Checklist for Operations in Section 8.3.
- ensure that all site personnel are aware of their environmental responsibilities in the management and implementation of safeguard controls and actions.

## 8. Schedule of Environmental Actions

### 8.1 Prior to Commencement of Work Commitments

Conditions 1 to 9 in development consent No. 578/2009 were general conditions and requirements prior to commencement of any works and have either been completed or the current status is shown in the table below. On 28 March 2012 Section 96 modifications to conditions 2, 8, 11, 12, 15, 17, 18, 53, 60, 62 in development consent No. 578/2009A were determined by Council and the Land and Environment Court made orders on conditions 66 and 72 in January 2013. Development consent No. 578/2009B modifying condition 10 was determined by Hornsby Shire Council on 3 November 2016.

No.	Development Consent No. 578/2009B General Conditions and Requirements Prior to Commencement of Any Works	Status																																																
1.	The development must be carried out in accordance with the plans and documentation listed below and endorsed with Council's stamp, except where amended by Council and/or other conditions of this consent: <i>Quarry Rehabilitation Concept Plans prepared by Footprint Green Pty Ltd</i>	Rehabilitation concept plans to be progressively implemented.																																																
	<table><tr><th>Plan No.</th><th>Plan Title</th><th>Rev</th><th>Dated</th></tr><tr><td>smrmcs1.01</td><td>Cover Page</td><td>0.4</td><td>15 January 2010</td></tr><tr><td>smrmex1.01</td><td>Existing site land uses and habitats and extraction and rehabilitation areas</td><td>0.4</td><td>15 January 2010</td></tr><tr><td>smrmeo1.01</td><td>Operational stages and typical extraction and rehabilitation process</td><td>0.4</td><td>15 January 2010</td></tr><tr><td>smrmfc1.01</td><td>Proposed land uses and final landform and contours</td><td>0.4</td><td>15 January 2010</td></tr><tr><td>smrmpp2.01</td><td>Stage 1 - rehabilitation process in Area E</td><td>0.4</td><td>15 January 2010</td></tr><tr><td>smrmisp1.01</td><td>Stage 1 - extraction and rehabilitation process in Areas A and C</td><td>0.4</td><td>15 January 2010</td></tr><tr><td>smrmisp2.01</td><td>Stage 2 - extraction and rehabilitation process in Areas B and D</td><td>0.4</td><td>15 January 2010</td></tr><tr><td>smrmrd1.01</td><td>Procedures for <i>Tetratheca glandulosa</i> propagation and translocation and bushland rehabilitation</td><td>0.4</td><td>15 January 2010</td></tr><tr><td>smrmrd2.01</td><td>Procedures for upland wetland revegetation and agricultural land rehabilitation</td><td>0.4</td><td>15 January 2010</td></tr><tr><td>smrmrp2.01</td><td>Specifications and species options for revegetation</td><td>0.4</td><td>15 January 2010</td></tr><tr><td>smrmmr1.01</td><td>Performance measures, monitoring and reporting</td><td>0.5</td><td>15 January 2010</td></tr></table>	Plan No.	Plan Title	Rev	Dated	smrmcs1.01	Cover Page	0.4	15 January 2010	smrmex1.01	Existing site land uses and habitats and extraction and rehabilitation areas	0.4	15 January 2010	smrmeo1.01	Operational stages and typical extraction and rehabilitation process	0.4	15 January 2010	smrmfc1.01	Proposed land uses and final landform and contours	0.4	15 January 2010	smrmpp2.01	Stage 1 - rehabilitation process in Area E	0.4	15 January 2010	smrmisp1.01	Stage 1 - extraction and rehabilitation process in Areas A and C	0.4	15 January 2010	smrmisp2.01	Stage 2 - extraction and rehabilitation process in Areas B and D	0.4	15 January 2010	smrmrd1.01	Procedures for <i>Tetratheca glandulosa</i> propagation and translocation and bushland rehabilitation	0.4	15 January 2010	smrmrd2.01	Procedures for upland wetland revegetation and agricultural land rehabilitation	0.4	15 January 2010	smrmrp2.01	Specifications and species options for revegetation	0.4	15 January 2010	smrmmr1.01	Performance measures, monitoring and reporting	0.5	15 January 2010	Baseline vegetation survey in Area A completed in May 2011.
	Plan No.	Plan Title	Rev	Dated																																														
	smrmcs1.01	Cover Page	0.4	15 January 2010																																														
	smrmex1.01	Existing site land uses and habitats and extraction and rehabilitation areas	0.4	15 January 2010																																														
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			The dust gauge was relocated in August 2010 to the western boundary of Lot 2 DP 510812 and monthly results are obtained.																																															
			Acoustic assessments of the Pit 4 and Pit 5 area commenced in August 2011 and annually thereafter.																																															
	<i>Supporting Documentation</i>		Quarterly water quality results are obtained.																																															
<table><tr><th>Document No.</th><th>Prepared by</th><th>Dated</th></tr><tr><td>Environmental Impact Statement</td><td>Environmental Planning Pty Ltd</td><td>May 2009</td></tr><tr><td>Species Impact Statement</td><td>Aquila Ecological Surveys</td><td>November 2008</td></tr><tr><td>Report on Traffic and Transportation Requirements - Job No. 9162 Report No. 36/07</td><td>Lyle Marshall &amp; Associates Pty Ltd</td><td>February 2008</td></tr><tr><td>Air Quality Impact Assessment</td><td>Holmes Air Sciences</td><td>4 March 2008</td></tr></table>		Document No.	Prepared by	Dated	Environmental Impact Statement	Environmental Planning Pty Ltd	May 2009	Species Impact Statement	Aquila Ecological Surveys	November 2008	Report on Traffic and Transportation Requirements - Job No. 9162 Report No. 36/07	Lyle Marshall & Associates Pty Ltd	February 2008	Air Quality Impact Assessment	Holmes Air Sciences	4 March 2008	A groundwater management plan was completed in July 2011 and annually thereafter.																																	
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Air Quality Impact Assessment	Holmes Air Sciences	4 March 2008																																																

No.	Development Consent No. 578/2009B General Conditions and Requirements Prior to Commencement of Any Works	Status
	Air Quality Impact Assessment Addendum 1 (letter)	PAE Holmes
	Air Quality Impact Assessment Addendum 2 (letter)	PAE Holmes
	Environmental Noise and Vibration Assessment – TD721-01F02 (Rev 4)	Renzo Tonin and Associates
	Acoustic Report Addendum (letter)	Renzo Tonin and Associates
	Groundwater Assessment Report - JN 43346029.00106/REPORT 08	URS Australia Pty Ltd
	Aboriginal Cultural Heritage and Archaeological Assessment	Total Earth Care
	Herbivore Exclusion Fencing Requirements	Hornsby Shire Council Bushland & Biodiversity Team
2.	<p>Pursuant to Section 80A(1)(d), this consent is limited to a period of 20 years from the endorsed date of this consent or the commencement of on-site extraction works, whichever is the latter date. Any disturbed areas on the site, must be rehabilitated in this period.</p> <p>All work including rehabilitation is to be completed within this period. Rehabilitation must be carried out progressively during the course of excavation and be completed within this period. All equipment to be used in the work must be removed from the site within that time.</p>	Endorsed date of modified consent is 28 March 2012.
3.	A standard method of determining weighted material must be negotiated, being a method that is auditable by Council at six monthly intervals.	Completed.
4.	The proponent is to obtain all necessary operating licenses and permits from all relevant public authorities including the Environmental Protection Authority and Department of Water and Energy, details of which are to be submitted to Council prior to the commencement of on-site works.	Environment Protection Licence 3829 obtained.
5.	Fencing must be provided to separate extraction areas from Aboriginal artefacts and habitat areas to reduce impacts to native vegetation and the habitat it provides and to protect Aboriginal artefacts.	Setbacks from Aboriginal artefacts are fenced off and marked with high visibility tape.
6.	<p>Erosion and sediment control measures must be provided and maintained throughout the construction period in accordance with the manual <i>'Soils and Construction 2004 (Bluebook)'</i>, the approved plans, Council specifications and to the satisfaction of the principal certifying authority. The erosion and sediment control devices must remain in place until the site has been stabilised and revegetated.</p> <p><i>Note: On the spot penalties up to \$1,500 may be issued for any non-compliance with this requirement without any further notification or warning.</i></p>	Partially completed and in accordance with Rehabilitation Plans Sheets 6 to 10. <i>Bluebook</i> held on site.
7.	<p>In accordance with the approved <i>Quarry Rehabilitation Plans for Part Lot 3 DP567166 and Part Lot 2 DP510812 Old Northern Rd, Maroota</i> prepared by Footprint Green Pty Ltd (dated 15<sup>th</sup> January 2010) certification by a qualified and experienced ecologist is required to:</p> <p>a. undertake <i>Tetratheca glandulosa</i> propagation and translocation procedures including pre-clearing surveys and identification of clumps of on-site (Task 6.1-6.11 – Sheet 8/11)</p>	Footprint Green Pty Ltd has certified M. Attard (landowner Lot 3 DP 567166) to undertake <i>Tetratheca</i>



No.	Development Consent No. 578/2009B General Conditions and Requirements Prior to Commencement of Any Works	Status
	b. collection of all baseline vegetation quadrat data for future monitoring purposes prior to clearing c. prior to clearing of native vegetation within each cell check that the cell does not contain exotic or weed vegetation d. prior to the translocation of topsoil within each cell check that the recipient cell does not contain any exotic or weed vegetation and the final grading band sub strata has been suitably prepared e. provide recommended actions required to ensure the donor and recipient sites are weed free before works commence.	<i>glandulosa</i> propagation on site. Clumps of <i>Tetratheca glandulosa</i> have been identified on the site by Footprint Green Pty Ltd and are marked with star pickets and high visibility tape. Some plants have been translocated on-site.
8.	The removal of introduced environmental and noxious weeds from donor and recipient sites is to be undertaken or supervised by a qualified and experienced bush regeneration company or consultant.	Partially completed by Footprint Green Pty Ltd.
9.	Prior to the commencement of extraction, the proponent must lodge with Council a contract for a Rehabilitation Bond based on an amount per tonne of extracted material. The total of this amount must be sufficient to cover the cost of rehabilitating the approved extraction area and other likely disturbed areas.	Lodged with Council on 19 May 2010.

## 8.2 Environmental Commitments Summary Checklist

A summary checklist for monthly recurring commitments follows. The checklist will be completed by the Environmental Manager with assistance from the Quarry Manager as required. The completed summary monthly checklists will be included in the AEMPs by the Environmental Manager.

**PF FORMATION EXTRACTIVE INDUSTRY AT PITS 5 and 15 OLD NORTHERN ROAD, MAROOTA**  
**ENVIRONMENTAL COMMITMENTS SUMMARY CHECKLIST**  
**COMMITMENT/ACTION - MONTH ENDING ..... 201 .**  
**Completed by Environmental Manager - Signature ..... Date .....**

COMMITMENT GROUP	EMP Checklists Commitment Numbers	COMPLETED √ Satisfactory or X Needs Corrective Action	COMMENTS Include details of any Corrective Actions required, complaints received and implementation of any As Required commitments
Operational	10 to 24		
Dept. Water and Energy	25 to 42		
Dept. of Environment Climate Change and Water (EPA)	43 to 64		
Dept. of Primary Industries Mineral Resources	65		
Dept. of Environment and Climate Change (NPWS)	66 to 74		
Roads and Traffic Authority (RMS)	75 to 79		
Environment Protection Licence	80 to 91		
EIS Mitigation Measures	92 to 166		
Other Requirements	167 to 178		
Any As Required commitments implemented?		Yes or No	

### 8.3 Environmental Checklist for Operations

A detailed checklist for operations and rehabilitation of the Pits 5 and 15 quarries follow. The environmental commitments monthly summary checklist will be completed by the Environmental Manager with assistance from the Quarry Manager as required.

OPERATIONAL CONDITIONS				
OPERATIONAL Commitment and/or Action	Reference	Monthly Check	As Required	Responsibility
10. A maximum of 35 truck loads of material are permitted to be removed from the site each day averaged over 1 month.	Modified consent condition 10	√		Environmental Manager
<p>11. The proponent must submit to Council every 12 months after the endorsed date of this consent or prior to the commencement of the on-site extraction works (whichever is the latter date), an <i>Environmental Management Plan</i> in which Council is to be satisfied of the overall performance and management of the operation.</p> <p>The <i>Environmental Management Plan</i> should refer to the objectives and principles of Ecologically Sustainable Development and address the following matters:</p> <ul style="list-style-type: none"> <li>a. Acquisition of all necessary licences and permits and an indication of how compliance with licensing and approval requirements will be achieved and due diligence attained.</li> <li>b. On site materials management including management of operational impacts: if appropriate, include such as: <ul style="list-style-type: none"> <li>i. management of explosives, chemicals and fuel and their use</li> <li>ii. maintenance an site security plans</li> </ul> </li> <li>c. Water Management.</li> <li>d. Acoustic Management.</li> <li>e. Air quality Management.</li> <li>f. Transport routes, access &amp; movements.</li> <li>g. Soil Conservation including geo-technical appraisal of tailing systems and erosion and sediment controls.</li> <li>h. Social impact management including consultation with community groups, nearby residents and monitoring of complaints received.</li> <li>i. Identification, assessment and evaluation of risks, safeguards and the confidence level of contingency / emergency plans.</li> </ul>	Consent condition 11		<p>√</p> <p>First EMP submitted to Council in December 2011.</p> <p>EMP revised September 2012, August 2013 and November 2016.</p> <p>Safety/ Environmental meetings are held quarterly.</p> <p>The neighbouring residents will be contacted</p>	Environmental Manager

<b>OPERATIONAL Commitment and/or Action</b>	<b>Reference</b>	<b>Monthly Check</b>	<b>As Required</b>	<b>Responsibility</b>
<p>j. Statement of Compliance with the approved EIS documentation, conditions of this consent and the objectives of Councils DCP - Extractive industries.</p> <p>k. Advice and recommendations of all relevant state government agencies.</p> <p>l. Reference to International Standards (ISO) 14001-14004 relating to Environmental Management Systems, which should address issues such as:</p> <ul style="list-style-type: none"> <li>i. the capacity and support mechanisms necessary to implement and achieve the proponent company's environmental policy, objectives and targets; and</li> <li>ii. the means by which the proponent company measure, monitor and evaluate its environmental performance.</li> </ul> <p>m. Recommendations to adjust operation procedures to improve the overall performance of the operations.</p> <p>n. Strategies to feed information from the monitoring program back into the management practices and action plans to improve the environmental performance and sustainability of all components of the proposal.</p> <p>o. Training programs for operational staff and incentives for environmentally sound performance.</p> <p>p. Archaeological protection measures.</p> <p>q. Performance indicators in relation to critical operational issues including:</p> <ul style="list-style-type: none"> <li>i. Compliance with the conditions of consent;</li> <li>ii. Compliance with the objectives of Sydney Regional Environmental Plan No.9 Extractive Industries (No. 2 - 1995); and</li> <li>iii. Compliance with the objectives of Council's Extractive Industry Development Control Plan.</li> </ul>			<p>by letter at least annually requesting them if there are any issues to resolve and to inform them of the AEMPs.</p>	
<p>12. Processing of materials must take place wholly within the Maroota area.</p>	<p>Consent condition 12</p>		<p>√ At least quarterly</p>	<p>Environmental Manager and Quarry Manager</p>
<p>13. The annual volume of material to be extracted shall be in accordance with the details provided in the Environmental Impact Statement and accompanying documents (i.e. 195,000 tonnes per annum).</p>	<p>Consent condition 13</p>		<p>√ At least quarterly</p>	<p>Environmental Manager</p>
<p>14. All rehabilitation and environmental protection procedures must be undertaken in accordance with the approved <i>Quarry Rehabilitation Plans for Part Lot 3 DP567166 and Part Lot 2 DP510812 Old Northern Rd, Maroota</i> prepared by Footprint Green Pty Ltd (dated 15<sup>th</sup> January 2010).</p>	<p>Consent condition 14</p>		<p>√ At least quarterly</p>	<p>Environmental Manager and Quarry Manager</p>



OPERATIONAL Commitment and/or Action	Reference	Monthly Check	As Required	Responsibility
<p>15. In accordance with the approved <i>Quarry Rehabilitation Plans for Part Lot 3 DP567166 and Part Lot 2 DP510812 Old Northern Rd, Maroota</i> prepared by Footprint Green Pty Ltd (dated 15<sup>th</sup> January 2010) all weed removal, protection and translocation of <i>Tetradlea glandulosa</i> clumps, vegetation clearing, bulk removal of topsoil containing seed bank and preparation of recipient sites including final grading of sub strata (Tasks 7.6 – 7.30 within sheet 8/11 of the approved Rehabilitation Plan) is to only be undertaken or supervised by an experienced bushland rehabilitation company or consultant.</p> <p>Some bulk earth works pertaining to rehabilitation works (e.g. topsoil stripping or recipient site preparation) may be undertaken by other earth moving personnel including PF Formation employees or other earthmoving contractors.</p>	Consent condition 15		<p>√</p> <p>At least quarterly</p>	<p>Environmental Manager and Footprint Green Pty Ltd</p>
<p>16a. In order to prevent herbivory of germinating translocated soil seedlings, exclusion fencing is to be undertaken in accordance with the '<i>Herbivore Exclusion Fencing Requirements</i>', prepared by Hornsby Shire Council Bushland and Biodiversity Team, dated 1 February 2010. The fencing which includes sedimentation/erosion control is to be installed immediately after topsoil has been translocated to the recipient site.</p> <p>16b. The Herbivore Exclusion Fencing must be maintained for each rehabilitation cell until certification from an ecologist or contracted bush regeneration company or consultant is provided to Council that justifies that exclusion fencing is no longer required due to the success of native vegetation establishment.</p>	Consent condition 16		<p>√</p> <p>At least quarterly</p>	<p>Environmental Manager and Footprint Green Pty Ltd</p>
<p>17a. The monitoring program for bushland rehabilitation must form part of other monitoring requirements (ground water, air quality etc) of the approved quarry operation Environmental Management Plan. The approved monitoring methods, survey parameters, frequency, performance measures and remedial actions outlined within sheet 11 of 11 of the <i>Quarry Rehabilitation Concept Plan for Part Lot 3 DP567166 and Part Lot 2 DP510812 Old Northern Rd, Maroota</i> prepared by Footprint Green Pty Ltd (dated 15<sup>th</sup> January 2010) must be undertaken or supervised by a qualified and experienced ecological company or consultant.</p> <p>17b. At the completion of rehabilitation and translocation works within each cell, a concise works summary report must be prepared by a qualified and experienced ecologist to ensure the rehabilitation and translocation works are satisfactorily completed in accordance with the approved rehabilitation plan with <i>Task 7.32 – Sheet 8/11</i> of the approved <i>Quarry Rehabilitation Plans for Part Lot 3 DP567166 and Part Lot 2 DP510812 Old Northern Rd, Maroota</i> prepared by Footprint Green Pty Ltd (dated 15<sup>th</sup> January 2010). The works summary reports must be provided</p>	Consent condition 17		<p>√</p> <p>At least quarterly</p>	<p>Environmental Manager and Footprint Green Pty Ltd</p>

<b>OPERATIONAL Commitment and/or Action</b>	<b>Reference</b>	<b>Monthly Check</b>	<b>As Required</b>	<b>Responsibility</b>
to Council and must also be attached to the operational monitoring program reporting (Environmental Management Plan).				
<p>18. The monthly payment to Council of a contribution of \$0.80* per tonne for all processed material transported from the site in accordance with Council's <i>Development Contributions Plan 2007-2011</i> and the following:</p> <p>18a. On or before the 14<sup>th</sup> day of each month that processed materials are transported from the site, the Applicant shall submit to Council a certified copy of returns or records showing the true quantities of extracted material transported from the site during the immediately preceding month. Thereafter, Council will issue to the Applicant an invoice for the contribution payable for such material transported from the site. Payment of the amount of the invoice shall be made by the Applicant within 14 days of the invoice date. If the party carrying out the extraction work fails to deliver such returns to the Council in accordance with this clause by the 14<sup>th</sup> day of a particular month, the Council shall at its absolute discretion be entitled but not obliged to estimate the quantity of material transported from the site during the immediately preceding month and shall be entitled to issue such an invoice on the basis of such estimate.</p> <p>18b. Council shall be entitled to inspect and audit the original records relating to any of the processed material, including locality of destinations, numbers and types of laden trucks and trailers and load quantities, transported from the site.</p> <p>18c. If the Applicant ceases to carry out the approved extraction work or if a party other than the Applicant commences to carry out such work without the Applicant having started to do so, then the Applicant shall forthwith furnish to Council notice of that fact together with the name and address of the party (if any) who has commenced or will thereafter commence to carry on the said work. Such notice shall be accompanied by an acknowledgment in writing by that party that it is aware of the obligations imposed on it pursuant to this condition. Until such time as the notice and acknowledgment are furnished to the Council by the applicant, the applicant will remain jointly and severally liable with the party for the time being carrying out the extraction work for payment of the aforesaid contribution and for compliance with the terms of this condition. The terms of this paragraph shall apply mutatis mutandis to any future operator of the extraction work in the event of his ceasing to carry out the work.</p> <p><i>Note: * The value of contribution is current as at 5 February 2010. The contribution will be adjusted from this date in accordance with the underlying consumer price index for subsequent financial quarters. It is recommended that you contact Council each quarter to ascertain the indexed value of the contribution prior to payment.</i></p>	Consent condition 18	√		Environmental Manager

OPERATIONAL Commitment and/or Action	Reference	Monthly Check	As Required	Responsibility
19. The site must be managed in accordance with the publication <i>'Managing Urban Stormwater – Landcom (March 2004)</i> and the <i>Protection of the Environment Operations Act 1997</i> by way of implementing appropriate measures to prevent sediment run-off, excessive dust, noise or odour emanating from the site during the construction of the development.	Consent condition 19	√		Environmental Manager
20. A buffer setback of 40 metres must be provided from the crest of the watercourse (Coopers Creek) to any construction works. The setback area must be suitably vegetated with native grasses to facilitate the filtration of surface runoff.	Consent condition 20	√		Environmental Manager
21. An on-site sewage management system, separately approved under the Local Government Act 1993, must be installed, commissioned and certified by a licensed plumber in accordance with Australian Standard 1547 – Onsite Domestic Wastewater Management (2000) and Environment & Health Protection Guidelines – Onsite Sewage Management for Single Households (1998).	Consent condition 21		√ Not required as septic tank pumped out.	Environmental Manager
22. All wastewater and stormwater treatment devices (including drainage systems, sumps and traps) must be regularly maintained in order to remain effective. All solid and liquid wastes collected from the device must be disposed of in accordance with the <i>Protection of the Environment Operations Act 1997</i> .	Consent condition 22	√		Quarry Manager and Environmental Manager
23. Flammable and combustible liquids must be stored in accordance with <i>Australian Standard 1940 – The Storage and Handling of Flammable and Combustible Liquids</i> . A bund wall must be constructed around all work and liquid storage areas to prevent any spillage entering into the stormwater system. The bunded area must provide a volume equal to 110% of the largest container stored and graded to a blind sump so as to facilitate emptying and cleansing.	Consent condition 23	√		Quarry Manager and Environmental Manager
24. The maximum depth of allowable excavation is 177 metres AHD or the retention of a 2 metre buffer above the wet weather high water table.	Consent condition 24		√ At least quarterly	Quarry Manager and Environmental Manager

**DEPARTMENT OF WATER AND ENERGY CONDITIONS**

<b>DEPARTMENT OF WATER AND ENERGY Commitment and/or Action</b>	<b>Reference</b>	<b>Monthly Check</b>	<b>As Required</b>	<b>Responsibility</b>
25. These General Terms of Approval (GTA) only apply to the controlled activities described in the plans and associated documentation relating to DA/578/2009 and provided by Council:  (i) Site Plan, map and/or surveys Any amendments or modification to the proposed controlled activities may render these GTA invalid. If the proposed controlled activities are amended or modified the Department of Water and Energy must be notified to determine if any variations to these GTA will be required.	Consent condition 25		√	Environmental Manager
26. Prior to the commencement of any controlled activity (works) on waterfront land, the consent holder must obtain a Controlled Activity Approval (CAA) under the Water Management Act from the Department of Water and Energy. Waterfront land for the purposes of this DA is land and material in or within 40 metres of the top of the bank or shore of the river identified.	Consent condition 26		√ Controlled Activity Approval not required.	Environmental Manager
27. The consent holder must prepare or commission the preparation of: (i) Vegetation Management Plan. (ii) Erosion and Sediment Control Plan (iii) Soil and Water Management Plan. (iv) Amendments to Plans - in relation to rehabilitation of Coopers Creek in and around the crossing and in-line dam.	Consent condition 27		√	Environmental Manager
28. The consent holder must: (i) Carry out any controlled activity in accordance with approved plans. (ii) Construct and/or implement any controlled activity by or under the direction supervision of a suitability qualified professional. (iii) When required, provide a certificate of completion to the Department of Water and Energy.	Consent condition 28		√	Environmental Manager
29. <i>Condition 29 was deleted from the original and modified development consent.</i>	Nil			Nil
30. The consent holder must reinstate waterfront land affected by the carrying out of any controlled activity in accordance with a plan or design approved by the Department of Water and Energy.	Consent condition 30		√	Environmental Manager



<b>DEPARTMENT OF WATER AND ENERGY Commitment and/or Action</b>	<b>Reference</b>	<b>Monthly Check</b>	<b>As Required</b>	<b>Responsibility</b>
31. The consent holder must use a suitably qualified person to monitor the progress, completion, performance of works, rehabilitation and maintenance and report to the Department of Water and Energy as required.	Consent condition 31		√	Environmental Manager
32. The consent holder must provide a security deposit (bank guarantee or cash bond) - equal to the sum of the cost of complying with the obligations under any approval - to the Department of Water and Energy as and when required.	Consent condition 32		√	Environmental Manager
33. The consent holder must ensure that the construction of any bridge, causeway, culvert or crossing does not result in erosion, obstruction of flow, destabilisation or damage to the bed or banks of the river or waterfront land, other than in accordance with a plan approved by the Department of Water and Energy.	Consent condition 33		√	Environmental Manager and Quarry Manager
34. The consent holder must ensure that any bridge, causeway, culvert or crossing does not obstruct water flow and direction, is the same width as the river or sufficiently wide to maintain water circulation, with no significant water level difference between either side of the structure other than in accordance with a plan approved by the Department of Water and Energy.	Consent condition 34		√	Environmental Manager and Quarry Manager
35. The consent holder must ensure that no materials or cleared vegetation that may obstruct flow, wash into the water body or cause damage to river banks are left on waterfront land other than in accordance with a plan approved by the Department of Water and Energy.	Consent condition 35		√	Environmental Manager and Quarry Manager
36. The consent holder is to ensure that all drainage works: (i) capture and convey runoffs, discharges and flood flows to low flow water level in accordance with a plan approved by the Department of Water and Energy; and (ii) do not obstruct the flow of water other than in accordance with a plan approved by the Department of Water and Energy.	Consent condition 36		√	Environmental Manager and Quarry Manager
37. The consent holder must stabilise drain discharge points to prevent erosion in accordance with a plan approved by the Department of Water and Energy.	Consent condition 37		√	Environmental Manager and Quarry Manager
38. The consent holder must establish all erosion and sediment control works and water diversion structures in accordance with a plan approved by the Department of Water and Energy. These works and structures must be inspected and maintained throughout the working period and must not be removed until the site has been fully stabilised.	Consent condition 38		√	Environmental Manager and Quarry Manager

<b>DEPARTMENT OF WATER AND ENERGY Commitment and/or Action</b>	<b>Reference</b>	<b>Monthly Check</b>	<b>As Required</b>	<b>Responsibility</b>
39. The consent holder must ensure that no excavation is undertaken on waterfront land other than in accordance with a plan approved by the Department of Water and Energy.	Consent condition 39		√	Environmental Manager and Quarry Manager
40. The consent holder must ensure that any excavation does not result in: (i) diversion of any river, (ii) bed or bank instability, or (iii) damage to native vegetation within the area where a controlled activity has been authorised, other than in accordance with a plan approved by the Department of Water and Energy.	Consent condition 40		√	Environmental Manager and Quarry Manager
41. The consent holder must clearly mark (with stakes using a GPS or peg out survey), protect and maintain a riparian corridor with a width of 40 metres measured horizontally landward from the highest bank of the river for the length of the site directly affected by the controlled activity in accordance with a plan approved by the Department of Water and Energy.	Consent condition 41		√ Not completed as no extraction has taken place near the riparian zone.	Environmental Manager and Quarry Manager
42. The consent holder must establish a riparian corridor along Coopers Creek in accordance with a plan approved by the Department of Water and Energy.	Consent condition 42		√	Environmental Manager and Quarry Manager

**DEPARTMENT OF ENVIRONMENT CLIMATE CHANGE AND WATER (EPA) CONDITIONS**

*Note: In this section references to Environment Protection Licence 3829 have been updated to the 12 May 2015 version.*

<b>DEPARTMENT OF ENVIRONMENT CLIMATE CHANGE AND WATER (EPA) Commitment and/or Action</b>		<b>Reference</b>	<b>Monthly Check</b>	<b>As Required</b>	<b>Responsibility</b>
43. Except as may be expressly provided by a licence under the Protection of the Environment Operations Act 1997 in relation of the development, section 120 of the Protection of the Environment Operations Act 1997 must be complied with in and in connection with the carrying out of the development.		Consent condition 43 and Environment Protection Licence 3829		√	Environmental Manager and Quarry Manager
44. The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by a licence under the Protection of the Environment Operations Act 1997.		Consent condition 44 and Environment Protection Licence 3829		√	Environmental Manager and Quarry Manager
45. This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if it requires an environment protection licence under the Protection of the Environment Operations Act 1997.		Consent condition 45 and Environment Protection Licence 3829		√	Environmental Manager and Quarry Manager
46. Noise generated at the premises must not exceed the noise limits presented in the table below.		Consent condition 46 and Environment Protection Licence 3829		√ Quarterly monitoring and annual check	Environmental Manager
<b>Location</b>	<b>Noise Limits (dB(A)) Day L<sub>Aeq,15min</sub></b>				
R3 – Lot 59 DP 752029	43				
R4 – Lot 63 DP 752029 <i>Note: R4 is not included in the EPA Licence 3829</i>	41				
R6 – Lot 2 DP 567166	45				
R7 – Lot 2 DP 567166	45				
R8 – Lot 2 DP 567166	46				
R9 – Lot 1 DP 567166	47				
R10 – Lot 10 DP 752029	47				

DEPARTMENT OF ENVIRONMENT CLIMATE CHANGE AND WATER (EPA) Commitment and/or Action			Reference	Monthly Check	As Required	Responsibility
R11 – Lot 1 DP 621814	35					
R12 – Lot 6 DP 39392	35					
R13 – Lot 5 DP 39392	35					
R14 – Lot 4 DP 39392	35					
R15 – Lot 3 DP 39392	35					
R16 – Lot 2 DP 39392	35					
R17 – Lot 1 DP 39392	35					
Note: Daytime noise will be monitored at the western boundary of Lot 2 DP 510812 for at least 15 minutes on one operating day each quarter using a calibrated noise meter and as specified in the EPA licence.						
47. Noise generated from the premises in excess of the limits set out in condition L3.1 (i.e. condition 46 above), whether on one or more occasions, constitutes a breach of the licence regardless of Chapter 11 of the Industrial Noise Policy.			Consent condition 47 and Environment Protection Licence 3829		√	Environmental Manager and Quarry Manager
48. For the purposes of condition L3.1 (i.e. condition 46 above): <ul style="list-style-type: none"><li>Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sundays and Public holidays,</li><li>Evening is defined as the period 6pm to 10pm Monday to Sunday,</li><li>Night is defined as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sundays and Public Holidays,</li><li>The modification factors in Section 4 of the NSW Industrial Noise Policy must also be applied to the measured noise levels where applicable; and</li><li>Error margins associated with the noise monitoring equipment used are not to be taken into account in reporting whether or not a noise limit in Condition No. 46 has been exceeded.</li></ul> Where it can be demonstrated that direct measurement of noise from the premises is impractical, the EPA may accept alternative means of determining compliance. See Chapter 11 of the NSW Industrial Noise Policy.			Consent condition 48 and Environment Protection Licence 3829		√	Environmental Manager
49. The noise emission limits identified in condition L3.1 apply under adverse meteorological conditions of:			Consent condition 49 and Environment		√	Environmental Manager

DEPARTMENT OF ENVIRONMENT CLIMATE CHANGE AND WATER (EPA) Commitment and/or Action	Reference	Monthly Check	As Required	Responsibility
<ul style="list-style-type: none"> <li>Wind speed up to 3m/s at 10 metres above ground level.</li> </ul>	Protection Licence 3829			
50. For the purpose of condition L3.1 the metrological data to be used for determining meteorological conditions is the data recorded by the meteorological weather station identified as EPA Identification Point 5 ( <i>i.e. Meteorological station located at a site to be determined in accordance with AM-1</i> ).	Consent condition 50		√	Environmental Manager
51. For the purposes of determining the noise generated at the premises: <ul style="list-style-type: none"> <li>a) Class 1 or 2 noise monitoring equipment that is calibrated in accordance with the manufacturer's specifications must be used according to AS IEC61672.1-2004 and AS IEC61672.2-2004;</li> <li>b) The noise monitoring equipment for the premise described in the table in Condition 46 must be placed in a position that is:               <ul style="list-style-type: none"> <li>(i) On a property boundary that is closest to the premises, where any dwelling at the location is within 30 metres of the location's property boundary that is closest to the premises; or</li> <li>(ii) Within 30 metre of a dwelling façade where any dwelling at a location is situated more than 30 metres from the location's property boundary that is closest to the premises.</li> </ul> </li> </ul>	Consent condition 51 and Environment Protection Licence 3829		√	Environmental Manager
52. All activities at the premises must only be carried out on between 0700 and 1800 Monday to Saturday inclusive. Up to ten (10) laden vehicles can enter or leave the premises between 0600 and 0700 Monday to Saturday inclusive.	Consent condition 52 and Environment Protection Licence 3829	√		Environmental Manager and Quarry Manager
53. The proponent must prepare and implement a Noise Management Plan that covers all premises based activities and transport operations. The Plan must include but not need be limited to: <ul style="list-style-type: none"> <li>(i) All measures necessary to not exceed the limits in the table in Condition 46 at all times.</li> <li>(ii) A system that allows for periodic assessment at least every 12 months of Best Management Practice (BMP) and Best Available Technology Economically Achievable (BATEA) that has the potential to reduce noise levels from the premises at Locations R6, R7, R8, R9 and R10 in Condition 46, including, but not necessarily limited to, fitting and maintenance of "residential class muffler(s)" to the bulldozer(s), and formation and maintenance of sand mound(s) or sand bunds.</li> </ul>	Consent condition 53 and Environment Protection Licence 3829		√ Annually to cover all PF Formation Maroota operations	Environmental Manager

DEPARTMENT OF ENVIRONMENT CLIMATE CHANGE AND WATER (EPA) Commitment and/or Action	Reference	Monthly Check	As Required	Responsibility
(iii) Effective implementation of identified BMP and BATEA measures, where considered feasible and reasonable (iv) Measures to monitor noise generated from the premises, and respond to complaints (v) Measures for community consultation including site contact details (vi) Noise monitoring and reporting procedures.				
54. Activities occurring at the premises must be carried out in a manner that will minimise emissions of dust from the premises.	Consent condition 54 and Environment Protection Licence 3829	√		Environmental Manager and Quarry Manager
55. Trucks entering and leaving the premises that are carrying loads must be covered at all times, except during loading and unloading.	Consent condition 55 and Environment Protection Licence 3829	√		Environmental Manager and Quarry Manager
56. A <i>Soil and Water Management Plan (SWMP)</i> must be prepared and implemented. The plan must describe the measures that will be employed to minimise soil erosion and the discharge of sediment and other pollutants to lands and/or waters during all phases of the operation. The Scheme should be consistent with the guidance contained in <i>Managing Urban Stormwater: Volume 2E Soils and Construction - Mines and Quarries</i> (available from the EPA).	Consent condition 56 and Environment Protection Licence 3829		√ See Erosion and Sediment Control Strategy Attachment 8.	Environmental Manager and Quarry Manager
57. The results of any monitoring required to be conducted by the EPA's general terms of approval, or a licence under the Protection of the Environment Operations Act 1997, in relation to the development or in order to comply with the load calculation protocol must be recorded and retained as set out in conditions M1.2 and M1.3.	Consent condition 57 and Environment Protection Licence 3829	√		Environmental Manager
58. All records required to be kept by the licence must be: <ul style="list-style-type: none"> <li>• In a legible form, or in a form that can readily be reduced to a legible form;</li> <li>• Kept for at least 4 years after the monitoring or event to which they relate took place; and</li> <li>• Produced in a legible form to any authorised officer of the EPA who asks to see them.</li> </ul>	Consent condition 58 and Environment Protection Licence 3829		√	Environmental Manager
59. The following records must be kept in respect of any samples required to be collected:	Consent condition 59 and Environment	√		Environmental Manager

DEPARTMENT OF ENVIRONMENT CLIMATE CHANGE AND WATER (EPA) Commitment and/or Action				Reference	Monthly Check	As Required	Responsibility								
<ul style="list-style-type: none"><li>the date(s) on which the sample was taken;</li><li>the time(s) at which the sample was collected;</li><li>the point at which the sample was taken; and</li><li>the name of the person who collected the sample.</li></ul>				Protection Licence 3829											
60. For each monitoring/ discharge point or utilisation area specified below (by a point number), the applicant must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The applicant must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns: <b>Point # 1                      Air</b> <table><tr><th>Pollutant</th><th>Units of measure</th><th>Frequency</th><th>Sampling Method</th></tr><tr><td>Particles - Deposited Matter</td><td>Grams per square metre per month</td><td>Monthly</td><td>AM-19</td></tr></table>				Pollutant	Units of measure	Frequency	Sampling Method	Particles - Deposited Matter	Grams per square metre per month	Monthly	AM-19	Consent condition 60 and Environment Protection Licence 3829	√		Environmental Manager
Pollutant	Units of measure	Frequency	Sampling Method												
Particles - Deposited Matter	Grams per square metre per month	Monthly	AM-19												
61. Monitoring for the concentration of a pollutant emitted to the air required to be conducted by the EPA's general terms of approval, or a licence under the Protection of the Environment Operations Act 1997, in relation to the development or in order to comply with a relevant local calculation protocol must be done in accordance with: (a) any methodology which is required by or under the POEO Act 1997 to be used for the testing of the concentration of the pollutant; or (b) if no such requirement is imposed by or under the POEO Act 1997, any methodology which the general terms of approval or a condition of the licence or the protocol (as the case may be) requires to be used for that testing; or (c) if no such requirement is imposed by or under the POEO Act 1997 or by the general terms of approval or a condition of the licence or the protocol (as the case may be), any methodology approved in writing by the EPA for the purposes of that testing prior to the testing taking place. <i>Note: The Protection of the Environment Operations (Clean Air) Regulation 2002 requires testing for certain purposes to be conducted in accordance with test</i>				Consent condition 61 and Environment Protection Licence 3829	√		Environmental Manager								



DEPARTMENT OF ENVIRONMENT CLIMATE CHANGE AND WATER (EPA) Commitment and/or Action					Reference	Monthly Check	As Required	Responsibility
methods contained in the publication “Approved Methods for the Sampling and Analysis of Air Pollutants in NSW”.								
62. For each monitoring point specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) each weather parameter specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns: <b>POINT 5 &lt;weather&gt;</b>					Consent condition 62	√		Environmental Manager
Parameter	Units of Measure	Frequency	Averaging Period	Sampling Method				
Wind Speed	m/s	Continuous	15-minute	AM-2 and AM-4				
Wind Direction	°	Continuous	15-minute	AM-2 and AM-4				
Temperature	°C	Continuous	15-minute	AM-4				
63. The applicant must provide an annual return to the EPA in relation to the development as required by any licence under the Protection of the Environment Operations Act 1997 in relation to the development. In the return the applicant must report on the annual monitoring undertaken (where the activity results in pollutant discharges), provide a summary of complaints relating to the development, report on compliance with licence conditions and provide a calculation of licence fees (administrative fees and, where relevant, load based fees) that are payable. If load based fees apply to the activity the applicant will be required to submit load-based fee calculation worksheets with the return.					Consent condition 63		√ Annually	Environmental Manager
64. a) The proponent must prepare and implement a dust monitoring plan, to the satisfaction of DECCW, that: <ul style="list-style-type: none"><li>quantifies dust impacts at the most sensitive receptor(s) as defined by the results of the EA;<ul style="list-style-type: none"><li>for the range of normal operating scenarios at the proposal site;</li><li>for variable meteorological conditions;</li></ul></li><li>is implemented within 1 month of operational activities beginning at the proposal site; and</li><li>operates for a minimum period of 12 months.</li></ul>					Consent condition 64	√ See revised Dust Monitoring Plan Attachment 7.		Environmental Manager

DEPARTMENT OF ENVIRONMENT CLIMATE CHANGE AND WATER (EPA) Commitment and/or Action	Reference	Monthly Check	As Required	Responsibility
<p>(iii) The proponent must submit a report to the Manager of Sydney Industry for DECCW approval detailing all elements of the dust monitoring plan at least two months prior to commencement of operational activities at the proposal site.</p> <p><i>Note: The air quality commitments in the EPA endorsed Dust Monitoring Plan to be implemented and monitored are listed below.</i></p> <ul style="list-style-type: none"> <li>• Only the minimum areas necessary for extraction activities will be disturbed.</li> <li>• After completion of extraction the areas will be progressively reshaped, topsoiled and rehabilitated.</li> <li>• Stockpiles will be maintained in a moist condition using a water truck or water cart to minimise wind-blown and traffic-generated dust.</li> <li>• All haul roads and trafficked areas will be watered as required using a water truck or water cart to minimise the generation of dust.</li> <li>• All haul roads will have edges clearly defined with marker posts or equivalent to control their locations.</li> <li>• Checks will be made that there is no visible dust blowing across the site on windy days.</li> <li>• Exhaust systems and engines of all mobile site plant, equipment and vehicles will be regularly serviced and properly maintained to minimise exhaust emissions and adverse impacts on air quality.</li> <li>• All internal combustion motors will not be permitted to emit continuous visible smoke for greater than 10 seconds on public lands.</li> <li>• Trucks entering and leaving the premises that are carrying loads will be covered at all times, except during loading and unloading.</li> <li>• Mobile equipment used for ripping and loading of friable sandstone will have enclosed cabs to avoid exposure of operatives to generated dust.</li> <li>• If the annual deposited dust level exceeds 4 g/m<sup>2</sup>/month PF Formation will implement corrective actions within their operations and control.</li> </ul>				

**DEPARTMENT OF PRIMARY INDUSTRIES MINERAL RESOURCES CONDITION**

<b>OPERATIONAL Commitment and/or Action</b>	<b>Reference</b>	<b>Monthly Check</b>	<b>As Required</b>	<b>Responsibility</b>
65. The operator is required to provide annual production data as requested by the Mineral Resources Division of the Department of Primary Industries.	Consent condition 65		√ Annually	Environmental Manager

**DEPARTMENT OF ENVIRONMENT AND CLIMATE CHANGE (NPWS) CONDITIONS**

<b>DEPARTMENT OF ENVIRONMENT AND CLIMATE CHANGE (NPWS) Commitment and/or Action</b>	<b>Reference</b>	<b>Monthly Check</b>	<b>As Required</b>	<b>Responsibility</b>
66. All identified sites must be protected from impact by a 40 metre buffer zone to be calculated from the perimeter of the identified site, other than for sites CC1 and CC6 which shall have a 20 metre buffer zone, which buffer zone is to also be calculated from the perimeter of sites CC1 and CC6.	Consent condition 66 modified by Land and Environment Court Orders January 2013	√		Environmental Manager
67. All identified sites to be precisely relocated using photos and GPS references prior to demarcation of buffer zone.	Consent condition 67		√	Environmental Manager
68. All buffer zones to be clearly fenced.	Consent condition 68	√		Environmental Manager
69. No vehicular access, services or earth disturbing works will be permitted within the buffer zones. No other impacts will be permitted within the buffer zones.	Consent condition 69	√		Environmental Manager and Quarry Manager
70. The buffer zones must not be used as storage areas.	Consent condition 70	√		Environmental Manager and Quarry Manager
71. Runoff from the sand extraction operation should be designed to ensure that sites are protected from altered runoff and deposition conditions which may impact sites.	Consent condition 71	√		Environmental Manager and Quarry Manager

<b>DEPARTMENT OF ENVIRONMENT AND CLIMATE CHANGE (NPWS) Commitment and/or Action</b>	<b>Reference</b>	<b>Monthly Check</b>	<b>As Required</b>	<b>Responsibility</b>
72. All sites CC1, CC2, CC3, CC4, CC5 and CC6 to be monitored annually to assess the condition of the buffer fencing, buffer zones and impacts to sites from runoff and/or deposition. Remedial action to be taken where necessary if changes are detected.  Any amended remediation action undertaken pursuant to this condition, in respect of site CC1 must be undertaken pursuant to an Aboriginal Heritage Impact Permit issued under Part 6 of the National Parks and Wild Life Act.	Consent condition 72 modified by Land and Environment Court Orders January 2013		√ Annually	Environmental Manager
73. If new Aboriginal objects, including Aboriginal human remains are found all work must cease and the Department of Environment, Climate Change and Water must be contacted.	Consent condition 73		√	Environmental Manager
74. All people employed on site must undergo a site induction which includes training in the management protocols set out in condition No. 73 above and be briefed on the Aboriginal cultural heritage significance of the area and relevant GTA conditions.	Consent condition 74		√	Environmental Manager

#### **ROADS AND TRAFFIC AUTHORITY CONDITIONS**

<b>ROADS AND TRAFFIC AUTHORITY Commitment and/or Action</b>	<b>Reference</b>	<b>Monthly Check</b>	<b>As Required</b>	<b>Responsibility</b>
75. The wheels of all vehicles leaving the site are to be clean and free of dust, dirt and mud. It is recommended that a wheel wash be installed to prevent material being deposited on Old Northern Road.	Consent condition 75	√		Environmental Manager and Quarry Manager
76. All landscaping, signage, fencing and parked vehicles are not to impeded sight lines to pedestrians and vehicles travelling along Old Northern Road.	Consent condition 76		√	Environmental Manager
77. All vehicles must enter and exit the site in a forward direction.	Consent condition 77	√		Quarry Manager
78. All vehicles must be clear of the formation before being required to stop.	Consent condition 78		√	Quarry Manager
79. All works associated with the proposed development to be at no cost to the RTA.	Consent condition 79		√	Environmental Manager

**ENVIRONMENT PROTECTION LICENCE 3829 REQUIREMENTS**  
(not already covered in Conditions 43 to 64)

*Note: In this section references to Environment Protection Licence 3829 have been updated to the 12 May 2015 version.*

ENVIRONMENT PROTECTION LICENCE REQUIREMENTS Commitment and/or Action	Reference	Monthly Check	As Required	Responsibility								
<p>80. The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or the setting of limits for the emission of pollutants to the air from the point</p> <table><tr><th>EPA Identification no.</th><th>Type of Monitoring Point</th><th>Type of Discharge Point</th><th>Description of Location</th></tr><tr><td>1</td><td>Dust monitoring</td><td></td><td>"Dust Monitoring Location" on the map titled "Staging of Sand Extraction at Part Lot 3 DP 567166 &amp; Part Lot 2 DP510812 at Old Northern Rd, Maroota" which was emailed to the EPA on 3 June 2010.</td></tr></table>	EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Description of Location	1	Dust monitoring		"Dust Monitoring Location" on the map titled "Staging of Sand Extraction at Part Lot 3 DP 567166 & Part Lot 2 DP510812 at Old Northern Rd, Maroota" which was emailed to the EPA on 3 June 2010.	Environment Protection Licence 3829	√		Environmental Manager
EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Description of Location									
1	Dust monitoring		"Dust Monitoring Location" on the map titled "Staging of Sand Extraction at Part Lot 3 DP 567166 & Part Lot 2 DP510812 at Old Northern Rd, Maroota" which was emailed to the EPA on 3 June 2010.									
<p>81. The following activities may be carried out at the premises outside the hours specified in condition L4.1 (<i>i.e. hours of operation</i>):</p> <p>a) The delivery of materials as requested by Police or other authorities for safety reasons;</p> <p>b) Emergency work to avoid the loss of lives, property and/or to prevent environmental harm.</p>	Environment Protection Licence 3829		√	Environmental Manager								
<p>82. Unless otherwise permitted by any other licence condition, annual extraction from Lot 2 DP510812 and Lot 3 DP567166 must not exceed 195,000 tonnes per annum.</p>	Environment Protection Licence 3829		√ Annually	Environmental Manager and Quarry Manager								
<p>83. The licensee must prevent any tracking of mud on to public roads by vehicles leaving the premises.</p>	Environment Protection Licence 3829		√	Environmental Manager and Quarry Manager								
<p>84. Licensed activities must be carried out in a competent manner. This includes:</p> <p>(a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and</p> <p>(b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.</p>	Environment Protection Licence 3829	√ See Waste Management Plan Attachment 9		Environmental Manager and Quarry Manager								

<b>ENVIRONMENT PROTECTION LICENCE REQUIREMENTS Commitment and/or Action</b>	<b>Reference</b>	<b>Monthly Check</b>	<b>As Required</b>	<b>Responsibility</b>
85. All plant and equipment installed at the premises or used in connection with the licensed activity: (a) must be maintained in a proper and efficient condition; and (b) must be operated in a proper and efficient manner.	Environment Protection Licence 3829	√		Environmental Manager and Quarry Manager
86. The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies. The record must include details of the following: (a) the date and time of the complaint; (b) the method by which the complaint was made; (c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect; (d) the nature of the complaint; (e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and (f) if no action was taken by the licensee, the reasons why no action was taken. The record of a complaint must be kept for at least 4 years after the complaint was made. The record must be produced to any authorised officer of the EPA who asks to see them.	Environment Protection Licence 3829		√	Environmental Manager
87. The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence. The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint. The preceding two conditions do not apply until 3 months after the date of the issue of this licence.	Environment Protection Licence 3829		√	Environmental Manager
88. The licensee must complete and supply to the EPA an Annual Return in the approved form comprising: (a) a Statement of Compliance; and	Environment Protection Licence 3829		√ Annually	Environmental Manager

<b>ENVIRONMENT PROTECTION LICENCE REQUIREMENTS</b> <b>Commitment and/or Action</b>	<b>Reference</b>	<b>Monthly Check</b>	<b>As Required</b>	<b>Responsibility</b>
<p>(b) a Monitoring and Complaints Summary.</p> <p>The Annual Return for the reporting period must be supplied to the EPA by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').</p> <p>The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.</p> <p>Within the Annual Return, the Statement of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:</p> <p>(a) the licence holder; or</p> <p>(b) by a person approved in writing by the EPA to sign on behalf of the licence holder.</p>				
<p>89. Notifications of environmental harm must be made by telephoning the Environment Line service on 131 555.</p> <p>The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.</p>	<p>Environment Protection Licence 3829</p>		<p>√</p>	<p>Environmental Manager and Quarry Manager</p>
<p>90. Where an authorised officer of the EPA suspects on reasonable grounds that:</p> <p>(a) where this licence applies to premises, an event has occurred at the premises; or</p> <p>(b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence, and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.</p> <p>The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.</p> <p>The request may require a report which includes any or all of the following information:</p> <p>(a) the cause, time and duration of the event;</p> <p>(b) the type, volume and concentration of every pollutant discharged as a result of the event;</p> <p>(c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;</p>	<p>Environment Protection Licence 3829</p>		<p>√</p>	<p>Environmental Manager and Quarry Manager</p>



<b>ENVIRONMENT PROTECTION LICENCE REQUIREMENTS</b> <b>Commitment and/or Action</b>	<b>Reference</b>	<b>Monthly Check</b>	<b>As Required</b>	<b>Responsibility</b>
<p>(d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;</p> <p>(e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants;</p> <p>(f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and</p> <p>(g) any other relevant matters.</p> <p>The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.</p>				
<p>91. A copy of this licence must be kept at the premises to which the licence applies.</p> <p>The licence must be produced to any authorised officer of the EPA who asks to see it.</p> <p>The licence must be available for inspection by any employee or agent of the licensee working at the premises.</p>	<p>Environment Protection Licence 3829</p>		<p>√</p>	<p>Environmental Manager</p>

**EIS MITIGATION MEASURES**  
(not already covered in Conditions 1 to 90)

<b>EIS MITIGATION MEASURES Commitment and/or Action</b>	<b>Reference</b>	<b>Monthly Check</b>	<b>As Required</b>	<b>Responsibility</b>
92. Site CC1 will be provided with a minimum 6 metre buffer area and exclusion from the extraction area. As modified by Land and Environment Court Orders of January 2013 this commitment now reads " <i>Site CC1 will be provided with a minimum 20 metre buffer area and exclusion from the extraction area.</i> "	EIS but modified by Land and Environment Court Orders January 2013		√	Environmental Manager and Quarry Manager
93. If Council does not approve of a minimum 6 metre buffer around Site CC6 then consent from DECC to destroy the site under Section 90 of the <i>National Parks and Wildlife Act 1974</i> will be required. As modified by Land and Environment Court Orders of January 2013 this commitment is no longer relevant.	EIS but modified by Land and Environment Court Orders January 2013		√	Environmental Manager
94. The mobile crusher will only be used on-site for an average of one day a week if the noise criterion cannot be met.	EIS but modified	√		Environmental Manager and Quarry Manager
95. Extraction area setbacks of 40 metres from Coopers Creek, 10 metres from property boundaries, a minimum 20 or 40 metre buffer area around known Aboriginal sites and general avoidance of the two areas zoned Environmental Protection B (River Catchment).	EIS but modified by Land and Environment Court Orders January 2013	√		Environmental Manager and Quarry Manager
96. Stabilised bund walls will run along the side of each extraction area and will contain all extraction activities.	EIS	√		Environmental Manager and Quarry Manager
97. No blasting of any material will be allowed on-site.	EIS	√		Quarry Manager
98. The plant and equipment will be fuelled on-site by a mobile tanker. Refuelling stations will be located in dedicated and properly bunded areas.	EIS	√		Environmental Manager and Quarry Manager
99. An existing cleared and bunded maintenance area including bulk diesel fuel storage, a pump-out toilet facility and shed provided for the workforce within the stage 1 area will continue to be used until nearby extraction causes it to be relocated within the stage 2 area in Lot 3 DP 567166.	EIS		√	Environmental Manager and Quarry Manager
100. No hazardous substances or dangerous goods will be used or stored on-site.	EIS		√	Environmental Manager and Quarry Manager

<b>EIS MITIGATION MEASURES Commitment and/or Action</b>	<b>Reference</b>	<b>Monthly Check</b>	<b>As Required</b>	<b>Responsibility</b>
101. Administration of the site will be carried out from PF Formation's main processing plant and offices at 1774 Wisemans Ferry Road, Maroota.	EIS		√	Environmental Manager
102. An existing sign with a telephone number for complaints located at the intersection of Old Northern Road and the unnamed Council sealed road near the entry to Lot 3 DP 567166 will be maintained.	EIS		√	Environmental Manager
103. Topsoil will be stockpiled on-site for reuse.	EIS	√		Environmental Manager and Quarry Manager
104. Groundwater will not be breached or used in the extraction process.	EIS	√		Environmental Manager and Quarry Manager
105. Groundwater levels and water chemistry will continue to be monitored at the existing monitoring bore.	EIS		√ Annually	Environmental Manager
106. As required, the existing monitoring bore located on Lot 3 DP 567166 will be relocated approximately 200 metres to the south outside the extraction area and according to Department of Water and Energy requirements. The data logger will be re-installed in the new bore and groundwater levels and water chemistry will continue to be monitored.	EIS		√ Monitoring bore relocated in 2014	Environmental Manager
107. No water will be drawn from Coopers Creek or groundwater or the existing monitoring bore PFL3MW1 for any processing. <i>Note: Monitoring bore now PFL3MW2.</i>	EIS	√		Environmental Manager
108. Erosion and sedimentation controls will be established before extraction commences.	EIS		√	Environmental Manager and Quarry Manager
109. Some of the vegetation stripped during the initial land clearing will be reused in sediment control works.	EIS		√	Environmental Manager and Quarry Manager
110. Temporary sediment dams and tailings ponds for each extraction cell will be created as extraction proceeds.	EIS	√		Environmental Manager and Quarry Manager

<b>EIS MITIGATION MEASURES Commitment and/or Action</b>	<b>Reference</b>	<b>Monthly Check</b>	<b>As Required</b>	<b>Responsibility</b>
111. Surface water will be captured in a series of sediment dams on site and directed to the clean water dams for reuse in the processing of sand. The ponds will be progressively capped and rehabilitated as they fill with silt derived from the process water. The clean water dams will be retained in the long term to support future agricultural uses on the site.	EIS	√		Environmental Manager and Quarry Manager
112. Clean stormwater runoff will be diverted away from disturbed areas and dirty water runoff diverted into sediment basins and tailings ponds.	EIS	√		Environmental Manager and Quarry Manager
113. All stormwater flows less than the 100 year Average Recurrence Interval will be contained within the extraction areas.	EIS		√	Environmental Manager
114. Sediment controls will be regularly inspected and maintained.	EIS	√		Environmental Manager
115. A localised sand mound at least 3 metres in height will be installed near the mobile crusher until the extraction level and mound is below the surrounding natural ground level.	EIS		√	Environmental Manager and Quarry Manager
116. A residential grade muffler will be installed on the bulldozer during operations.	EIS	√		Environmental Manager
117. Only the minimum areas necessary for extraction activities will be disturbed.	EIS	√		Environmental Manager and Quarry Manager
118. After completion of extraction the areas will be progressively reshaped, topsoiled and rehabilitated as soon as practicable.	EIS	√		Environmental Manager and Quarry Manager
119. Stockpiles will be maintained in a moist condition using a water cart to minimise wind-blown and traffic-generated dust.	EIS	√		Environmental Manager and Quarry Manager
120. All haul roads and trafficked areas will be watered as required using a water truck or water cart to minimise the generation of dust. <i>Note:</i> In October 2015 a dust suppression system was installed along approximately 1.5km of internal haul roads.	EIS	√		Environmental Manager and Quarry Manager
121. All haul roads will have edges clearly defined with marker posts or equivalent to control their locations.	EIS	√		Quarry Manager

<b>EIS MITIGATION MEASURES Commitment and/or Action</b>	<b>Reference</b>	<b>Monthly Check</b>	<b>As Required</b>	<b>Responsibility</b>
122. All mobile plant and equipment will be regularly serviced and maintained.	EIS	√		Quarry Manager
123. All laden vehicles outside the extraction areas travelling on haul roads and public roads will have covered loads.	EIS	√		Environmental Manager and Quarry Manager
124. The 1.6 hectares of land already quarried on Lot 3 DP 567166 south of Coopers Creek will be rehabilitated as bushland.	EIS		√	Environmental Manager
125. Progressive vegetation and rehabilitation will occur aiming to reinstate woodland habitat of similar diversity and type to that which exists in the naturally vegetated parts of the site including species from all vegetative strata.	EIS		√	Environmental Manager
126. There will be on-going weed control and monitoring of revegetation works.	EIS		√	Environmental Manager
127. Where practicable debris from the extraction area (including tree crowns, old stumps, logs and leaf litter) will be stockpiled for subsequent application to rehabilitation and revegetation areas.	EIS		√	Environmental Manager and Quarry Manager
128. Suitable fencing will be erected for permanent exclusion of goats from the revegetation area where required.	EIS		√	Environmental Manager
129. All mature trees and dead standing trees will be conserved unless removal is critical for the extraction process.	EIS		√	Environmental Manager and Quarry Manager
130. Suitable nesting boxes for fauna species will be installed. The number of these will be dependent on how many tree hollows can be salvaged during clearing.	EIS		√	Environmental Manager
131. Suitable tree hollows removed during clearing will be placed in rehabilitation areas.	EIS		√	Environmental Manager
132. Reptiles found in the course of activity in the extraction areas will be relocated.	EIS		√	Environmental Manager
133. Design and construction of drainage lines and ponds will be such that they provide suitable breeding habitat for frogs.	EIS		√	Environmental Manager
134. Fauna monitoring will be on going over the project life.	EIS		√	Environmental Manager

<b>EIS MITIGATION MEASURES Commitment and/or Action</b>	<b>Reference</b>	<b>Monthly Check</b>	<b>As Required</b>	<b>Responsibility</b>
135. Adaptive management will be implemented should previously unrecorded threatened species be identified during the life of the extraction and revegetation process.	EIS		√	Environmental Manager
136. Prior to each stage of clearing hollow-bearing trees will be marked by a qualified ecologist.	EIS		√	Environmental Manager
137. Where possible these hollows will be inspected by a qualified ecologist using an infrared camera attached to a portable viewing screen. Any trees known to contain fauna or where occupation is uncertain will be shaken prior to felling to allow any fauna present to vacate the hollow. Where possible hollow-bearing trees should be gently lowered to avoid harm to any fauna and to avoid damage to the hollow. Any nocturnal fauna captured subsequent to felling will be released in adjacent bushland during the subsequent evening. Felled tree hollows will be excised or the tree stockpiled as a whole for use in the rehabilitation area.	EIS		√	Environmental Manager
138. All personnel working at the quarry will be informed of the importance of environmental protection including threatened species issues.	EIS		√	Environmental Manager
139. Long-term strategies will be employed in the environmental management of the site that will assist in protecting retained native vegetation and fauna habitat. Specific monitoring of flora and fauna will be conducted which will allow ecologists to provide feedback to the quarry management should modifications be required to the extraction programme and/or the rehabilitation programme.	EIS		√	Environmental Manager
140. Apart from revegetation of the affected woodland area 50% of the existing completed extraction area south of Coopers Creek will be rehabilitated to bush. The area is currently approved to be returned to agricultural land but PF Formation will delay this and incorporate the rehabilitation with the removal and transfer of the topsoil from area A.	EIS		√	Environmental Manager
141. PF Formation's workforce will be made aware of the location of the six Aboriginal sites and the need to cease work in the vicinity and DECC contacted if further sites are encountered.	EIS		√	Environmental Manager
142. The Aboriginal sites will be monitored annually with verification that all sites remain with the required buffers.	EIS		√ Annually	Environmental Manager
143. Access to and from the site processing area within will be via Old Northern Road, along approximately 100 metres of an unnamed sealed Council road and then approximately 1 km of unsealed internal access and haul road.	EIS	√		Environmental Manager and Quarry Manager

<b>EIS MITIGATION MEASURES Commitment and/or Action</b>	<b>Reference</b>	<b>Monthly Check</b>	<b>As Required</b>	<b>Responsibility</b>
144. No site access will be permitted off Old Northern Road to Lot 2 DP 510812 except for use by residents and visitors to the land and for light vehicles access in emergencies.	EIS	√		Environmental Manager and Quarry Manager
145. Sand will be transported from the site using 15 tonne tipper trucks and 32 tonne truck-and-dogs at a rate of no more than an average 35 truck loads per day averaged over one month.	EIS	√		Environmental Manager and Quarry Manager
146. Engine brakes on heavy vehicles will be switched off when using the haul road within Lot 3 DP 567166.	EIS	√		Environmental Manager and Quarry Manager
147. A speed limit of 20 km/hour will be observed by traffic along all internal haul roads.	EIS	√		Environmental Manager and Quarry Manager
148. The agreed traffic management policy of extractive industry operators in the Maroota area complying with speed limits of 40 km/hour between 8.00 to 9.30am and 2.30 to 4.00pm on school days otherwise 60 km/hour outside Maroota Public School; that all loads will be covered leaving the quarry sites; and engine/exhaust brakes will not be used in the vicinity of quarry sites will continue to be implemented.	EIS	√		Environmental Manager
149. A 2 metre high and 3 metre wide bund will be located along the western boundary of Lot 2 DP 510812 for 20 years to provide visual screening for residents of the nearby dwelling.	EIS	√		Environmental Manager
150. The proposal will follow the resource management hierarchy principles embodied in the <i>Waste Avoidance and Resource Recovery Act, 2001</i> .	EIS	√		Environmental Manager
151. Only extractive industry activity processing wastes will be buried on-site.	EIS	√		Environmental Manager
152. No other waste including vegetation will be buried or burnt on-site.	EIS	√		Environmental Manager
153. Overburden from the initial extraction works will be reused in the rehabilitation works for the previously extracted area and topsoil stockpiled for reuse.	EIS		√	Environmental Manage



<b>EIS MITIGATION MEASURES Commitment and/or Action</b>	<b>Reference</b>	<b>Monthly Check</b>	<b>As Required</b>	<b>Responsibility</b>
154. Tailings from the wash plant will be discharged into the tailings ponds and backfilled on-site.	EIS	√		Environmental Manager and Quarry Manager
155. Waste oil and grease will be collected and stored in a bunded tank and periodically removed by a licensed oil recycling contractor.	EIS	√		Environmental Manager
156. Used filters and machinery parts and minor wastes generated by the workforce (for example, food scraps and litter) will be regularly collected and transferred in batches to PF Formation's main processing plant and offices at 1774 Wisemans Ferry Road, Maroota for recycling and reuse and as a last resort for disposal at a legally operating landfill.	EIS	√		Environmental Manager and Quarry Manager
157. The workforce will continue to use a pump-out toilet facility and shed located within the bunded maintenance area within Lot 3 DP 567166.	EIS	√		Environmental Manager and Quarry Manager
158. The waste waters and sullage generated by the workforce in the maintenance area will be regularly collected and disposed of at a licensed facility by a licensed contractor.	EIS	√		Environmental Manager
159. Waste bins will be provided within the shed in the maintenance area with collected wastes transferred to PF Formation's main processing plant.	EIS	√		Environmental Manager
160. After extraction the land will be progressively rehabilitated in stages for agricultural use (8.7 hectares) including dams for water storage and as regenerated bushland (8.2 hectares) as per the quarry rehabilitation concept plan.	EIS		√	Environmental Manager
161. The large sediment detention dam within the existing extraction area on Lot 3 DP 567166 will be retained for agricultural purposes as part of the quarry rehabilitation concept plan.	EIS		√	Environmental Manager and Quarry Manager
162. All diesel fuel storage on-site will be bunded to prevent spillage.	EIS	√		Environmental Manager and Quarry Manager
163. The existing internal access road within Lot 3 DP 567166 will continue to be maintained to prevent soil erosion and landslip.	EIS	√		Environmental Manager and Quarry Manager
164. A set of relevant bushfire mitigation measures will be included in the environmental management plan for the site.	EIS		√	Environmental Manager

<b>EIS MITIGATION MEASURES Commitment and/or Action</b>	<b>Reference</b>	<b>Monthly Check</b>	<b>As Required</b>	<b>Responsibility</b>
				See Pollution Incident Response Management Plan Attachment 6.
165. Information concerning major activities or developments at the site will be posted on PF Formation's website.	EIS		√	Environmental Manager
166. The Maroota Residents Community Committee already set up by PF Formation will met annually as part of the environmental management plan.	EIS		√ Superseded	Environmental Manager

#### OTHER REQUIREMENTS

<b>OTHER REQUIREMENTS Commitment and/or Action</b>	<b>Reference</b>	<b>Monthly Check</b>	<b>As Required</b>	<b>Responsibility</b>
167. The erosion and sediment control strategy in Attachment 8 and the relevant measures in <i>Managing Urban Stormwater: Volume 2E Soils and Construction - Mines and Quarries</i> and <i>Soils and Construction 2004</i> (the Blue Book) will be implemented and monitored.	Best Practice	√		Environmental Manager
168. All surface water run-off from site operations will be contained within the tailings ponds and sediment dams within the extraction areas of the site.	Best Practice	√		Environmental Manager
169. Daily records will be maintained recording each truck movement to the site in terms of date, time, vehicle registration number, type of material, mass/tonnage and job number	Best Practice	√		Environmental Manager
170. Production records will be monitored to establish the number of daily laden road vehicle trips.	Best Practice	√		Environmental Manager
171. 24 hour access to the site will be maintained at all times for emergency purposes	Best Practice		√	Environmental Manager
172. The level of groundwater on the site will be monitored at the licensed bore PFL3MW1 located near the extraction area. As agreed with DL&WC groundwater quality will be monitored for:	Best Practice		√ Annually	Environmental Manager

<b>OTHER REQUIREMENTS Commitment and/or Action</b>	<b>Reference</b>	<b>Monthly Check</b>	<b>As Required</b>	<b>Responsibility</b>
<ul style="list-style-type: none"> <li>pH, electrical conductivity and total dissolved solids.</li> <li>calcium, magnesium, sodium and potassium.</li> <li>chloride, sulphate and bicarbonate.</li> <li>oil and grease.</li> </ul>			Relocated monitoring bore now PFL3MW2	
173. Any damaged sedimentation control structural measures will be repaired as soon as possible.	Best Practice	√		Environmental Manager
174. The sedimentation ponds will be cleaned regularly and emptied of sediment before they reach 50% full.	Best Practice		√	Environmental Manager and Quarry Manager
175. Sediment from the sedimentation ponds will be disposed of by incorporating it in the sand to be processed or by spreading it on the rehabilitation areas.	Best Practice		√	Environmental Manager and Quarry Manager
176. The water cycle for the site will be self-enclosed.	Best Practice		√	Environmental Manager
177. Community complaints will be monitored and procedures implemented by the Environmental Manager to rectify any problems and a register of corrective actions maintained.	Best Practice	√		Environmental Manager
178. Environmental audits of the site, the EMP and its effectiveness and implementation may be completed as required.	Best Practice		√	Environmental Manager

## **Attachment 1**

**Development Consent 578/2009B**

**EPA Licence 3829 (12 May 2015)**



Etra Pty Ltd  
Trading As Pf Formations  
1774 Wisemans Ferry Road  
MAROOTA NSW 2756

## NOTICE OF DETERMINATION

Approval

Development Application No: DA/578/2009/B

Pursuant to Section 96 (2) of the *Environmental Planning and Assessment Act 1979* consent is granted to the development, it being noted that Council is satisfied that the development remains substantially the same development as that originally approved.

The development consent is subject to the conditions specified within this notice and will lapse unless the development is physically commenced within five years of the effective date of the original determination.

Section 97 of the Act allows an applicant who is dissatisfied with the determination of a consent authority, a right of appeal to the Land and Environment Court within 6 months from the date of this notice.

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<b>Property:</b>	Lot 3 DP 567166, Lot 2 DP 510812 No. 4713 & 4751 Old Northern Road, MAROOTA NSW 2756
<b>Original development:</b>	Industrial - Extractive Industry - Designated Development
<b>Effective date of original determination:</b>	3 March 2010

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**Hornsby Shire Council**

ABN 20 706 996 972  
296 Peats Ferry Rd, Hornsby 2077

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**Date of 1<sup>st</sup> modification:** 28 March 2012  
**Details of 1<sup>st</sup> modification:** Amend conditions of consent relating to time limit, monitoring, management and rehabilitation works, processing of materials, S94 contributions conditions and noise monitoring  
**Conditions Added:** Nil  
**Conditions Deleted:** Nil  
**Conditions Modified:** 2, 8, 11, 12, 15, 17, 18, 53, 60 and 62

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**Date of LEC modification:** 9 February 2013  
**Details of LEC modification:** Modification of the Aboriginal Cultural Heritage General Terms of Approval  
**Conditions Added:** Nil  
**Conditions Deleted:** Nil  
**Conditions Modified:** 66 and 72

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**Date of this modification:** 3 November 2016  
**Details of this modification:** Amend condition No. 10 relating to truck movements  
**Conditions Added:** Nil  
**Conditions Deleted:** Nil  
**Conditions Modified:** 10

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Per:  
Manager, Assessments  
Planning Division

Contact: Cassandra Williams (9847 6724 – 8.30 am to 5.00 pm)

**CONDITIONS OF APPROVAL****GENERAL CONDITIONS**

The conditions of consent within this notice of determination have been applied to ensure that the use of the land and/or building is carried out in such a manner that is consistent with the aims and objectives of the relevant legislation, planning instruments and Council policies affecting the land and does not disrupt the amenity of the neighbourhood or impact upon the environment.

*Note: For the purpose of this consent, any reference to an Act, Regulation, Australian Standard or publication by a public authority shall be taken to mean the gazetted Act or Regulation, or adopted Australian Standard or publication as in force on the date that the application for a construction certificate is made.*

**1. Approved Plans and Supporting Documentation**

The development must be carried out in accordance with the plans and documentation listed below and endorsed with Council's stamp, except where amended by Council and/or other conditions of this consent:

*Quarry Rehabilitation Concept Plans prepared by Footprint Green Pty Ltd*

<b>Plan No.</b>	<b>Plan Title</b>	<b>Rev</b>	<b>Dated</b>
smrmcs1.01	Cover Page	0.4	15 January 2010
smrmex1.01	Existing site land uses and habitats and extraction and rehabilitation areas	0.4	15 January 2010
smrmeo1.01	Operational stages and typical extraction and rehabilitation process	0.4	15 January 2010
smrmfc1.01	Proposed land uses and final landform and contours	0.4	15 January 2010
smrmpp2.01	Stage 1 - rehabilitation process in Area E	0.4	15 January 2010
smrmisp1.01	Stage 1 - extraction and rehabilitation process in Areas A and C	0.4	15 January 2010
smrmisp2.01	Stage 2 - extraction and rehabilitation process in Areas B and D	0.4	15 January 2010
smrmrd1.01	Procedures for <i>Tetratheca glandulosa</i> propagation and translocation and bushland rehabilitation	0.4	15 January 2010
smrmrd2.01	Procedures for upland wetland revegetation and agricultural land rehabilitation	0.4	15 January 2010
smrmrp2.01	Specifications and species options for revegetation	0.4	15 January 2010
smrmmr1.01	Performance measures, monitoring and reporting	0.5	15 January 2010

**Supporting Documentation**

<b>Document No.</b>	<b>Prepared by</b>	<b>Dated</b>
Environmental Impact Statement	Environmental Planning Pty Ltd	May 2009
Species Impact Statement	Aquila Ecological Surveys	November 2008
Report on Traffic and Transportation Requirements - Job No. 9162 Report No. 36/07	Lyle Marshall & Associates Pty Ltd	February 2008

**Hornsby Shire Council**

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Air Quality Impact Assessment	Holmes Air Sciences	4 March 2008
Air Quality Impact Assessment Addendum 1 (letter)	PAE Holmes	13 August 2009
Air Quality Impact Assessment Addendum 2 (letter)	PAE Holmes	24 September 2009
Environmental Noise and Vibration Assessment – TD721-01F02 (Rev 4)	Renzo Tonin and Associates	17 March 2008
Acoustic Report Addendum (letter)	Renzo Tonin and Associates	14 August 2009
Groundwater Assessment Report - JN 43346029.00106/REPORT 08	URS Australia Pty Ltd	15 January 2008
Aboriginal Cultural Heritage and Archaeological Assessment	Total Earth Care	January 2008
Herbivore Exclusion Fencing Requirements	Hornsby Shire Council Bushland & Biodiversity Team	1 February 2010

## 2. Consent Limited to a Period of 20 Years

Pursuant to Section 80A(1)(d), this consent is limited to a period of 20 years from the endorsed date of this consent. Any disturbed areas on the site, must be rehabilitated in this period.

All work including rehabilitation is to be completed within this period. Rehabilitation must be carried out progressively during the course of excavation and be completed within this period. All equipment to be used in the work must be removed from the site within that time.

## 3. Determination of Weighted Material

A standard method of determining weighted material must be negotiated, being a method that is auditable by Council at six monthly intervals.

# REQUIREMENTS PRIOR TO THE COMMENCEMENT OF ANY WORKS

## 4. Licences

The proponent is to obtain all necessary operating licenses and permits from all relevant public authorities including the Environmental Protection Authority and Department of Water and Energy, details of which are to be submitted to Council prior to the commencement of on-site works.

## 5. Protection of Aboriginal Artefacts and Habitat

Fencing must be provided to separate extraction areas from Aboriginal artefacts and habitat areas to reduce impacts to native vegetation and the habitat it provides and to protect Aboriginal artefacts.

## 6. Erosion and Sediment Control

Erosion and sediment control measures must be provided and maintained throughout the construction period in accordance with the manual '*Soils and Construction 2004 (Bluebook)*', the approved plans, Council specifications and to the satisfaction of the principal certifying authority.



The erosion and sediment control devices must remain in place until the site has been stabilised and revegetated.

*Note: On the spot penalties up to \$1,500 may be issued for any non-compliance with this requirement without any further notification or warning.*

#### **7. Certification by a qualified and experienced ecologist**

In accordance with the approved *Quarry Rehabilitation Plans for Part Lot 3 DP567166 and Part Lot 2 DP510812 Old Northern Rd, Maroota* prepared by Footprint Green Pty Ltd (dated 15<sup>th</sup> January 2010) certification by a qualified and experienced ecologist is required to:

- a) undertake *Tetratheca glandulosa* propagation and translocation procedures including pre-clearing surveys and identification of clumps of on-site (Task 6.1-6.11 – Sheet 8/11)
- b) collection of all baseline vegetation quadrat data for future monitoring purposes prior to clearing
- c) prior to clearing of native vegetation within each cell check that the cell does not contain exotic or weed vegetation
- d) prior to the translocation of topsoil within each cell check that the recipient cell does not contain any exotic or weed vegetation and the final grading band sub strata has been suitably prepared
- e) provide recommended actions required to ensure the donor and recipient sites are weed free before works commence

#### **8. Noxious Weeds**

The removal of introduced environmental and noxious weeds from donor and recipient sites is to be undertaken by a qualified and experienced bush regeneration company or consultant.

#### **9. Rehabilitation Bond**

Prior to the commencement of extraction, the proponent must lodge with Council a contract for a Rehabilitation Bond based on an amount per tonne of extracted material. The total of this amount must be sufficient to cover the cost of rehabilitating the approved extraction area and other likely disturbed areas.

### **OPERATIONAL CONDITIONS**

#### **10. Truck Movements**

A maximum of 35 truck loads of material are permitted to be removed from the site each day averaged over 1 month.

#### **11. Monitoring and Management**

The proponent must submit to Council every 12 months after the endorsed date of this consent an *Environmental Management Plan* in which Council is to be satisfied of the overall performance and management of the operation.

The *Environmental Management Plan* should refer to the objectives and principles of Ecologically Sustainable Development and address the following matters:

- a) Acquisition of all necessary licences and permits and an indication of how compliance with licensing and approval requirements will be achieved and due diligence attained.
- b) On site materials Management including management of operational impacts: if appropriate, include such as:
  - i) management of explosives, chemicals and fuel and their use
  - ii) maintenance an site security plans
- c) Water Management.
- d) Acoustic Management.
- e) Air quality Management.
- f) Transport routes, access & movements.
- g) Soil Conservation including geo-technical appraisal of tailing systems and erosion and sediment controls.
- h) Social impact management including consultation with community groups, nearby residents and monitoring of complaints received.
- i) Identification, assessment and evaluation of risks, safeguards and the confidence level of contingency / emergency plans.
- j) Statement of Compliance with the approved EIS documentation, conditions of this consent and the objectives of Councils DCP - Extractive industries.
- k) Advice and recommendations of all relevant state government agencies.
- l) Reference to International Standards (ISO) 14001-14004 relating to Environmental Management Systems, which should address issues such as:
  - i) the capacity and support mechanisms necessary to implement and achieve the proponent company's environmental policy, objectives and targets; and
  - ii) the means by which the proponent company measure, monitor and evaluate its environmental performance.
- m) Recommendations to adjust operation procedures to improve the overall performance of the operations.
- n) Strategies to feed information from the monitoring program back into the management practices and action plans to improve the environmental performance and sustainability of all components of the proposal.
- o) Training programs for operational staff and incentives for environmentally sound performance.
- p) Archaeological protection measures.
- q) Performance indicators in relation to critical operational issues including :
  - i) Compliance with the conditions of consent;

- ii) Compliance with the objectives of Sydney Regional Environmental Plan No. 9 Extractive Industries (No. 2 - 1995); and
- iii) Compliance with the objectives of Council's Extractive Industry Development Control Plan.

## **12. Processing of Materials**

Processing of materials must take place wholly within the Maroota area.

## **13. Annual Volume of Materials Extracted**

The annual volume of material to be extracted shall be in accordance with the details provided in the Environmental Impact Statement and accompanying documents (i.e. 195,000 tonnes per annum).

## **14. Rehabilitation and Environmental Protection Procedures**

All rehabilitation and environmental protection procedures must be undertaken in accordance with the approved *Quarry Rehabilitation Plans for Part Lot 3 DP567166 and Part Lot 2 DP510812 Old Northern Rd, Maroota* prepared by Footprint Green Pty Ltd (dated 15<sup>th</sup> January 2010).

## **15. Rehabilitation and Environmental Protection Works**

In accordance with the approved *Quarry Rehabilitation Plans for Part Lot 3 DP567166 and Part Lot 2 DP510812 Old Northern Rd, Maroota* prepared by Footprint Green Pty Ltd (dated 15<sup>th</sup> January 2010) all weed removal, protection and translocation of *Tetratheca glandulosa* clumps, vegetation clearing, bulk removal of topsoil containing seed bank and preparation of recipient sites including final grading of sub strata (Tasks 7.6 – 7.30 within sheet 8/11 of the approved Rehabilitation Plan) is to only be undertaken by an experienced bushland rehabilitation company or consultant.

Some bulk earth works pertaining to rehabilitation works (e.g. topsoil stripping or recipient site preparation) may be undertaken by other earth moving personnel including PF Formation employees or other earthmoving contractors.

## **16. Exclusion Fencing**

- a) In order to prevent herbivory of germinating translocated soil seedlings, exclusion fencing is to be undertaken in accordance with the '*Herbivore Exclusion Fencing Requirements*', prepared by Hornsby Shire Council Bushland and Biodiversity Team, dated 1 February 2010. The fencing which includes sedimentation/erosion control is to be installed immediately after topsoil has been translocated to the recipient site.
- b) The Herbivore Exclusion Fencing must be maintained for each rehabilitation cell until certification from an ecologist or contracted bush regeneration company or consultant is provided to Council that justifies that exclusion fencing is no longer required due to the success of native vegetation establishment.

## **17. Monitoring Program**

- a) The monitoring program for bushland rehabilitation must form part of other monitoring requirements (ground water, air quality etc) of the approved quarry operation Environmental Management Plan. The approved monitoring methods, survey parameters, frequency,

performance measures and remedial actions outlined within sheet 11 of 11 of the *Quarry Rehabilitation Concept Plan for Part Lot 3 DP567166 and Part Lot 2 DP510812 Old Northern Rd, Maroota* prepared by Footprint Green Pty Ltd (dated 15<sup>th</sup> January 2010) must be undertaken by a qualified and experienced ecological company or consultant.

- b) At the completion of rehabilitation and translocation works within each cell, a concise works summary report must be prepared by a qualified and experienced ecologist to ensure the rehabilitation and translocation works are satisfactorily completed in accordance with the approved rehabilitation plan with *Task 7.32 – Sheet 8/11* of the approved *Quarry Rehabilitation Plans for Part Lot 3 DP567166 and Part Lot 2 DP510812 Old Northern Rd, Maroota* prepared by Footprint Green Pty Ltd (dated 15<sup>th</sup> January 2010). The works summary reports must be provided to Council and must also be attached to the operational monitoring program reporting (Environmental Management Plan).

#### 18. s94 Infrastructure Contributions

The monthly payment to Council of a contribution of \$0.80\* per tonne for all extracted material transported from the site in accordance with Council's *Development Contributions Plan 2007-2011* and the following:

- a) On or before the 14<sup>th</sup> day of each month that extracted materials are transported from the site, the Applicant shall submit to Council a certified copy of returns or records showing the true quantities of extracted material transported from the site during the immediately preceding month. Thereafter, Council will issue to the Applicant an invoice for the contribution payable for such material transported from the site. Payment of the amount of the invoice shall be made by the Applicant within 14 days of the invoice date. If the party carrying out the extraction work fails to deliver such returns to the Council in accordance with this clause by the 14<sup>th</sup> day of a particular month, the Council shall at its absolute discretion be entitled but not obliged to estimate the quantity of material transported from the site during the immediately preceding month and shall be entitled to issue such an invoice on the basis of such estimate.
- b) Council shall be entitled to inspect and audit the original records relating to any of the extracted material, including locality of destinations, numbers and types of laden trucks and trailers and load quantities, transported from the site.
- c) If the Applicant ceases to carry out the approved extraction work or if a party other than the Applicant commences to carry out such work without the Applicant having started to do so, then the Applicant shall forthwith furnish to Council notice of that fact together with the name and address of the party (if any) who has commenced or will thereafter commence to carry on the said work. Such notice shall be accompanied by an acknowledgment in writing by that party that it is aware of the obligations imposed on it pursuant to this condition. Until such time as the notice and acknowledgment are furnished to the Council by the applicant, the applicant will remain jointly and severally liable with the party for the time being carrying out the extraction work for payment of the aforesaid contribution and for compliance with the terms of this condition. The terms of this paragraph shall apply mutatis mutandis to any future operator of the extraction work in the event of his ceasing to carry out the work.

*Note: \* The value of contribution is current as at 5 February 2010. The contribution will be adjusted from this date in accordance with the underlying consumer price index for subsequent financial quarters.*

*It is recommended that you contact Council each quarter to ascertain the indexed value of the contribution prior to payment.*

**19. Environmental Management**

The site must be managed in accordance with the publication *'Managing Urban Stormwater – Landcom (March 2004)* and the *Protection of the Environment Operations Act 1997* by way of implementing appropriate measures to prevent sediment run-off, excessive dust, noise or odour emanating from the site during the construction of the development.

**20. Setback from Prescribed Stream**

A buffer setback of 40 metres must be provided from the crest of the watercourse (Coopers Creek) to any construction works. The setback area must be suitably vegetated with native grasses to facilitate the filtration of surface runoff.

**21. Wastewater System Approval**

An on-site sewage management system, separately approved under the *Local Government Act 1993*, must be installed, commissioned and certified by a licensed plumber in accordance with *Australian Standard 1547 – Onsite Domestic Wastewater Management (2000)* and *Environment & Health Protection Guidelines – Onsite Sewage Management for Single Households (1998)*.

**22. Maintenance of Wastewater Device**

All wastewater and stormwater treatment devices (including drainage systems, sumps and traps) must be regularly maintained in order to remain effective. All solid and liquid wastes collected from the device must be disposed of in accordance with the *Protection of the Environment Operations Act 1997*.

**23. Storage of Flammable and Combustible Goods**

Flammable and combustible liquids must be stored in accordance with *Australian Standard 1940 – The Storage and Handling of Flammable and Combustible Liquids*. A bund wall must be constructed around all work and liquid storage areas to prevent any spillage entering into the stormwater system. The bunded area must provide a volume equal to 110% of the largest container stored and graded to a blind sump so as to facilitate emptying and cleansing.

**24. Depth of Excavation**

The maximum depth of allowable excavation is 177 metres AHD or the retention of a 2 metre buffer above the wet weather high water table.

**GENERAL TERMS OF APPROVAL – DEPARTMENT OF WATER AND ENERGY**

The following conditions of consent are General Terms of Approval from the nominated State Agency pursuant to Section 91A of the *Environmental Planning and Assessment Act 1979* and must be complied with to the satisfaction of that Agency.

**25. Works Requiring Controlled Activity Approval - GTA 1**

These General Terms of Approval (GTA) only apply to the controlled activities described in the plans and associated documentation relating to DA/578/2009 and provided by Council:

- i) Site Plan, map and/or surveys

Any amendments or modification to the proposed controlled activities may render these GTA invalid. If the proposed controlled activities are amended or modified the Department of Water and Energy must be notified to determine if any variations to these GTA will be required.

**26. Works Requiring Controlled Activity Approval - GTA 2**

Prior to the commencement of any controlled activity (works) on waterfront land, the consent holder must obtain a Controlled Activity Approval (CAA) under the Water Management Act from the Department of Water and Energy. Waterfront land for the purposes of this DA is land and material in or within 40 metres of the top of the bank or shore of the river identified.

**27. Works Requiring Controlled Activity Approval - GTA 3**

The consent holder must prepare or commission the preparation of:

- i) Vegetation Management Plan.
- ii) Erosion and Sediment Control Plan
- iii) Soil and Water Management Plan.
- iv) Amendments to Plans - in relation to rehabilitation of Coopers Creek in and around the crossing and in-line dam.

**28. Works Requiring Controlled Activity Approval - GTA 5**

The consent holder must:

- i) Carry out any controlled activity in accordance with approved plans.
- ii) Construct and/or implement any controlled activity by or under the direction supervision of a suitability qualified professional.
- iii) When required, provide a certificate of completion to the Department of Water and Energy.

**29. Deleted****30. Works Requiring Controlled Activity Approval - GTA 7**

The consent holder must reinstate waterfront land affected by the carrying out of any controlled activity in accordance with a plan or design approved by the Department of Water and Energy.

**31. Works Requiring Controlled Activity Approval - GTA 8**

The consent holder must use a suitably qualified person to monitor the progress, completion, performance of works, rehabilitation and maintenance and report to the Department of Water and Energy as required.

**32. Works Requiring Controlled Activity Approval - GTA 9**

The consent holder must provide a security deposit (bank guarantee or cash bond) - equal to the sum of the cost of complying with the obligations under any approval - to the Department of Water and Energy as and when required.

**33. Works Requiring Controlled Activity Approval - GTA 12**

The consent holder must ensure that the construction of any bridge, causeway, culvert or crossing does not result in erosion, obstruction of flow, destabilisation or damage to the bed or banks of the river or waterfront land, other than in accordance with a plan approved by the Department of Water and Energy.

**34. Works Requiring Controlled Activity Approval - GTA 13**

The consent holder must ensure that any bridge, causeway, culvert or crossing does not obstruct water flow and direction, is the same width as the river or sufficiently wide to maintain water circulation, with no significant water level difference between either side of the structure other than in accordance with a plan approved by the Department of Water and Energy.

**35. Works Requiring Controlled Activity Approval - GTA 14**

The consent holder must ensure that no materials or cleared vegetation that may obstruct flow, wash into the water body or cause damage to river banks are left on waterfront land other than in accordance with a plan approved by the Department of Water and Energy.

**36. Works Requiring Controlled Activity Approval - GTA 15**

The consent holder is to ensure that all drainage works:

- i) capture and convey runoffs, discharges and flood flows to low flow water level in accordance with a plan approved by the Department of Water and Energy; and
- ii) do not obstruct the flow of water other than in accordance with a plan approved by the Department of Water and Energy.

**37. Works Requiring Controlled Activity Approval - GTA 16**

The consent holder must stabilise drain discharge points to prevent erosion in accordance with a plan approved by the Department of Water and Energy.

**38. Works Requiring Controlled Activity Approval - GTA 17**

The consent holder must establish all erosion and sediment control works and water diversion structures in accordance with a plan approved by the Department of Water and Energy. These

works and structures must be inspected and maintained throughout the working period and must not be removed until the site has been fully stabilised.

**39. Works Requiring Controlled Activity Approval - GTA 18**

The consent holder must ensure that no excavation is undertaken on waterfront land other than in accordance with a plan approved by the Department of Water and Energy.

**40. Works Requiring Controlled Activity Approval - GTA 19**

The consent holder must ensure that any excavation does not result in:

- i) diversion of any river,
- ii) bed or bank instability, or
- iii) damage to native vegetation within the area where a controlled activity has been authorised, other than in accordance with a plan approved by the Department of Water and Energy.

**41. Works Requiring Controlled Activity Approval - GTA 22**

The consent holder must clearly mark (with stakes using a GPS or peg out survey), protect and maintain a riparian corridor with a width of 40 metres measured horizontally landward from the highest bank of the river for the length of the site directly affected by the controlled activity in accordance with a plan approved by the Department of Water and Energy.

**42. Works Requiring Controlled Activity Approval - GTA 23**

The consent holder must establish a riparian corridor along Coopers Creek in accordance with a plan approved by the Department of Water and Energy.

**GENERAL TERMS OF APPROVAL - DEPARTMENT OF ENVIRONMENT CLIMATE CHANGE AND WATER (EPA)**

The following conditions of consent are General Terms of Approval from the nominated State Agency pursuant to Section 91A of the *Environmental Planning and Assessment Act 1979* and must be complied with to the satisfaction of that Agency.

EPA Identification No.	Type of Monitoring Point	Description of Location
5	Meteorological station	Meteorological station located at a site to be determined in accordance with AM-1.

**43. Pollution of Waters (L1.1)**

Except as may be expressly provided by a licence under the Protection of the Environment Operations Act 1997 in relation of the development, section 120 of the Protection of the Environment Operations Act 1997 must be complied with in and in connection with the carrying out of the development.



**44. Waste (5.1)**

The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by a licence under the Protection of the Environment Operations Act 1997.

**45. Waste (L5.2)**

This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if it requires an environment protection licence under the Protection of the Environment Operations Act 1997.

**46. Noise Limits (L6.1)**

Noise generated at the premises must not exceed the noise limits presented in the table below:

**Table 6.1 - Noise Limits (dB(A))**

Location	Day
	$L_{Aeq,15min}$
R3 – Lot 59 DP 752029	43
R4 – Lot 63 DP 752029	41
R6 – Lot 2 DP 567166	45
R7 – Lot 2 DP 567166	45
R8 – Lot 2 DP 567166	46
R9 – Lot 1 DP 567166	47
R10 – Lot 10 DP 752029	47
R11 – Lot 1 DP 621814	35
R12 – Lot 6 DP 39392	35
R13 – Lot 5 DP 39392	35
R14 – Lot 4 DP 39392	35
R15 – Lot 3 DP 39392	35
R16 – Lot 2 DP 39392	35
R17 – Lot 1 DP 39392	35

**47. Noise limits apply regardless of Chapter 11 Industrial Noise Policy (L6.2)**

Noise generated from the premises in excess of the limits set out in condition L6.1, whether on one or more occasions, constitutes a breach of the licence regardless of Chapter 11 of the Industrial Noise Policy.

**48. Interpretation of noise limits (L6.3)**

For the purposes of condition L6.1:

- Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sundays and Public holidays,
- Evening is defined as the period 6pm to 10pm Monday to Sunday,
- Night is defined as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sundays and Public Holidays,

- The modification factors in Section 4 of the NSW Industrial Noise Policy must also be applied to the measured noise levels where applicable; and
- Error margins associated with the noise monitoring equipment used are not to be taken into account in reporting whether or not a noise limit in Condition No. 39 has been exceeded.

Where it can be demonstrated that direct measurement of noise from the premises is impractical, the EPA may accept alternative means of determining compliance. See Chapter 11 of the NSW Industrial Noise Policy.

**49. Noise (L6.4)**

The noise emission limits identified in condition L6.1 apply under adverse meteorological conditions of:

- Wind speed up to 3m/s at 10 metres above ground level.

**50. Noise (L6.5)**

For the purpose of condition L6.4 the meteorological data to be used for determining meteorological conditions is the data recorded by the meteorological weather station identified as EPA Identification Point 5.

**51. Noise (L6.6)**

For the purposes of determining the noise generated at the premises:

- a) Class 1 or 2 noise monitoring equipment that is calibrated in accordance with the manufacturer's specifications must be used according to AS IEC61672.1-2004 and AS IEC61672.2-2004;
- b) The noise monitoring equipment for the premise described in Table 6.1 must be placed in a position that is:
  - On a property boundary that is closest to the premises, where any dwelling at the location is within 30 metres of the location's property boundary that is closest to the premises; or
  - Within 30 metre of a dwelling façade where any dwelling at a location is situated more than 30 metres from the location's property boundary that is closest to the premises.

**52. Hours of Operation (L6.7)**

All activities at the premises must only be carried out on between 0700 and 1800 Monday to Saturday inclusive. Up to ten (10) laden vehicles can enter or leave the premises between 0600 and 0700 Monday to Saturday inclusive.

**53. Noise Management Plan (L6.8)**

The proponent must prepare and implement a Noise Management Plan that covers all premises based activities and transport operations. The Plan must include but not need be limited to:

- All measures necessary to not exceed the limits in Table L6.1 at all times

- A system that allows for periodic assessment at least every 6 months of Best Management Practice (BMP) and Best Available Technology Economically Achievable (BATEA) that has the potential to reduce noise levels from the premises at Locations R6, R7, R8, R9 and R10 in Table L6.1, including, but not necessarily limited to, fitting and maintenance of “residential class muffler(s)” to the bulldozer(s), and formation and maintenance of sand mound(s) or sand bunds.
- Effective implementation of identified BMP and BATEA measures, where considered feasible and reasonable
- Measures to monitor noise generated from the premises, and respond to complaints
- Measures for community consultation including site contact details
- Noise monitoring and reporting procedures.

**54. Dust (O2.1)**

Activities occurring at the premises must be carried out in a manner that will minimise emissions of dust from the premises.

**55. Dust (O2.2)**

Trucks entering and leaving the premises that are carrying loads must be covered at all times, except during loading and unloading.

**56. Soil and Water Management Plan (O3.1)**

A *Soil and Water Management Plan (SWMP)* must be prepared and implemented. The plan must describe the measures that will be employed to minimise soil erosion and the discharge of sediment and other pollutants to lands and/or waters during all phases of the operation. The Scheme should be consistent with the guidance contained in *Managing Urban Stormwater: Volume 2E Soils and Construction - Mines and Quarries* (available from the EPA).

**57. Monitoring Records (M1.1)**

The results of any monitoring required to be conducted by the EPA's general terms of approval, or a licence under the Protection of the Environment Operations Act 1997, in relation to the development or in order to comply with the load calculation protocol must be recorded and retained as set out in conditions M1.2 and M1.3.

**58. Monitoring Records (M1.2)**

All records required to be kept by the licence must be:

- In a legible form, or in a form that can readily be reduced to a legible form;
- Kept for at least 4 years after the monitoring or event to which they relate took place; and
- Produced in a legible form to any authorised officer of the EPA who asks to see them.

**59. Monitoring Records (M1.3)**

The following records must be kept in respect of any samples required to be collected: the date(s) on which the sample was taken;

- the time(s) at which the sample was collected;
- the point at which the sample was taken; and
- the name of the person who collected the sample.

#### 60. Requirement to monitor concentration of pollutants discharged (M2.1)

For each monitoring/ discharge point or utilisation area specified below (by a point number), the applicant must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The applicant must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

**Point # 1, 2, and 3                      Air**

Pollutant	Units of measure	Frequency	Sampling Method
Particles - Deposited Matter	Grams per square metre per month	Monthly	AM-19

#### 61. Testing methods - concentration limits (M4.1)

Monitoring for the concentration of a pollutant emitted to the air required to be conducted by the EPA's general terms of approval, or a licence under the Protection of the Environment Operations Act 1997, in relation to the development or in order to comply with a relevant local calculation protocol must be done in accordance with:

- any methodology which is required by or under the POEO Act 1997 to be used for the testing of the concentration of the pollutant; or
- If no such requirement is imposed by or under the POEO Act 1997, any methodology which the general terms of approval or a condition of the licence or the protocol (as the case may be) requires to be used for that testing; or
- if no such requirement is imposed by or under the POEO Act 1997 or by the general terms of approval or a condition of the licence or the protocol (as the case may be), any methodology approved in writing by the EPA for the purposes of that testing prior to the testing taking place.

*Note: The Protection of the Environment Operations (clean air) Regulation 2002 requires testing for certain purposes to be conducted in accordance with test methods contained in the publication "Approved Methods for the Sampling and Analysis of Air Pollutants in NSW".*

#### 62. Requirement to monitor weather (M5.1)

For each monitoring point specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) each weather parameter specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

**POINT 5 <weather>**

Parameter	Units of Measure	Frequency	Averaging Period	Sampling Method
Wind Speed	m/s	Continuous	15-minute	AM-2 and AM-4
Wind Direction	°	Continuous	15-minute	AM-2 and AM-4
Sigma Theta	°	Continuous	15-minute	AM-2 and AM-4
Temperature	°C	Continuous	15-minute	AM-4

**63. Reporting Conditions (R1.1)**

The applicant must provide an annual return to the EPA in relation to the development as required by any licence under the Protection of the Environment Operations Act 1997 in relation to the development. In the return the applicant must report on the annual monitoring undertaken (where the activity results in pollutant discharges), provide a summary of complaints relating to the development, report on compliance with licence conditions and provide a calculation of licence fees (administrative fees and, where relevant, load based fees) that are payable. If load based fees apply to the activity the applicant will be required to submit load-based fee calculation worksheets with the return.

**64. Dust Monitoring Plan**

- a) The proponent must prepare and implement a dust monitoring plan, to the satisfaction of DECCW, that:
  - quantifies dust impacts at the most sensitive receptor(s) as defined by the results of the EA;
    - for the range of normal operating scenarios at the proposal site;
    - for variable meteorological conditions;
  - is implemented within 1 month of operational activities beginning at the proposal site; and
  - operates for a minimum period of 12 months.
- b) The proponent must submit a report to the Manager of Sydney Industry for DECCW approval detailing all elements of the dust monitoring plan at least two months prior to commencement of operational activities at the proposal site.

<b>GENERAL TERMS OF APPROVAL – DEPARTMENT OF PRIMARY INDUSTRIES MINERAL RESOURCES</b>
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<p>The following conditions of consent are General Terms of Approval from the nominated State Agency pursuant to Section 91A of the <i>Environmental Planning and Assessment Act 1979</i> and must be complied with to the satisfaction of that Agency.</p>
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**65. Production Data**

The operator is required to provide annual production data as requested by the Mineral Resources Division of the Department of Primary Industries.

**Hornsby Shire Council**

ABN 20 706 996 972  
296 Peats Ferry Rd, Hornsby 2077

PO Box 37, Hornsby NSW 1630

Phone 02 9847 6666  
Fax 02 9847 6999

Email [hsc@hornsby.nsw.gov.au](mailto:hsc@hornsby.nsw.gov.au)  
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**GENERAL TERMS OF APPROVAL – DEPARTMENT OF ENVIRONMENT AND CLIMATE CHANGE**

The following conditions of consent are General Terms of Approval from the nominated State Agency pursuant to Section 91A of the *Environmental Planning and Assessment Act 1979* and must be complied with to the satisfaction of that Agency.

**66. Aboriginal Cultural Heritage - GTA 1**

All identified sites must be protected from impact by a 40 metre buffer zone to be calculated from the perimeter of the identified site, other than for sites CC1 and CC6 which shall have a 20 metre buffer zone, which buffer zone is to also be calculated from the perimeter of sites CC1 and CC6.

**67. Aboriginal Cultural Heritage - GTA 2**

All identified sites to be precisely relocated using photos and GPS references prior to demarcation of buffer zone.

**68. Aboriginal Cultural Heritage - GTA 3**

All buffer zones to be clearly fenced.

**69. Aboriginal Cultural Heritage - GTA 4**

No vehicular access, services or earth disturbing works will be permitted within the buffer zones. No other impacts will be permitted within the buffer zones.

**70. Aboriginal Cultural Heritage - GTA 5**

The buffer zones must not be used as storage areas.

**71. Aboriginal Cultural Heritage - GTA 6**

Runoff from the sand extraction operation should be designed to ensure that sites are protected from altered runoff and deposition conditions which may impact sites.

**72. Aboriginal Cultural Heritage - GTA 7**

All sites CC1, CC2, CC3, CC4, CC5 and CC6 to be monitored annually to assess the condition of the buffer fencing, buffer zones and impacts to sites from runoff and/or deposition. Remedial action to be taken where necessary if changes are detected.

Any amended remediation action undertaken pursuant to this condition, in respect of site CC1 must be undertaken pursuant to an Aboriginal Heritage Impact Permit issued under Part 6 of the *National Parks and Wildlife Act 1974*.

**73. Aboriginal Cultural Heritage - GTA 8**

If new Aboriginal objects, including Aboriginal human remains are found all work must cease and the Department of Environment, Climate Change and Water must be contacted.

**74. Aboriginal Cultural Heritage - GTA 9**

All people employed on site must undergo a site induction which includes training in the management protocols set out in condition No. 73 above and be briefed on the Aboriginal cultural heritage significance of the area and relevant GTA conditions.

**CONDITIONS OF CONCURRENCE – ROADS AND TRAFFIC AUTHORITY**

The following conditions of consent are from the nominated State Agency pursuant to Section 79b of the *Environmental Planning and Assessment Act 1979* and must be complied with to the satisfaction of that Agency.

- 75. The wheels of all vehicles leaving the site are to be clean and free of dust, dirt and mud. It is recommended that a wheel wash be installed to prevent material being deposited on Old Northern Road.
- 76. All landscaping, signage, fencing and parked vehicles are not to impeded sight lines to pedestrians and vehicles travelling along Old Northern Road.
- 77. All vehicles must enter and exit the site in a forward direction.
- 78. All vehicles must be clear of the formation before being required to stop.
- 79. All works associated with the proposed development to be at no cost to the RTA.

**- END OF CONDITIONS -**

# Environment Protection Licence



Licence - 3829

Licence Details	
Number:	3829
Anniversary Date:	02-March

Licensee
ETRA PTY LTD
1774 WISEMANS FERRY ROAD
MARROOTA NSW 2756

Premises
HORNSBY SITES
OLD NORTHERN ROAD
MARROOTA NSW 2756

Scheduled Activity
Extractive Activities

Fee Based Activity	Scale
Land-based extractive activity	> 100000-500000 T extracted, processed or stored

Region
Metropolitan - Sydney Industry
Level 13, 10 Valentine Ave
PARRAMATTA NSW 2150
Phone: (02) 9995 5000
Fax: (02) 9995 6900
PO Box 668 PARRAMATTA
NSW 2124



# Environment Protection Licence

Licence - 3829



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# Environment Protection Licence

Licence - 3829



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## Information about this licence

### Dictionary

A definition of terms used in the licence can be found in the dictionary at the end of this licence.

### Responsibilities of licensee

Separate to the requirements of this licence, general obligations of licensees are set out in the Protection of the Environment Operations Act 1997 ("the Act") and the Regulations made under the Act. These include obligations to:

- ensure persons associated with you comply with this licence, as set out in section 64 of the Act;
- control the pollution of waters and the pollution of air (see for example sections 120 - 132 of the Act);
- report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the Act.

### Variation of licence conditions

The licence holder can apply to vary the conditions of this licence. An application form for this purpose is available from the EPA.

The EPA may also vary the conditions of the licence at any time by written notice without an application being made.

Where a licence has been granted in relation to development which was assessed under the Environmental Planning and Assessment Act 1979 in accordance with the procedures applying to integrated development, the EPA may not impose conditions which are inconsistent with the development consent conditions until the licence is first reviewed under Part 3.6 of the Act.

### Duration of licence

This licence will remain in force until the licence is surrendered by the licence holder or until it is suspended or revoked by the EPA or the Minister. A licence may only be surrendered with the written approval of the EPA.

### Licence review

The Act requires that the EPA review your licence at least every 5 years after the issue of the licence, as set out in Part 3.6 and Schedule 5 of the Act. You will receive advance notice of the licence review.

### Fees and annual return to be sent to the EPA

For each licence fee period you must pay:

- an administrative fee; and
- a load-based fee (if applicable).

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The EPA publication “A Guide to Licensing” contains information about how to calculate your licence fees. The licence requires that an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), be submitted to the EPA. The Annual Return must be submitted within 60 days after the end of each reporting period. See condition R1 regarding the Annual Return reporting requirements.

Usually the licence fee period is the same as the reporting period.

### Transfer of licence

The licence holder can apply to transfer the licence to another person. An application form for this purpose is available from the EPA.

### Public register and access to monitoring data

Part 9.5 of the Act requires the EPA to keep a public register of details and decisions of the EPA in relation to, for example:

- licence applications;
- licence conditions and variations;
- statements of compliance;
- load based licensing information; and
- load reduction agreements.

Under s320 of the Act application can be made to the EPA for access to monitoring data which has been submitted to the EPA by licensees.

### This licence is issued to:

ETRA PTY LTD
1774 WISEMANS FERRY ROAD
MARROOTA NSW 2756

subject to the conditions which follow.

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## 1 Administrative Conditions

### A1 What the licence authorises and regulates

A1.1 This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.

Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.

Scheduled Activity	Fee Based Activity	Scale
Extractive Activities	Land-based extractive activity	> 100000 - 500000 T extracted, processed or stored

### A2 Premises or plant to which this licence applies

A2.1 The licence applies to the following premises:

Premises Details
HORNSBY SITES
OLD NORTHERN ROAD
MARROOTA
NSW 2756
LOT 2 DP 510812, LOT 3 DP 567166, LOT 63 DP 752029
PARISH OF FREDERICK

A2.2 The premises location is shown on the map below.



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1	Dust monitoring	"Dust Monitoring Location" on the map titled "Staging of Sand Extraction at Part Lot 3 DP 567166 & Part Lot 2 DP510812 at Old Northern Rd, Maroota" which was emailed to the EPA on 3 June 2010.
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P1.2 The following utilisation areas referred to in the table below are identified in this licence for the purposes of the monitoring and/or the setting of limits for any application of solids or liquids to the utilisation area.

## 3 Limit Conditions

### L1 Pollution of waters

L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.

### L2 Waste

L2.1 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

L2.2 This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if those activities require an environment protection licence.

### L3 Noise limits

L3.1 Noise generated at the premises must not exceed the day time noise limits presented in the table below:

*Table 1 - Noise Limits (dB(A))*

Location	Day; LAeq,15min
R3 - Lot 59, DP 752029	43
R6 - Lot 2, DP 567166	45
R7 - Lot 2, DP 567166	45
R8 - Lot 2, DP 567166	46
R9 - Lot 1, DP 567166	47
R10 - Lot 10, DP 752029	47
R11 - Lot 1, DP 621814	35
R12 - Lot 6, DP 39392	35
R13 - Lot 5, DP 39392	35

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R14 - Lot 4, DP 39392	35
R15 - Lot 3, DP 39392	35
R16 - Lot 2, DP 39392	35
R17 - Lot 1, DP 39392	35

- L3.2 Noise generated from the premises in excess of the limits set out in condition L3.1, whether on one or more occasions, constitutes a breach of the licence regardless of Chapter 11 of the NSW Industrial Noise Policy.
- L3.3 For the purpose of condition L3.1:
- "Day" is defined as the period from 7:00am to 6:00am Monday to Saturday and 8:00am to 6:00pm Sundays and Public Holidays;
  - "Evening" is defined as the period from 6:00pm to 10:00pm Monday to Sunday;
  - "Night" is defined as the period from 10:00pm to 7:00am Monday to Saturday and 10:00pm to 8:00am Sundays and Public Holidays;
  - The modification factors in Section 4 of the NSW Industrial Noise Policy must also be applied to the measured noise levels where applicable; and
  - Error margins associated with the noise monitoring equipment used are not to be taken into account in reporting whether or not a noise limit in condition L3.1 has been exceeded.
- L3.4 The noise emission limits identified in condition L3.1 apply under adverse meteorological conditions of wind speed up to 3m/s at 10 metres above ground level.
- L3.5 For the purpose of determining the noise generated at the premises:
- Class 1 or 2 noise monitoring equipment that is calibrated in accordance with the manufacturer's specifications must be used according to AS IEC61672.1-2004 and AS IEC61672.2-2004; and
  - The noise monitoring equipment for the premise described in condition L3.1, Table 1 must be placed in a position that is:
    - On a property boundary that is closest to the premises, where any dwelling at the location is within 30 metres of the location's property boundary that is closest to the premises; or
    - Within 30 metres of a dwelling façade where any dwelling at a location is situated more than 30 metres from the location's property boundary that is closest to the premises.
- L3.6 The licensee must prepare and implement a Noise Management Plan that covers all premises based activities and transport operations. The Plan must include, but not be limited to:
- All measures necessary to not exceed the limits prescribed in condition L3.1 at all times;
  - A system that allows for periodic assessment at least every 12 months of Best Management Practice (BMP) and Best Available Technology Economically Achievable (BATEA) that has the potential to reduce noise levels from the premises at Locations R6, R7, R8, R9 and R10 in condition L6.1, Table 1, including, but not limited to, fitting and maintenance of "residential class muffler(s)" to the bulldozer(s), and formation and maintenance of sand mound(s) or sand bunds;
  - Effective implementation of identified BMP and BATEA measures, where considered feasible and reasonable;
  - Measures to monitor noise generated from the premises, and respond to complaints;
  - Measures for community consultation and notification including site contact details; and
  - Noise monitoring and reporting procedures.



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## **L4 Hours of operation**

- L4.1 All activities at the premises must only be carried out between 7:00am and 6:00pm Monday to Saturday inclusive. Up to ten laden vehicles can enter or leave the premises per day between 6:00am and 7:00am Monday to Saturday inclusive.
- L4.2 The following activities may be carried out at the premises outside the hours specified in conditions L4.1:
- a) the delivery of materials as requested by Police or other authorities for safety reasons;
  - b) emergency work to avoid the loss of lives, property and/or to prevent environmental harm.

## **L5 Other limit conditions**

- L5.1 Unless otherwise permitted by any other licence condition, annual extraction from Lot 2 DP510812 and Lot 3 DP567166 must not exceed 195,000 tonnes per annum.

## **4 Operating Conditions**

### **O1 Activities must be carried out in a competent manner**

- O1.1 Licensed activities must be carried out in a competent manner.  
This includes:
- a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
  - b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

### **O2 Maintenance of plant and equipment**

- O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:
- a) must be maintained in a proper and efficient condition; and
  - b) must be operated in a proper and efficient manner.

### **O3 Dust**

- O3.1 The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.
- O3.2 Trucks entering or leaving the premises that are carrying loads must be covered at all times, except during loading and unloading.

### **O4 Other operating conditions**

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- O4.1 The licensee must prevent any tracking of mud on to public roads by vehicles leaving the premises.
- O4.2 A Soil and Water Management Plan (SWMP) must be prepared and implemented. The SWMP must describe the measures that will be employed to minimise soil erosion and the discharge of sediment and other pollutants to lands and/or waters during all phases of the licensed activities and scheduled development work occurring at the premises.

## 5 Monitoring and Recording Conditions

### M1 Monitoring records

- M1.1 The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.
- M1.2 All records required to be kept by this licence must be:
- a) in a legible form, or in a form that can readily be reduced to a legible form;
  - b) kept for at least 4 years after the monitoring or event to which they relate took place; and
  - c) produced in a legible form to any authorised officer of the EPA who asks to see them.
- M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence:
- a) the date(s) on which the sample was taken;
  - b) the time(s) at which the sample was collected;
  - c) the point at which the sample was taken; and
  - d) the name of the person who collected the sample.

### M2 Requirement to monitor concentration of pollutants discharged

- M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:
- M2.2 Air Monitoring Requirements

#### POINT 1

Pollutant	Units of measure	Frequency	Sampling Method
Particulates - Deposited Matter	grams per square metre per month	Monthly	AM-19

### M3 Testing methods - concentration limits

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- M3.1 Monitoring for the concentration of a pollutant emitted to the air required to be conducted by this licence must be done in accordance with:
- a) any methodology which is required by or under the Act to be used for the testing of the concentration of the pollutant; or
  - b) if no such requirement is imposed by or under the Act, any methodology which a condition of this licence requires to be used for that testing; or
  - c) if no such requirement is imposed by or under the Act or by a condition of this licence, any methodology approved in writing by the EPA for the purposes of that testing prior to the testing taking place.

Note: The *Protection of the Environment Operations (Clean Air) Regulation 2010* requires testing for certain purposes to be conducted in accordance with test methods contained in the publication "Approved Methods for the Sampling and Analysis of Air Pollutants in NSW".

## **M4 Recording of pollution complaints**

- M4.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.
- M4.2 The record must include details of the following:
- a) the date and time of the complaint;
  - b) the method by which the complaint was made;
  - c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
  - d) the nature of the complaint;
  - e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
  - f) if no action was taken by the licensee, the reasons why no action was taken.
- M4.3 The record of a complaint must be kept for at least 4 years after the complaint was made.
- M4.4 The record must be produced to any authorised officer of the EPA who asks to see them.

## **M5 Telephone complaints line**

- M5.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.
- M5.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.
- M5.3 The preceding two conditions do not apply until 3 months after: the date of the issue of this licence.

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## 6 Reporting Conditions

### R1 Annual return documents

- R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:
- a) a Statement of Compliance; and
  - b) a Monitoring and Complaints Summary.
- At the end of each reporting period, the EPA will provide to the licensee a copy of the form that must be completed and returned to the EPA.
- R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.
- R1.3 Where this licence is transferred from the licensee to a new licensee:
- a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
  - b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.
- R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:
- a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
  - b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.
- R1.5 The Annual Return for the reporting period must be supplied to the EPA by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').
- R1.6 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.
- R1.7 Within the Annual Return, the Statement of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:
- a) the licence holder; or
  - b) by a person approved in writing by the EPA to sign on behalf of the licence holder.

**Note:** The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

**Note:** An application to transfer a licence must be made in the approved form for this purpose.

### R2 Notification of environmental harm

- R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.
- R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.

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**Note:** The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.

## **R3 Written report**

- R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that:
- a) where this licence applies to premises, an event has occurred at the premises; or
  - b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence, and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.
- R3.2 The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.
- R3.3 The request may require a report which includes any or all of the following information:
- a) the cause, time and duration of the event;
  - b) the type, volume and concentration of every pollutant discharged as a result of the event;
  - c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;
  - d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
  - e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
  - f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and
  - g) any other relevant matters.
- R3.4 The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.

## **7 General Conditions**

### **G1 Copy of licence kept at the premises or plant**

- G1.1 A copy of this licence must be kept at the premises to which the licence applies.
- G1.2 The licence must be produced to any authorised officer of the EPA who asks to see it.
- G1.3 The licence must be available for inspection by any employee or agent of the licensee working at the premises.

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## Dictionary

### General Dictionary

<b>3DGM [in relation to a concentration limit]</b>	Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples
<b>Act</b>	Means the Protection of the Environment Operations Act 1997
<b>activity</b>	Means a scheduled or non-scheduled activity within the meaning of the Protection of the Environment Operations Act 1997
<b>actual load</b>	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
<b>AM</b>	Together with a number, means an ambient air monitoring method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .
<b>AMG</b>	Australian Map Grid
<b>anniversary date</b>	The anniversary date is the anniversary each year of the date of issue of the licence. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
<b>annual return</b>	Is defined in R1.1
<b>Approved Methods Publication</b>	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
<b>assessable pollutants</b>	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
<b>BOD</b>	Means biochemical oxygen demand
<b>CEM</b>	Together with a number, means a continuous emission monitoring method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .
<b>COD</b>	Means chemical oxygen demand
<b>composite sample</b>	Unless otherwise specifically approved in writing by the EPA, a sample consisting of 24 individual samples collected at hourly intervals and each having an equivalent volume.
<b>cond.</b>	Means conductivity
<b>environment</b>	Has the same meaning as in the Protection of the Environment Operations Act 1997
<b>environment protection legislation</b>	Has the same meaning as in the Protection of the Environment Administration Act 1991
<b>EPA</b>	Means Environment Protection Authority of New South Wales.
<b>fee-based activity classification</b>	Means the numbered short descriptions in Schedule 1 of the Protection of the Environment Operations (General) Regulation 2009.
<b>general solid waste (non-putrescible)</b>	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997

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<b>flow weighted composite sample</b>	Means a sample whose composites are sized in proportion to the flow at each composites time of collection.
<b>general solid waste (putrescible)</b>	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
<b>grab sample</b>	Means a single sample taken at a point at a single time
<b>hazardous waste</b>	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
<b>licensee</b>	Means the licence holder described at the front of this licence
<b>load calculation protocol</b>	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
<b>local authority</b>	Has the same meaning as in the Protection of the Environment Operations Act 1997
<b>material harm</b>	Has the same meaning as in section 147 Protection of the Environment Operations Act 1997
<b>MBAS</b>	Means methylene blue active substances
<b>Minister</b>	Means the Minister administering the Protection of the Environment Operations Act 1997
<b>mobile plant</b>	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
<b>motor vehicle</b>	Has the same meaning as in the Protection of the Environment Operations Act 1997
<b>O&amp;G</b>	Means oil and grease
<b>percentile [in relation to a concentration limit of a sample]</b>	Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit specified in the licence for that pollutant over a specified period of time. In this licence, the specified period of time is the Reporting Period unless otherwise stated in this licence.
<b>plant</b>	Includes all plant within the meaning of the Protection of the Environment Operations Act 1997 as well as motor vehicles.
<b>pollution of waters [or water pollution]</b>	Has the same meaning as in the Protection of the Environment Operations Act 1997
<b>premises</b>	Means the premises described in condition A2.1
<b>public authority</b>	Has the same meaning as in the Protection of the Environment Operations Act 1997
<b>regional office</b>	Means the relevant EPA office referred to in the Contacting the EPA document accompanying this licence
<b>reporting period</b>	For the purposes of this licence, the reporting period means the period of 12 months after the issue of the licence, and each subsequent period of 12 months. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
<b>restricted solid waste</b>	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
<b>scheduled activity</b>	Means an activity listed in Schedule 1 of the Protection of the Environment Operations Act 1997
<b>special waste</b>	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
<b>TM</b>	Together with a number, means a test method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .

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<b>TSP</b>	Means total suspended particles
<b>TSS</b>	Means total suspended solids
<b>Type 1 substance</b>	Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements
<b>Type 2 substance</b>	Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements
<b>utilisation area</b>	Means any area shown as a utilisation area on a map submitted with the application for this licence
<b>waste</b>	Has the same meaning as in the Protection of the Environment Operations Act 1997
<b>waste type</b>	Means liquid, restricted solid waste, general solid waste (putrescible), general solid waste (non - putrescible), special waste or hazardous waste

Mr Bernie Weir

Environment Protection Authority

(By Delegation)

Date of this edition: 09-July-2001



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## End Notes

- 1 Licence varied by notice 1010454, issued on 08-Aug-2001, which came into effect on 08-Aug-2001.
- 2 Licence varied by notice 1012317, issued on 23-Aug-2002, which came into effect on 17-Sep-2002.
- 3 Licence varied by notice 1082666, issued on 29-Feb-2008, which came into effect on 29-Feb-2008.
- 4 Licence varied by Change to Schedule 1 , issued on 02-May-2008, which came into effect on 02-May-2008.
- 5 Condition A1.3 Not applicable varied by notice issued on <issue date> which came into effect on <effective date>
- 6 Licence varied by notice 1111658, issued on 31-Mar-2010, which came into effect on 31-Mar-2010.
- 7 Licence varied by notice 1113899, issued on 04-Jun-2010, which came into effect on 04-Jun-2010.
- 8 Licence varied by notice 1527499 issued on 09-Mar-2015
- 9 Licence varied by notice 1529336 issued on 12-May-2015

## **Attachment 2**

### **Quarry Rehabilitation Plans**



# quarry rehabilitation plan - for Part Lot 3 DP 567166 & Part Lot 2 DP 510812 Old Northern Road, Maroota



revised - 15th January 2010

prepared by  
Mark Couston. - Ass. Dip. Env. Ctrl. (CSU), Grad. Dip. Env. Mgmt. (CSU), Cert. Soil & Water Mgmt. (UWS), MESA, MECA.  
DECCW - Scientific Licence No. S11031, DA - Animal Research Authority 04-4786

### Background

This plan was initially prepared as part of the Environmental Impact Statement, Species Impact Statement & Development Application No. 578/2009 for the extraction of sandstone material on parts of Lot 3 in DP 567166 and Lot 2 in DP 510812 off Old Northern Road at Maroota. The report has been revised in response to Hornsby Council's comments and specifically addresses issues raised in correspondence from Banksia Ecology to Hornsby Council dated 14/08/09 and 16/11/09.

This plan outlines the extraction process, the rehabilitation works and the final land uses and includes specifications and rehabilitation procedures. The plan was commissioned by PF Formation Pty Ltd with instructions provided by Environmental Planning Pty Ltd.

### Existing Site

The site currently contains several land uses comprising of agricultural land, sandstone extraction and processing areas and natural bushland habitats. The threatened species of Tetratheca glandulosa and Pimelea curviflora var curviflora have been recorded within the bushland habitats and these habitats also provide foraging opportunities for several threatened fauna species found in the local area.

### Proposed Land Uses

The proposed development involves the staged extraction of sandstone material in 3 areas;  
- the northern areas, Area A & Area B, being approximately 6.6 ha and currently containing native vegetation; and  
- the southern area, Area C, being approximately 4.8 ha and is currently used as agricultural pasture.

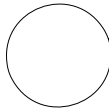
The proposed operation also provides for the rehabilitation of the extraction areas to their pre existing land uses with additional rehabilitation of the existing extraction area, Area D, approximately 3.9 ha for agricultural purposes and Area E, approximately 1.6 ha as native vegetation.

### Rehabilitation Planning

A number of rehabilitation planning principals have been considered in this report including:  
- State Regional Environmental Plan No. 9 Extractive Industry (No.2) 1995  
- Development Control Plan - Extractive Industries (Hornsby Council 1998)  
- Best Practice Environmental Management Rehabilitation & Revegetation (Cwlth Environmental Protection Agency, 1995)  
- Guidelines to the Mining, Rehabilitation & Environmental Management Process, version 3. (NSW Dept Primary Industries, 2006)  
- Agricultural Land Classification Atlas, Sydney Basin, including the Lower Nepean - Hawkesbury Catchment (NSW Agriculture, 1995)

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sheet 4 - proposed land uses and final landform & contours  
sheet 5 - stage 1 - rehabilitation process in Area E  
sheet 6 - stage 1 extraction and rehabilitation process Areas A & C  
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sheet 8 - procedures for Tetratheca glandulosa propagation & translocation and bushland rehabilitation  
sheet 9 - procedures for upland wetland revegetation and agricultural land rehabilitation  
sheet 10 - specifications & species options for revegetation  
sheet 11- performance measures, monitoring & reporting



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drawing title  
cover page



existing landuses on the site and adjacent allotments



regional air photo



habitat

The site adjoins the bushland habitats of Marramarra National Park which is managed for conservation purposes. This reserve along with the natural habitats on the site provide refuge and foraging opportunities for a variety of native fauna including several threatened species.

Threatened species reported (Burcher 2007) within 5km of the site include Turquoise Parrot (*Neophema pulchella*), Powerful Owl (*Ninox strenua*), Spotted-tailed Quoll (*Dasyurus maculatus*), Eastern Pygmy-possum (*Cercartetus nanus*), Large-eared Pied Bat (*Chalinolobus dwyeri*) and Red-crowned Toadlet (*Pseudophryne australis*).

The vegetation within the Open Forest / Woodland area is typical of the Sydney Sandstone Complex (Benson Howell, 1994).

The Open Forest occurring along the riparian areas of Coopers Creek is characterised by canopy trees of Sydney Peppermint (*Eucalyptus piperita*), Smooth-barked Apple (*Angophora costata*) and Turpentine (*Syncarpia glomulifera*) with an understorey of Christmas Bush (*Ceratopetalum gummiferum*), Old-Man Banksia (*Banksia serrata*) and Forest Oak (*Allocasuarina torulosa*).

The Woodland area extends along the ridgeline and slopes and consists of Scribbly Gum (*Eucalyptus haemastoma*), Narrow-leaved Apple (*Angophora bakeri*) Stringybark (*Eucalyptus sparsifolia*), Yellow Bloodwood (*Corymbia eximia*), Red Bloodwood (*Corymbia gummifera*), Grey Gum (*Eucalyptus punctata*), Sydney Peppermint and Smooth-barked Apple (*Angophora costata*).

Two threatened species have been recorded (Burcher 2007) as occurring on the site. These are *Pimelea curviflora* var *curviflora* and *Tetratheca glandulosa*. Whilst *Pimelea curviflora* var *curviflora* is known to occur in large numbers adjacent the site in Marramarra National Park, the *Tetratheca glandulosa* on the site is considered to be part of a more restricted population.

Detailed assessment of the impact of the proposed sand mining on the local ecology and threatened species are made in the Species Impact Statement (Burcher 2008).



site characteristics

site geology:  
soil landscape:  
vegetation structure - bushland  
vegetation association

catchment  
fire history

hawkesbury sandstone (Herbert, 1983),  
Sydney Town soil landscape (McInnes, 1997),  
woodland / open forest / grassland (Burcher, 2007),  
sydney sandstone ridgetop woodland  
sydney sandstone gully forest (Benson & Howell, 1994)  
cleared grassland,  
Coopers Creek / Hawkesbury River,  
wildfire Jan 1994, wildfire Dec 2002,

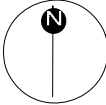
legend



this plan is based upon

pf formation, part lot - DP567166, maroota, part lot 2 - DP510812, maroota, plan 1  
april 2005 from 1:12,000 scale aerial photography flown 26/10/2004  
Geo-Spectrum (Australia) Pty. Limited,

ground survey, Hammond Smeally & Co.



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project  
**quarry rehabilitation plan for  
part lot 3 DP 567166 & part lot 2 DP 510812  
old northern road, maroota.**

drawing title  
**existing site land uses & habitats  
and extraction & rehabilitation areas**



## existing landuses on the site and adjacent allotments



grassland pasture or cleared areas  
- class 3 & 4 agricultural land



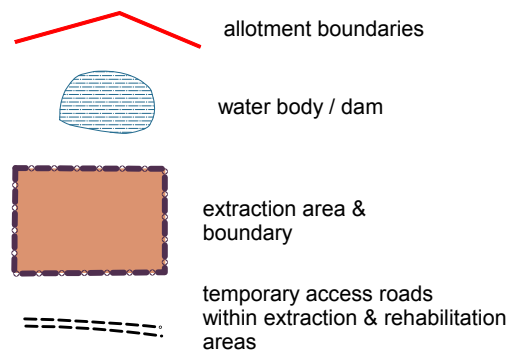
rural forest - partially cleared



open forest / woodland  
- bushland



## legend



100 0 100 200 metres

## staging of works

Staging of the extraction process is to commence in the following sequence:

- Stage 1 (0 - 10 years after date of development consent)
- Area E, progressive rehabilitation to native vegetation.
  - Area A, progressive extraction and rehabilitation to native vegetation.
  - Area C, progressive extraction and rehabilitation to agricultural land use.

- Stage 2 (10 - 20 years after date of development consent)
- Area B progressive extraction and rehabilitation to native vegetation.
  - Area D rehabilitation to agricultural land use.

## progressive extraction and rehabilitation

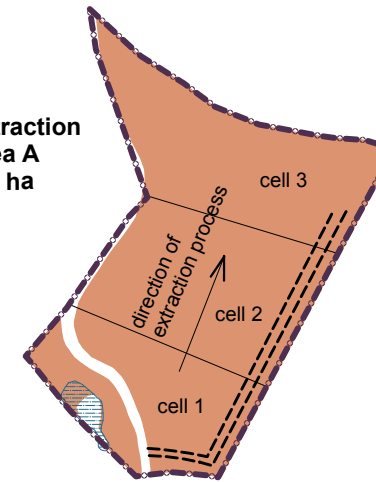
The extraction and rehabilitation process is to be carried out in a progressive process in operational cells. Each cell is to reflect the stage of the extraction / rehabilitation process.

The typical process involves simultaneous operations involving:

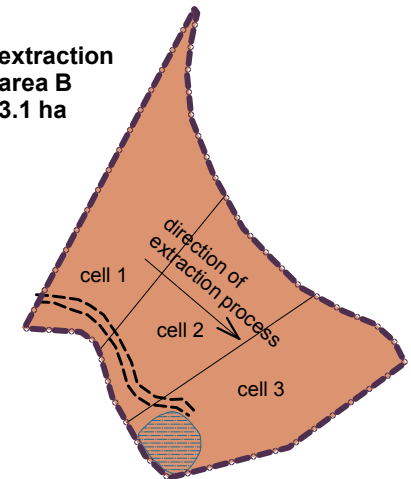
- removal of vegetation and topsoil in the preceding cell;
- extraction of material in the current working cell, and
- rehabilitation of the previously worked cell.

This approach avoids the need to store topsoil and organic material, reduces double handling of topsoil, maximises the rate of native plant regeneration from seed stored in soil and limits the visual impact of the extraction face.

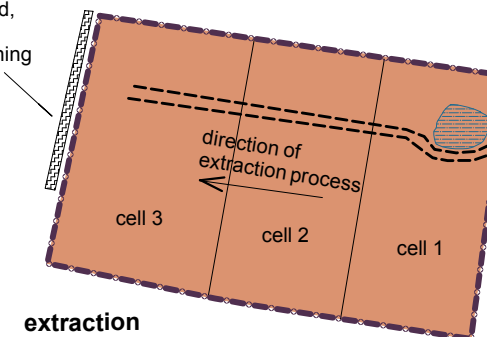
extraction  
area A  
3.5 ha



extraction  
area B  
3.1 ha

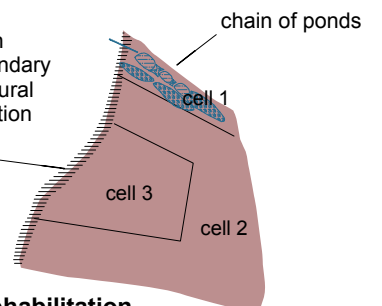


temporary  
2m high bund,  
3m wide, for  
visual screening



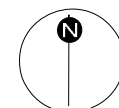
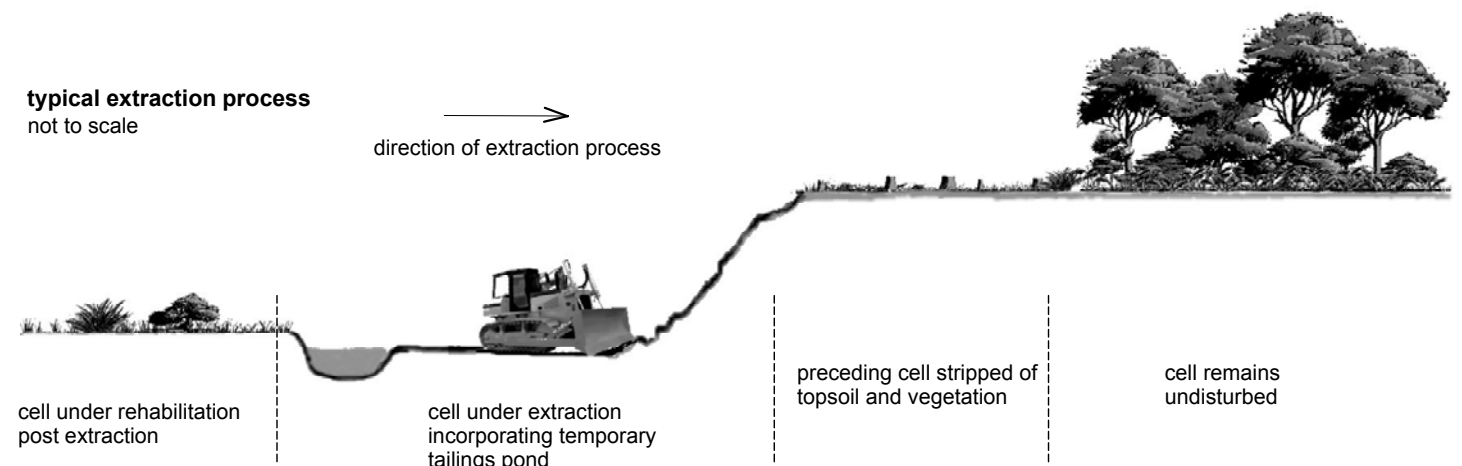
extraction  
area C  
4.8 ha

permanent low 1m high  
earthen berm as a boundary  
between future agricultural  
land and native vegetation  
rehabilitation



rehabilitation  
area E  
1.6 ha

typical extraction process  
not to scale



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**quarry rehabilitation plan for  
part lot 3 DP 567166 & part lot 2 DP 510812  
old northern road, maroota.**

drawing title  
**operational stages & typical extraction  
and rehabilitation process**



existing landuses on the site and adjacent allotments

rehabilitation landuses



grassland pasture or cleared areas  
- class 3 & 4 agricultural land

rural forest - partially cleared

open forest / woodland - bushland

rehabilitated grassland pasture  
- class 3 & 4 agricultural land

rehabilitated open forest /  
woodland - bushland



legend



aboriginal site



allotment boundaries



water bodies



Tetradlea glandulosa - retained in situ



permanent low 1m high earthen berm as a watershed  
boundary between agricultural land and native vegetation

final landform objectives

The final landform is based upon a number of planning criteria including:

The final landform is to be capable of supporting sustainable agricultural production or other post-extraction land uses compatible with the established character and the landscape and natural quality of the Maroota locality. (SREP No. 9 Extractive Industry (No.2) 1995)

Rehabilitation should identify a final stable and permanent landform which is environmentally and visually acceptable (SREP No. 9 Extractive Industry (No.2) Planning Report)

Extraction areas should be progressively rehabilitated to reflect and integrate with the shape, form, contour, colour, texture, drainage characteristics and landscape quality of the surrounding terrain. (Extractive Industries DCP, Hornsby Council 1998)

land uses & final landform

The extent of the extraction process is defined by the areas shown as being rehabilitated as either bushland or agricultural land. No extraction is to occur beyond the rehabilitation areas and existing land uses and landforms shall remain.

The final land use after the extraction process is completed has been based upon a number of factors. these factors include;

- objectives of relevant planning instruments;
- the objectives of the land owners;
- the land use objectives of a previous development consent for part of the site on the south western portion of Lot 3 in DP 567166;
- the need to provide compatible land uses;
- opportunities for agricultural production, and
- the need to provide flora & fauna habitats and minimise the impact on the local ecology.

The final land form after the extraction process as shown on this plan has been based upon the integration of the existing terrain using typical slopes and contours that occur locally.

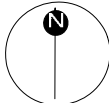
The volume of overburden material to be generated from the extraction process has not been determined and is subject to the type of material excavated. The final contours shown on this plan shall be formed by either; the backfilling of overburden material, limiting the extent of the extraction or a combination of both.

Constructed slopes or rock faces formed by either excavation or backfilling will need to be undertaken in a manner that ensures their long term stability.

this plan is based upon

pf formation, part lot - DP567166, maroota, part lot 2 - DP510812, maroota, plan 1  
april 2005 from 1:12,000 scale aerial photography flown 26/10/2004  
Geo-Spectrum (Australia) Pty. Limited,

ground survey, Hammond Smeally & Co.



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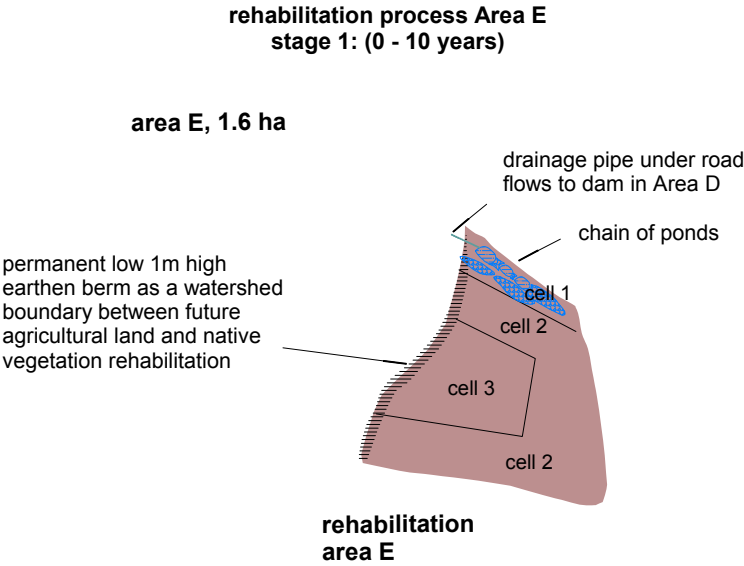
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old northern road, maroota.**

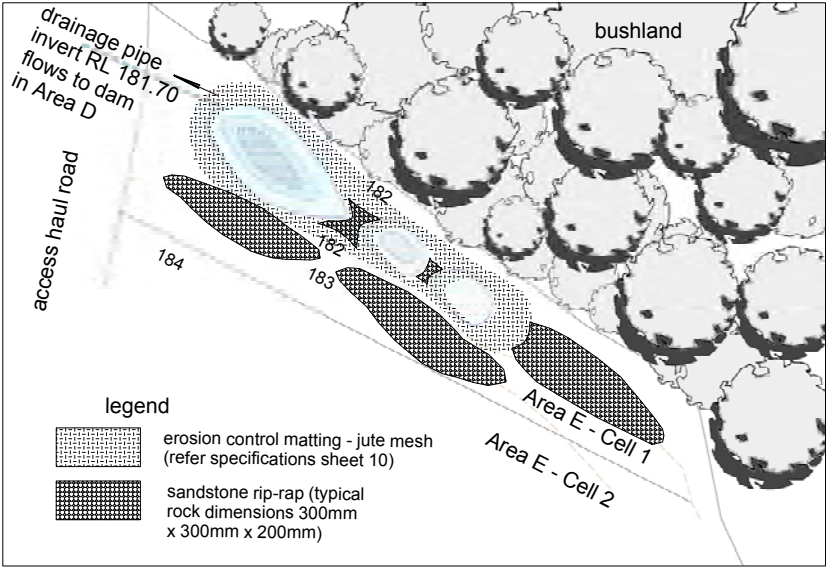
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**proposed land uses and  
final landform & contours**



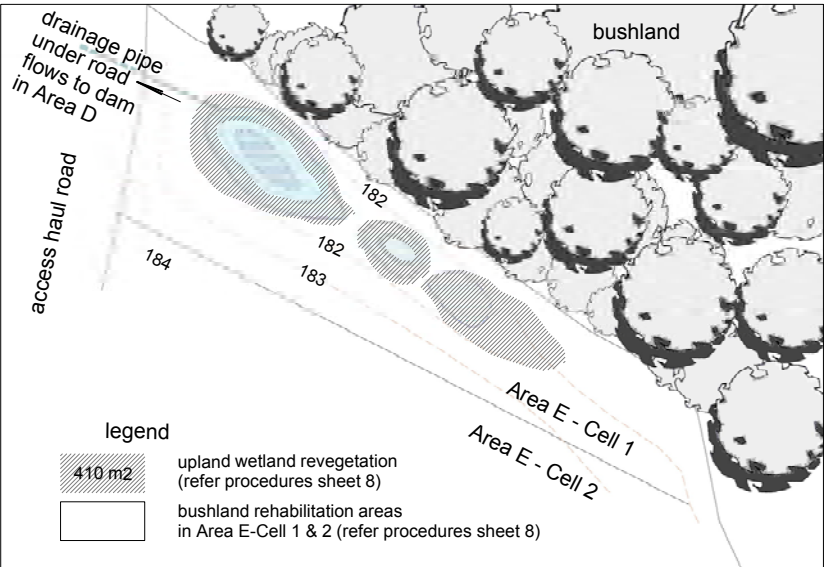


- 1.1 - Star pickets shall be erected at 5m intervals along the boundary between Area E and Area D to identify the rehabilitation area on the ground.
- 1.2 - All exotic flora and environmental weed species shall be eradicated across Area E using standard weed control techniques (refer Specifications sheet 10).
- 1.3 - Existing stockpiles of residual topsoil from the earlier extraction process are to be removed and stockpiled in Area D for future use in areas D or C.
- 1.4 - The chain of 3 ponds, in Area E - Cell 1, are to be constructed in accordance with the Chain of Pond Chainage detail (refer this sheet).
- 1.5 - Sandstone rip-rap is to be placed adjacent the ponds (refer details this sheet and Specifications sheet 10) to act as a gross sediment filter and/or to provide for micro-habitat variation.
- 1.6 - Any Isolepis nodosa (Knobby Club-rush) or native Xyris spp. naturally regenerating within Area E are to be transplanted into the upper pond in the constructed Chain of Ponds.
- 1.7 - Final grading of this Area E is to be carried out in accordance with the Proposed Land Use and Final Landform & Contour Plan (refer sheet 4) on the Area E western boundary.
- 1.8 - A permanent sediment /weed control fence with 3 strand wires (top middle & within 100mm from the base) shall be installed along the berm using the installed star-pickets (refer 1.1). The entire berm is to be stabilised with erosion control matting (refer Specifications sheet 10) and rehabilitated in accordance with Bushland Rehabilitation Procedure (refer sheet 8).
- 1.9 - Revegetation of the Chain of Ponds shall be carried out in accordance with the Upland Wetland Revegetation Procedures (refer sheet 9).
- 1.10- The southern slope of Area E -Cell 2 is to be terraced with 2 benches to reduce the erosion potential of the slope and to assist with the recruitment of native vegetation.
- 1.11- Area E must be maintained free of all exotic flora and environmental weed species prior to receiving bushland topsoil using standard weed control techniques (refer Specifications sheet 10).
- 1.12- Area E - part Cell 1, Cell 2 & Cell 3 is to receive the topsoil from the natural bushland habitats only, east of the existing access track in Area A - Cell 1 using an increase topsoil stripping depth of 120mm (refer Clearing Native Vegetation & Topsoil Removal Procedures sheet 8).
- 1.13- Area E, Cells 1, 2 & 3 are to be rehabilitated as bushland in accordance with Bushland Rehabilitation Procedure (refer sheet 8).
- 1.14- Maintenance of Area E - Cells 1, 2 & 3 shall be conducted in accordance with the Bushland Rehabilitation Procedure (refer sheet 8).
- 1.15- Monitoring & reporting associated with Area E -Cells 1, 2 & 3 shall be conducted in accordance with the Reporting & Monitoring Protocols (refer sheet 11).

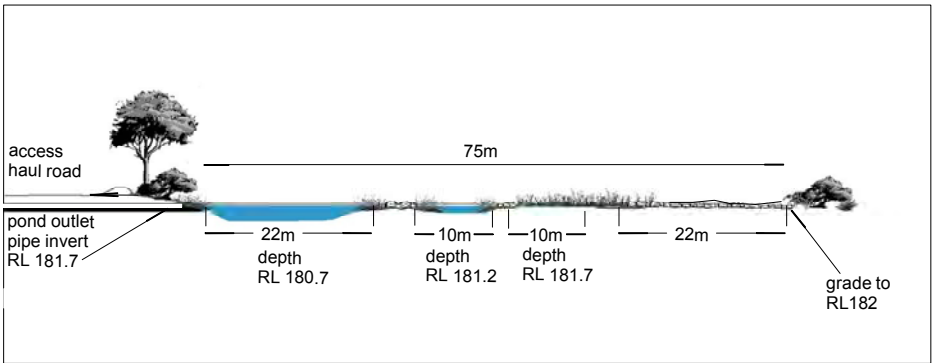
Area E chain of ponds detail



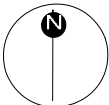
chain of ponds detail - construction and configuration



chain of ponds detail - revegetation areas



chain of ponds detail - long section with dimensions and levels



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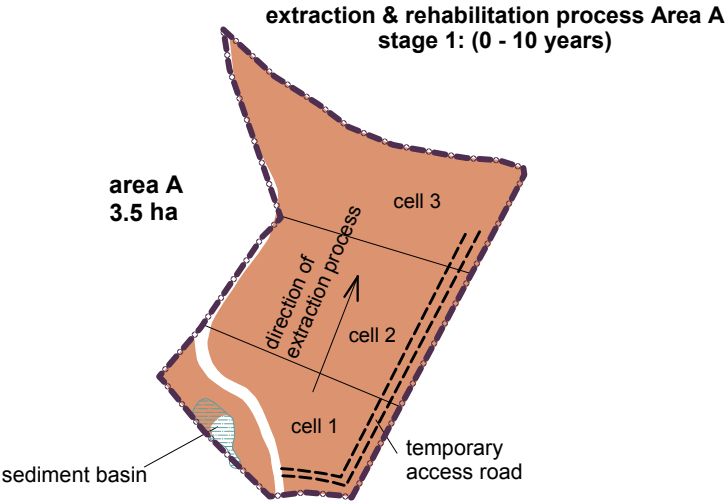
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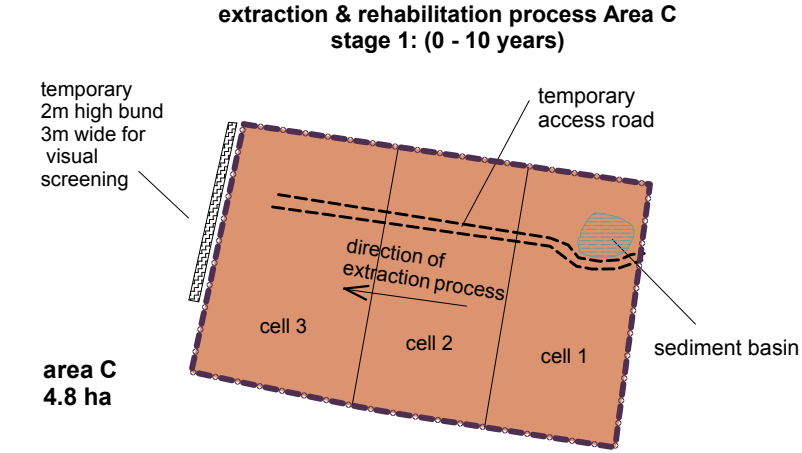
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old northern road, maroota.**

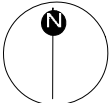
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**stage 1 - rehabilitation process  
in Area E**



- 2.1 - The boundaries of Area A are to be marked on the ground using star pickets to visibly identify the extent of the area.
- 2.2 - A systematic survey is to be carried out to identify the locations of *Tetratheca glandulosa* plants. (refer sheet 8 *Tetratheca glandulosa* Propagation & Translocation Procedures).
- 2.3 - Prior to the clearing of vegetation, initial measures for the translocation of the *Tetratheca glandulosa* must be implemented (refer sheet 8, *Tetratheca glandulosa* Propagation & Translocation Procedures).
- 2.4 - The machinery service area is to be relocated to Area D.
- 2.5 - A section of the haul road is to be realigned north of the existing causeway towards the western boundary of Area A and the causeway crossing will be retained.
- 2.6 - All annual weeds such as Whisky Grass (*Andropogon virginicus*) and Veldtgrass (*Ehrharta* sp.) along existing tracks shall be eradicated from Area A using standard weed control methods (refer specifications, sheet 9).
- 2.7 - Native vegetation, east of the existing access road, is to be removed from Area A-Cell 1 in accordance with Clearing Native Vegetation & Topsoil Removal Procedures (refer sheet 8).
- 2.8 - Topsoil in bushland habitats east of the existing access road, is to be stripped from Area A- Cell 1 in accordance with Clearing Native Vegetation & Topsoil Removal Procedures (refer sheet 8) and is to be used in rehabilitation of Area E-Cells 1, 2 & 3. Topsoil stripping shall be increased in depth to 120mm to allow for greater coverage in Area E
- 2.9 - Exotic vegetation and topsoil west of the existing access road is to be removed and stockpiled in Area D for future rehabilitation of agricultural land.
- 2.10- A temporary tailings pond is to be established at the low part of the extraction Cell.
- 2.11- Temporary sediment and erosion controls such as earth bunding are to be installed (refer specifications sheet 8).
- 2.12- Extraction is to be carried out in Cell 1 with final landforms incorporated as part of the extraction process or formed from overburden material.
- 2.13- Towards the completion of extraction in Area A-Cell 1, vegetation is to be removed from Area A-Cell 2 in accordance with Clearing Native Vegetation & Topsoil Removal Procedures (refer sheet 8).
- 2.14- Towards the completion of extraction in Area A-Cell 1, topsoil is to be stripped in accordance with Clearing Native Vegetation & Topsoil Removal Procedures (refer sheet 8) from Area A- Cell 2 and used in the rehabilitation of Area A-Cell 1 (refer Bushland Rehabilitation Procedure, sheet 8).
- 2.15- Extraction is to be carried out in Area A- Cell 2 with final landforms incorporated as part of the extraction process or formed from overburden material.
- 2.16- A temporary tailings pond is to be established at the low part of the extraction Cell 2.
- 2.17- Rehabilitation and maintenance of Area A-Cell 1 is to continue (refer Bushland Rehabilitation Procedure sheet 8).
- 2.18- Prior to the clearing of vegetation in Area A- Cell 3, initial measures for the translocation of the *Tetratheca glandulosa* in Area A- Cell 3 must be implemented (refer sheet 8, *Tetratheca glandulosa* Propagation & Translocation Procedures).
- 2.19- Towards the completion of extraction in Area A-Cell 2, vegetation is to be removed from Area A-Cell 3 in accordance with Clearing Native Vegetation & Topsoil Removal Procedures (refer sheet 8).
- 2.20- Towards the completion of extraction in Area A-Cell 2, topsoil is to be stripped in accordance with Clearing Native Vegetation & Topsoil Removal Procedures (refer sheet 8) from Area A- Cell 3 and used in the rehabilitation of Area A-Cell 2 (refer Bushland Rehabilitation Procedure, sheet 8).
- 2.21- Final measures for the translocation of the *Tetratheca glandulosa* must be implemented (refer sheet 8, *Tetratheca glandulosa* Propagation & Translocation Procedures).
- 2.22- Extraction is to be carried out in Area A- Cell 3 with final landforms incorporated as part of the extraction process or formed from overburden material.
- 2.23- A temporary tailings pond is to be established at the low part of the extraction Cell 3.
- 2.24- Rehabilitation and maintenance of Area A-Cells 1 & 2 is to continue (refer Bushland Rehabilitation Procedure sheet 8).
- 2.25- Towards the completion of extraction in Area A-Cell 3 vegetation is to be removed from Area B-Cell 1 in accordance with Clearing Native Vegetation & Topsoil Removal Procedures (refer sheet 8).
- 2.26- Towards the completion of extraction in Area A-Cell 3, topsoil is to be stripped in accordance with Clearing Native Vegetation & Topsoil Removal Procedures, refer sheet 8) from Area B Cell 1 and used in the rehabilitation of Area A-Cell 3 (refer Bushland Rehabilitation Procedure, sheet 8).
- 2.27- In the event that there is a delay between the completion of extraction in Area A-Cell 3 and the commencement of extraction in Area B-Cell 1, weed control must be carried out to maintain the Area A-Cell 3 free of noxious and environmental weeds.
- 2.28- Rehabilitation and maintenance of Area A- Cells 1, 2 & 3 is to continue (refer Bushland Rehabilitation Procedure sheet 8).



- 3.1 - The boundaries of Area C are to be marked on the ground using star pickets to visibly identify the extent of the area.
- 3.2 - Native vegetation is to be removed from Area C- Cell 1 and is to be stockpiled in area D. Native vegetation containing seed can be used as supplementary brushmatting in Area E where there is limited natural regeneration.
- 3.4 - Vegetation & Topsoil is to be removed from Area C- Cell 1 and is to be used to form an earthen bund for visual screening at the western end of Area C- Cell 3 (refer Agricultural Land Rehabilitation Procedure sheet 8).
- 3.5 - Temporary sediment and erosion controls are to be installed (refer specifications sheet 8).
- 3.6 - A temporary tailings pond is to be established at the low part of the extraction Cell.
- 3.7 - Extraction is to be carried out in Area C-Cell 1 with final landforms incorporated as part of the extraction process or formed from overburden material.
- 3.8 - The main sediment pond / dam is to be established in the lower part of Area C.
- 3.9 - Towards the end of Area C- Cell 1 extraction, vegetation and topsoil are to be stripped from Area C- Cell 2.
- 3.10- Where final landforms are established in Area C- Cell 1, the stripped topsoil and vegetation from Cell 2 is to be utilised in Area C- Cell 1 (refer Agricultural Land Rehabilitation Procedure sheet 8).
- 3.11 - Extraction is to be carried out in Cell 2 with final landforms incorporated as part of the extraction process or formed from overburden material.
- 3.12 - A temporary tailings pond is to be established at the low part of the extraction Cell.
- 3.13- Rehabilitation of Area C- Cell 1 is to be carried out (refer Agricultural Land Rehabilitation Procedure sheet 8).
- 3.14- Towards the end of Area C- Cell 2 extraction, vegetation and topsoil are to be stripped from Cell 3.
- 3.15- Where final landforms are established in Area C- Cell 2, the stripped topsoil and vegetation from Area C- Cell 3 is to be utilised in Area C- Cell 2 (refer Agricultural Land Rehabilitation Procedure sheet 8).
- 3.16- Extraction is to be carried out in Area C- Cell 3 with final landforms incorporated as part of the extraction process or formed from overburden material.
- 3.17- A temporary tailings pond is to be established at the low part of the extraction Cell.
- 3.18- Rehabilitation of Area C- Cell 2 is to be carried out (refer Agricultural Land Rehabilitation Procedure sheet 8).
- 3.19- At the completion of the Extraction of Area C- Cell 3 the topsoil and vegetation used for the construction of the earthen bund is to be used as part of the rehabilitation process of Area C - Cell 3 (refer Agricultural Land Rehabilitation Procedure sheet 8).
- 3.20- Rehabilitation of Area C- Cell 3 is to be carried out (refer Agricultural Land Rehabilitation Procedure sheet 8).



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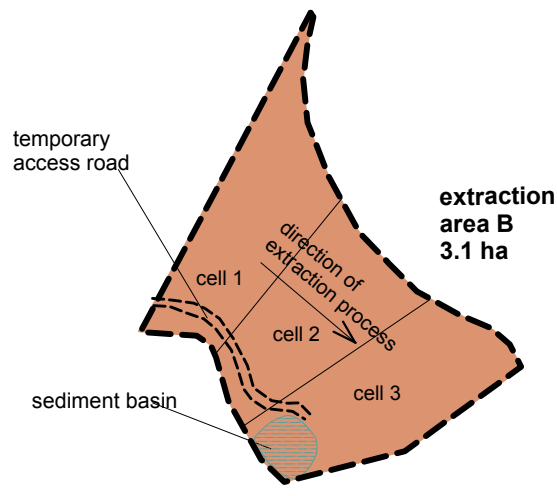
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old northern road, maroota.**

drawing title  
**stage 1 - extraction and rehabilitation  
process Areas A & C**



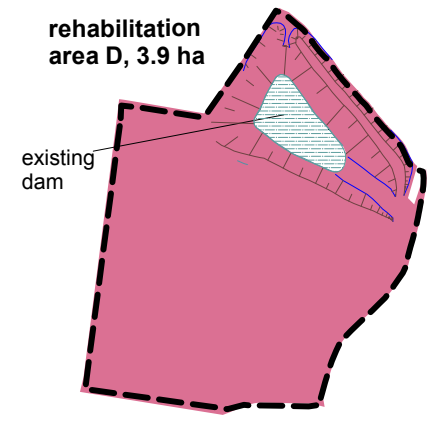
extraction & rehabilitation process Area B  
stage 2: (10 - 20 years)



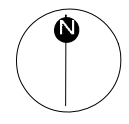
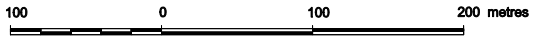
- 4.1 - The boundaries of Area B are to be marked on the ground using star pickets to visibly identify the extent of the area.
- 4.2 - A systematic survey is to be carried out to identify the locations of *Tetratheca glandulosa* plants. (refer sheet 8 *Tetratheca glandulosa* Propagation & Translocation Procedures).
- 4.3 - Prior to the clearing of vegetation in Area B- Cell 1, initial measures for the translocation of the *Tetratheca glandulosa* in Area B- Cell 1 must be implemented (refer sheet 8 *Tetratheca glandulosa* Propagation & Translocation Procedures).
- 4.4 - All annual weeds such as Whisky Grass ( *Andropogon virginicus*) and Veldtgrass (*Ehrharta* sp.) along existing tracks shall be eradicated from Area B using standard weed control methods (refer specifications sheet 9).
- 4.5 - Vegetation is to be removed from Area B-Cell 1 in accordance with Clearing Native Vegetation & Topsoil Removal Procedures (refer sheet 8).
- 4.6 - Topsoil is to be stripped from Area B- Cell 1 in accordance with Clearing Native Vegetation & Topsoil Removal Procedures (refer sheet 8) and is to be used in rehabilitation of Area A-Cell 3.
- 4.7 - Final measures for the translocation of the *Tetratheca glandulosa* in Area B- Cell 1 must be implemented (refer sheet 8 *Tetratheca glandulosa* Propagation & Translocation Procedures).
- 4.8 - A temporary tailings pond is to be established at the low part of the extraction Cell.
- 4.9 - Temporary sediment and erosion controls such as earth bunding are to be installed (refer specifications sheet 8).
- 4.10- Extraction is to be carried out in Area B- Cell 1 with final landforms incorporated as part of the extraction process or formed from overburden material.
- 4.11- Prior to the clearing of vegetation in Area B- Cell 2, initial measures for the translocation of the *Tetratheca glandulosa* in Area B- Cell 2 must be implemented (refer sheet 8 *Tetratheca glandulosa* Propagation & Translocation Procedures).
- 4.12- Towards the completion of extraction in Area B-Cell 1, vegetation is to be removed from Area B-Cell 2 in accordance with Clearing Native Vegetation & Topsoil Removal Procedures (refer sheet 8).
- 4.13- Final measures for the translocation of the *Tetratheca glandulosa* in Area B- Cell 2 must be implemented (refer sheet 8 *Tetratheca glandulosa* Propagation & Translocation Procedures).
- 4.14- Towards the completion of extraction in Area B-Cell 1, topsoil is to be stripped in accordance with Clearing Native Vegetation & Topsoil Removal Procedures (refer sheet 8) from Area B-Cell 2 and used in the rehabilitation of Area B-Cell 1 (refer Bushland Rehabilitation Procedure, sheet 8).
- 4.15- Extraction is to be carried out in Area B- Cell 2 with final landforms incorporated as part of the extraction process or formed from overburden material.
- 4.16- A temporary tailings pond is to be established at the low part of the extraction Cell 2.
- 4.17- Rehabilitation and maintenance of Area B- Cell 1 is to continue (refer Bushland Rehabilitation Procedure sheet 8).
- 4.18- Prior to the clearing of vegetation in Area B- Cell 3, initial measures for the translocation of the *Tetratheca glandulosa* in Area B- Cell 3 must be implemented (refer sheet 8 *Tetratheca glandulosa* Propagation & Translocation Procedures).
- 4.19- Towards the completion of extraction in Area B-Cell 2, vegetation is to be removed from Area B-Cell 3 in accordance with Clearing Native Vegetation & Topsoil Removal Procedures (refer sheet 8).
- 4.20- Towards the completion of extraction in Area B-Cell 2, topsoil is to be stripped in accordance with Clearing Native Vegetation & Topsoil Removal Procedures (refer sheet 8) from Area B-Cell 3 and used in the rehabilitation of Area B-Cell 2 (refer Bushland Rehabilitation Procedure, sheet 8).
- 4.21- Final measures for the translocation of the *Tetratheca glandulosa* in Area B- Cell 3 must be implemented (refer sheet 8 *Tetratheca glandulosa* Propagation & Translocation Procedures).
- 4.22- Extraction is to be carried out in Area A- Cell 3 with final landforms incorporated as part of the extraction process or formed from overburden material.
- 4.23- A temporary tailings pond is to be established at the low part of the extraction Cell 2.
- 4.24- Rehabilitation and maintenance of Area B-Cells 1 & 2 is to continue (refer Bushland Rehabilitation Procedure sheet 8).

- 4.25- Rehabilitation of Area B- Cell 3 is to be carried out using a higher proportion of logs and rock boulders.
- 4.26- Rehabilitation of Area B- Cell 3 is to involve collection of topsoil from previous rehabilitated sites in Areas A & B (up to 20 years old) and this is to be carried out under the guidance of an independent qualified and experienced ecologist. Topsoil is to be collected from Areas A & B in long narrow strips or as a mosaic pattern.
- 4.27- Rehabilitation of Area B- Cell 3 is to utilise brushmatting containing viable seed collected from the surrounding bushland.
- 4.28- Rehabilitation of Area B- Cell 3 is to involve the planting of 100 provenance canopy trees of Eucalyptus, Corymbia or Angophora to promote the build-up of leaf-litter and fine organic material which are to be progressively culled over a 5 year period to achieve similar tree canopy to that in the surrounding natural bushland.
- 4.29- Rehabilitation of Area B- Cell 3 is to include collection of native seed from the surrounding natural bushland within the allotment in particular *Acacia* species and *Poaceae* family and which is to be broadcast over the cell.
- 4.30- Rehabilitation and maintenance of Area B-Cells 1, 2 & 3 is to continue (refer Bushland Rehabilitation Procedure sheet 8).

rehabilitation process Area D  
stage 2: (10 - 20 years)



- 5.1 - At the completion of the rehabilitation of Area B, final grading of the landform is to be carried out across Area D.
- 5.2 - All residual top soil remaining from the previous extraction process in Area D is to be used as part of the rehabilitation process.
- 5.3 - Rehabilitation is to be carried out (refer Agricultural Land Rehabilitation Procedures sheet 8).



Tetratheca glandulosa propagation & translocation procedures

Background.

Tetratheca glandulosa is a low growing, spreading shrub, usually less than 20 cm high but occasionally can be up to 50 cm high.

Tetratheca glandulosa is listed as a Vulnerable species in the schedules of the Environment Protection and Biodiversity Conservation Act 1999 (Cwth) in the schedules of the Threatened Species Conservation Act 1995 (NSW). The impact of the development on Tetratheca glandulosa has been considered in the Species Impact Statement (Aquila Ecological Surveys, 2008) and this translocation procedure is part of the conservation strategies for the species on this site.

Pollination, seed production and germination triggers of Tetratheca glandulosa are poorly known. A similar species, Tetratheca juncea, is unable to self-pollinate due to the physical characteristics of the plant's reproductive parts and pollen vectors (possibly a species of native bee) are required for successful pollination. The fecundity, viability, dispersal, longevity and dormancy of seed from the species is unknown (DECC, 2000).

Plants are known to resprout from a woody root stock following fire; however the role that fire plays in seed germination in unclear. Juveniles appear to be uncommon within a population, with the majority of plants usually consisting of resprouting adults that are likely to be clonal (DECC 2000).

The Tetratheca glandulosa plants on this site have experienced wildfires in 1994 & 2002 and the population within and adjacent to the extraction areas persists.

Whilst species in the Tetratheca genus are reported to be readily propagated by cuttings (Wrigley & Fagg, 1996) there has been limited evidence directly relating to the propagation of Tetratheca glandulosa.

Propagation of the species has been carried out by Mount Annan Botanic Garden in 1991 from the Terrey Hills area. In this case cutting material was processed by taking semi hardwood cuttings dipped in clonex purple 4000ppm and propagated in a nursery environment. The results were limited but resulted in 1 plant per 24 cuttings (J. Whyte pers comm.)

Propagation & Translocation Procedure  
The translocation of Tetratheca glandulosa plants within the extraction areas involves 2 strategies. These are:  
- propagation of Tetratheca glandulosa from cuttings, and  
- translocation of soil containing the Tetratheca glandulosa root stock.

- 6.1 - Prior to any vegetation clearing within an extraction Area, a systematic survey is to be undertaken identifying all Tetratheca glandulosa plants during the flowering period July-November.
- 6.2 - Prior to any vegetation clearing within an extraction Area, the area within a 2m radius surrounding known Tetratheca glandulosa plants or groups of plants shall be clearly identified by star-pickets and a boundary of coloured flagging tape.
- 6.3 - Prior to clearing of vegetation within an extraction Area, cuttings are to be taken from all stems of the plant and transferred to a propagation nursery with specialist experience in the propagation of native species.
- 6.4 - The clearing native vegetation & topsoil removal is to occur within the extraction Cell leaving the Tetratheca glandulosa habitat islands identified by the star pickets and flagging tape undisturbed.
- 6.5 - The recipient sites for the Tetratheca glandulosa must be within the Cell that has received the surrounding topsoil and is under rehabilitation. The area to receive the Tetratheca glandulosa must be identified and if necessary further prepared before the translocation proceeds.
- 6.6 - Tetratheca glandulosa plants shall be removed by an excavator with a minimum bucket size of 300mm x 600mm removing soil to a minimum depth of 150mm. As an alternative a translocation "shovel" can be used to remove intact sods. With each method the root mass should be preserved in the excavated soil with minimal disturbance. Any remaining topsoil or leaf litter shall be translocated.
- 6.7 - For the purposes of monitoring, the recipient area shall be identified with the star-pickets and flagging tape noting that Tetratheca glandulosa plants & root stock has been translocated.
- 6.8 - To encourage the resprouting of the Tetratheca glandulosa the translocated root stock and soil is to be maintained by regular watering. To minimize the impact on soil organisms and mycorrhizal fungi no fertiliser is to be used.
- 6.9 - Tetratheca glandulosa plants that have been successfully propagated and have established adequate root systems will be replanted in a rehabilitation Cell containing topsoil.
- 6.10- Tetratheca glandulosa plantings are to be marked with a star-picket and coloured flagging tape noting tubestock planting.
- 6.11- Monitoring of the translocated root stock and propagated tubestock is to be carried out (refer monitoring and performance measures).

clearing native vegetation & topsoil and bushland rehabilitation procedures (translocation works)

Background  
The extraction cells in Areas A & B and part of C currently contain indigenous vegetation with an Open Forest and Woodland structure. The vegetation is in good condition with very few exotic weed species present. Whilst the vegetation in these areas is proposed to be removed as part of the extraction process, it is likely that substantial quantities of viable seed is present in the topsoil and on the standing vegetation.

The rehabilitation process focuses on using this inherent resilience in the soil seed bank and the capacity of native vegetation to naturally regenerate from seed or root stock rather than revegetation methods that rely on propagation and use of a limited number of species.

The clearing of native vegetation and bushland rehabilitation proceedures (translocation works) will need to be carried out in consultation with an independent, qualified and experienced ecologist with assessments carried out during the process and certification required at key stages in the procedures.

clearing native vegetation & topsoil removal procedures (donor site)

- 7.1 - Prior to disturbance a pre clearance floristic assessment is to carried out to establish baseline data for future comparisons in accordance with the Monitoring & Reporting (refer sheet 10).
- 7.2 - Prior to the clearing of vegetation within an Area, weed control using standard weed control methods (refer specifications) is to be carried out across the Area.
- 7.3 - Prior to the clearing of vegetation within an Area, important microhabitats such as tree hollows and ephemeral drainage soaks shall be identified by an independent, qualified and experienced ecologist using coloured flagging tape or star-pickets with boundary coloured flagging tape.
- 7.4 - Prior to clearing of vegetation, nest boxes (refer specifications) shall be erected within the bushland areas to be retained on the site. The number of nest boxes should be determined by an identified by an independent, qualified and experienced ecologist as part of the pre-clearing habitat assessment and must be at least equal to the number of hollow bearing trees identified for removal.
- 7.5 - Prior to the clearing of vegetation, an independent, qualified and experienced ecologist is to inspect the Cell to ensure the Cell is free of weeds and, if satisfied, provide certification that the Cell programmed for extraction is free of exotic and weed species.
- 7.6 - Prior to the clearing of vegetation in an extraction Cell, branches containing viable seed shall be manually collected and stockpiled or used immediately as brushmatting in Cells under rehabilitation.
- 7.7 - With the exception of important microhabitats identified with flagging tape and/or star-pickets, the understorey vegetation and small trees within an extraction Cell are to be removed with a slasher tractor, tritter or manually and stockpiled separately. It is important at this stage that machinery does not mix or invert soil profiles and minimises the mixing of natural leaf litter with slashed vegetation.
- 7.8 - With the exception of important microhabitats identified with flagging tape and/or star-pickets, trees are to be felled with chainsaws and dragged and stockpiled separately outside cells under rehabilitation. It is important that machinery does not mix or invert soil profiles.
- 7.9 - With the exception of important microhabitats identified with flagging tape and/or star-pickets, the leaf litter and organic material is to be raked as a separate process and stockpiled separately, leaving the topsoil in place.
- 7.10- Before stripping of topsoil, it is important to ensure that the recipient site is ready to receive the topsoil and topsoil is not stockpiled.
- 7.11- With the exception of important microhabitats identified with flagging tape and/or star-pickets, the topsoil within the extraction Cell is to be stripped using excavators to to a depth of between 100mm - 120mm. Topsoil shall not be stored or stockpiled and shall be immediately used as part of the rehabilitation process in the preceding Cell.
- 7.12- Important microhabitats trees with hollows will be inspected and trees known to contain fauna or where occupation is uncertain will be shaken to allow fauna to vacate the hollow prior to felling of the tree. Hollow-bearing trees should be gently lowered to avoid harm to any fauna and to avoid damage to the hollow. Any nocturnal fauna captured subsequent to felling will be released in adjacent bushland during that evening.
- 7.13- Other important habitats such as ephemeral drainage soaks shall be inspected by hand and reptiles and amphibians shall be relocated to similar habitats within the site outside the extraction Areas.
- 7.14- All remaining trees shall be removed and timber shall be stockpiled outside Cells receiving topsoil translocation.
- 7.15- After fauna have been relocated from important microhabitat areas the vegetation, leaf litter and topsoil shall be removed in separate processes with topsoil used immediately and leaf litter and vegetation stockpiles separately.
- 7.16- In the event that topsoil is doubled handled, topsoil is not to stand unused for more than 1 day or overnight.

bushland rehabilitation procedures (recipient site)

- 7.17 -Prior to any movement of soil within the recipient Area, weed control using standard weed control methods (refer specifications) is to be carried out across the Area.
- 7.18- Prior to any movement of soil within the recipient Area, an independent, qualified and experienced ecologist is to inspect the Area to ensure the Cell is free of weeds and, if satisfied, provide certification that the Area programmed for rehabilitation is free of exotic and weed species.
- 7.19- Final grading of the landform within the Cell is to be undertaken based upon the plan Proposed Landuses and Final Landform and Contour. The overburden or exposed sandstone material is likely to be acidic in nature. The background pH of natural sandstone top soils are naturally acidic with pH 4.0 commonly occurring. Whilst it is unlikely that soil conditioners such as Lime will be required ph testing of the sub topsoil material should be undertaken.
- 7.20- Boulders and rocks (approx 1m x 0.8m x 0.5m) generated from previous extraction process can be scattered across the rehabilitation Cell at an average of 10m intervals to provide microhabitat for recolonising ground dwelling fauna.
- 7.21- The translocation and rehabilitation process should be done in manageable areas to prevent the tracking over or accessing areas partially completed.
- 7.22- Final graded areas shall be ripped to a depth of 0.3m.
- 7.23- Prior to the translocation of topsoil within the recipient Cell, an independent, qualified and experienced ecologist is to inspect the Cell to ensure the final grading, decompaction of substratum and soil amelioration is adequate, and if satisfied provide certification that the Cell programmed for rehabilitation has been adequately prepared.
- 7.24- Topsoil shall be spread to a depth of approximately 100mm with experienced bush regeneration contractors following spreading machinery (eg excavator) locating rhizomes or rootstock and replanting these items to the proper depth and upright position.
- 7.25- Decayed log or trunk sections removed from clearing operations (approx 3m in length) shall be randomly scattered over the Cell at an average of 10m intervals to provide microhabitat for recolonising ground dwelling fauna.
- 7.26- Available brushmatting material containing viable seed is to be lightly spread over the topsoil areas.
- 7.27- In areas prone to erosion, organic fibre jute matting (refer specifications sheet 10) can be used.
- 7.28- To minimise the establishment of weed species, fertiliser is not to be used as a soil amendment.
- 7.29- Regular watering is to be undertaken to assist with plant establishment and dust suppression within 2 days of soil translocation, weekly (for 0 - 1 month), fortnightly (for 1-2 months), and monthly (for 2-6 months) unless rain occurs.
- 7.30- Maintenance weed control (refer specifications) must occur after rehabilitation of each Cell at; 1 monthly intervals (for 1-3 months), 3 monthly intervals (for 4-12 months) and 6 monthly intervals (for 12-36 months) after rehabilitation.
- 7.31- No access to the rehabilitation Cell is to occur except for prescribed watering, visual assessments and weed or sediment control.
- 7.32- Assessment of the completion of the translocation works within each Cell is to be carried out by an independent, qualified and experienced ecologist and, if satisfied, provide certification that the rehabilitation and translocation has been completed.
- 7.33- Currently we are advised that there is no evidence of herbivorous foraging on agricultural crops such as lettuce within the allotment. In the event that there is evidence of foraging activity on regenerating seedlings by rabbits, goats or wallabies etc., exclusion fencing shall be installed around rehabilitation Cells. Exclusion fencing shall be star-pickets with sediment control fencing for rabbits and parra- webbing to deter goats and wallabies.
- 7.34- Regular monitoring of the rehabilitation Cells is to be carried out (refer sheet 10 Monitoring and Performance Measures).
- 7.35- After 3 years from the commencement of rehabilitation where the natural regeneration has not achieved the vegetation densities required by the Performance Measures (refer sheet 10, Re-establishment of Native Flora) supplementary planting shall be carried out.

upland wetland revegetation procedures

Background  
The Chain of Ponds is intended to formalise the existing constructed depression in Area E- Cell 1 and improve sediment control functions below the rehabilitation area whilst providing habitat diversity. The Chain of Ponds are designed to provide ephemeral habitats and it is expected that water levels will fluctuate and pondages will expand and contract depending upon rainfall events.

- Upland Wetland Revegetation
- 8.1 - Prior to the construction of the Chain of Ponds all exotic and environmental weed species shall be controlled within 10m of the Chain of Ponds using standard bush regeneration weed control techniques (refer specifications sheet 9).
- 8.2- Construction of the Chain of Ponds is to be carried out in accordance with the Area E - Chain of Ponds Detail (refer sheet 5)
- 8.3 - Native species capable of being transplanted and are regenerating across Area E are to be transplanted into the upper pondage.
- 8.4 - With the exception Broad-leaved Cumbungi (*Typha orientalis*), native wetland species of sedges and rushes shall be collected from existing waterbodies on the site and shall be transplanted into the littoral zones of the constructed pondages. No more than 15% of the plant material of each species is to be collected from existing waterbodies.
- 8.5 - Replanting shall occur in water depths similar to those where the plant material was collected from.
- 8.6 - Planting densities of the littoral zone of the pondages is to be an average of 6 plants per m2 with grading from higher densities towards the banks and lower densities towards the limnetic zones in the lower and middle pondages.
- 8.7 - To achieve these planting densities supplementary planting is likely to be required. Where supplementary planting is required it shall consist of:
- Common Rush (*Juncus usitatus*) and/or Knobby Club-rush (*Isolepis nodosa*) used from bank to just below the level of pondage water, RL 181.7;
  - Club-rush (*Schoenoplectus mucronatus*) used from just below pondage water level (RL 181.6) to 100mm below water level, and
  - Common Spike-rush (*Eleocharis acuta*) 100mm below water level to 350mm below water level.

agricultural land rehabilitation procedures

Background  
Area C is currently used for agricultural purposes and consists of open pasture. Area C is currently mapped as Class 3 Agricultural Land (NSW Agriculture, 1995). Area D has been subject to previous sand extraction and is predominately mapped as Class 3 Agricultural Land with Class 4 Agricultural Land mapped in the lower eastern portions (NSW Agriculture, 1995).

Class 3 Agricultural Land is considered to be grazing land or land well suited to pasture improvement. It may be cultivated or cropped in a rotation with pasture. Class 4 Agricultural land is considered to be suitable for grazing but not for cultivation. Agricultural on this class of land is based on native pastures or improved pastures using minimum tillage techniques.

To ensure that there is no loss of agricultural productivity Areas C and D are to be rehabilitated to satisfy Class 3 & 4 agricultural criteria.

- Agricultural Land Rehabilitation Procedures
- 9.1 – Topsoil stockpiled in the existing bund between Area D & C shall be relocated and stored in Area D.
- 9.2 – Topsoil shall be progressively stripped in Area C to a depth of between 100mm and 300mm and shall be immediately used as part of the rehabilitation process in the preceding Cell after the grading of the final landform. During the initial extraction process where there are no Cells under rehabilitation, the topsoil is to be used as a temporary visual bund (2m high, 3m wide) at the eastern end of Area C.
- 9.3 – At the completion the extraction process within each Cell final grading of the landform is to be undertaken based upon the Proposed Landuses and Final Landform and Contour Plan.
- 9.4– After the spreading of topsoil over the final contouring, temporary erosion and sediment controls (refer specifications) such as sediment fence, check weirs etc. shall be installed in concentrated flow paths where appropriate.
- 9.5 – The topsoil, overburden and exposed sandstone is likely to be acidic in nature. The topsoil is to be treated with agricultural or coarsely crushed limestone or Dolomite with additional fertiliser as necessary.
- 9.6 – Final slopes greater than 10 degrees (18%) shall be stabilized with a temporary cover crop (refer specifications) to minimize the potential for sheet or rill erosion.
- 9.7 - Regular watering is to be undertaken to assist with plant establishment and dust suppression.
- 9.8 – To assist with the agricultural productivity of Areas C & D, legumes such as Lucerne and Clover species should be considered as the initial pasture crop to improve soil fertility and soil nitrogen levels.
- 9.9 – Regular monitoring of the rehabilitation Cells is to be carried out (refer monitoring and performance measures).
- 9.10– Longer term agricultural activities within Areas C & D are to be consistent with future farm management plans.



specifications

Erosion & sediment controls

All erosion and sediment controls such as berms, sediment fences, rumble zones, sediment basins and site drainage flow paths must be designed and constructed in accordance with Managing Urban Stormwater: Soils and Construction. 4<sup>th</sup> Edition (Landcom, 2004), New South Wales Government.

Erosion control matting

Erosion control matting will be biodegradable organic fibre matting such as jute fibre (Jutemaster ® FM) and must be specifically designed for erosion control and allow cover crop seed to germinate, emerge and develop through it. Erosion control matting must be installed and pinned down in accordance with the manufacturer's instructions.

Herbicide usage

Glyphosate based herbicides can be used in conjunction with weed control techniques and is to be used in accordance with the product label and registration. Herbicide usage must be undertaken in a manner or method that does not cause harm to endemic species or new plantings and there is no contamination of surface or ground waters. Herbicide application needs to be recorded in accordance with the Pesticides Act 1999.

Nest Boxes

Nest boxes are to be designed specifically for the target species. Specific nest boxes have been designed and are commercially available for micro-bats, parrots, possums and gliders. Commercially available nest boxes are available from Melbourne Wildlife Sanctuary at La Trobe University, Victoria. Nest Boxes should be installed at a minimum of 3m above ground level, away from night lights with openings facing away from the prevailing weather. Shredded bark or leaf litter should typically be placed in the Nest Box before installation to provide some insulation and nesting material.

Organic mulch

Whilst the use of organic mulch material is not specified in this plan it can be used in areas that are to be rehabilitated as agricultural land. In these circumstances it shall consist of a 75mm (unless otherwise specified) deep layer of chipped wood material of similar standard to Forest Blend ® and is to be free of non-organic material, contaminated chemicals such as hydrocarbons and weed seed. Organic mulch is not intended to be used in the rehabilitation of bushland areas where topsoil is translocated.

Plant maintenance & replacement

All plantings shall be maintained, (watered, weeded) so as to display good health and vigour. Apart from typical seasonal variations, plantings showing poor vigour, stress or disease will be replaced.

Plant stock

All plant material will be tubestock or maxi-cell with the exception of native grasses where viro-cells can be used.

Plants used must be grown from seed or cuttings taken from provenance stock. Greening Australia or local commercial nurseries specialising in native species can be contacted as they have a range of seed from the local provenance. Provided that orders are placed in advance, consignment propagation can be carried out from local stock.

Planting

Planting is to be carried out using standard horticultural practices. Because of the nature of the site and environmentally sensitive lands downstream, no fertiliser is to be used in conjunction with planting in the bushland rehabilitation areas, however if considered necessary, water retaining crystals can be used. All tree plantings are to be planted with staked translucent or cardboard grow tubes.

Planting preparation

Areas identified as for revegetation will be marked out on the ground and weed control carried out to remove/eradicate exotic species (unless noted otherwise). Where the soil is compacted as a result of operating machinery, the planting area is to be deep ripped to a depth of 0.3m, excluding areas beneath the canopy of existing trees to be retained. Ripping of the soil is not to occur in areas where natural regeneration is evident and planting is considered to be supplementary. Revegetation areas are to be mulched (unless noted otherwise) and planted in accordance with the species and densities identified within this report.

Planting species options & diversity

It is recognised that some species listed on this plan may be difficult to propagate or may not be readily available. To overcome this, a range of species options are listed. Where planting is required, to introduce diversity and avoid a mass monoculture of plantings, there must be a minimum of:

- 9 canopy species in roughly equal numbers;
- 15 understorey species in roughly equal numbers, and
- 10 ground covers species in roughly equal numbers

Sandstone riprap material

Non engineered sandstone riprap material is to be laid using rocks that are a minimum 50kg. Typical sandstone dimensions of 50kg rocks are 250mm x 300mm x 300mm.

Temporary cover crop

Temporary cover crop is to be used as a soil stabilising technique to minimise erosion. Depending upon the season, temporary cover crops are to be sown with either:

- Autumn/Winter seed mix – Oats @ 30kg/ha and Japanese millet @ 10kg/ha; or
- Spring/Summer seed mix – Japanese millet @ 30kg/ha plus oats @ 20kg/ha.

Weed control

Weed control is to be undertaken using standard bush regeneration techniques such as hand weeding or with the use of Glyphosate based herbicides when necessary (eg. cut & paint, stem scrape, spot spraying).

Weed material disposal and temporary storage on site.

Weed material containing seed or weed material capable of spreading vegetatively shall be removed from site and disposed of at an appropriate location where it will not cause further environmental damage.

Temporary storage of weed material prior to disposal can occur on site where it is stored, outside drainage lines, on an impervious surface and it is covered with a material that adequately contains the weed debris.

species options for revegetation (refer specifications)

Genus species	Common Name
<i>Acacia suaveolens</i>	Sweet Wattle
<i>Allocasuarina littoralis</i>	Black She-oak
<i>Allocasuarina torulosa</i>	Forest Oak
<i>Angophora bakeri</i>	Narrow-Leaved Apple
<i>Angophora costata</i>	Sydney Red/Rusty Gum
<i>Angophora hispida</i>	Dwarf/Scrub Apple
<i>Banksia serrata</i>	Old Man Banksia
<i>Ceratopetalum apetalum</i>	Coachwood Tree
<i>Ceratopetalum gummiferum</i>	Christmas Bush
<i>Corymbia eximia</i>	Yellow Bloodwood
<i>Corymbia gummifera</i>	Red Bloodwood
<i>Eucalyptus haemastoma</i>	Scribbly Gum
<i>Eucalyptus piperita</i>	Sydney Peppermint
<i>Eucalyptus punctata</i>	Grey Gum
<i>Eucalyptus sparsifolia</i>	Narrow-Leaved Stringybark
<i>Tristaniopsis collina</i>	Mountain Water Gum

Genus species	Common Name
<i>Acacia linifolia</i>	Flax-Leaved Wattle
<i>Acacia longifolia</i>	Sydney Golden Wattle
<i>Acacia myrtifolia</i>	Red-Stemmed Wattle
<i>Austromyrtus tenuifolia</i>	-
<i>Banksia ericifolia</i>	Heath Banksia
<i>Banksia oblongifolia</i>	-
<i>Banksia spinulosa</i>	Hairpin Banksia
<i>Bauera rubioides</i>	River Rose / Dog Rose
<i>Billardiera scandens</i>	Appleberry
<i>Boronia ledifolia</i>	Ledum/Sydney Boronia
<i>Boronia pinnata</i>	Pinnate Boronia
<i>Bossiaea heterophylla</i>	-
<i>Bossiaea obcordata</i>	Spiny Bossiaea
<i>Dodonaea triquetra</i>	Hop Bush
<i>Gompholobium latifolium</i>	Golden Glory Pea
<i>Grevillea buxifolia</i>	Grey Spider Flower
<i>Grevillea speciosa</i>	Red Spider Flower
<i>Hakea dactyloides</i>	Broad-leaved Hakea
<i>Lambertia formosa</i>	Mountain Devil
<i>Leptospermum arachnoides</i>	-
<i>Leptospermum parvifolium</i>	-
<i>Leptospermum polygalifolium</i>	Yellow Tee-tree
<i>Leptospermum trinervium</i>	Paperbark Tea-tree
<i>Leucopogon microphyllus</i>	-
<i>Melaleuca linariifolia</i>	-
<i>Micrantheum ericoides</i>	-
<i>Monotoca scoparia</i>	Prickly Broom-heath
<i>Ozothamnus diosmifolius</i>	White Dogwood
<i>Pimelea linifolia</i>	Slender Rice-flower
<i>Platysace linearifolia</i>	Narrow-leaf Platysace
<i>Xanthosia pilosa</i>	Woody Xanthosia
<i>Xylomelum pyrifome</i>	Woody Pear

Genus species	Common Name
<i>Actinotus helianthi</i>	Flannel Flower
<i>Actinotus minor</i>	Lesser Flannel Flower
<i>Dampiera stricta</i>	Blue Dampiera
<i>Dianella caerulea</i>	Blue Flax Lily
<i>Dianella prunina</i>	-
<i>Echinopogon caespitosus</i>	Tufted Hedgehog Grass
<i>Entolasia stricta</i>	Wiry Panic
<i>Eriostemon australasius</i>	Wax Flower
<i>Goodenia heterophylla</i>	-
<i>Hardenbergia violacea</i>	False Sarsaparilla
<i>Hibbertia aspera</i>	-
<i>Imperata cylindrica</i>	Blady Grass
<i>Lomandra glauca</i>	Pale Mat-rush
<i>Lomandra gracilis</i>	-
<i>Lomandra longifolia</i>	Spiny-headed Mat-rush
<i>Lomandra obliqua</i>	Twisted mat-rush
<i>Lomatia silaifolia</i>	Crinkle Bush
<i>Parsonsia straminea</i>	Common Silkpod
<i>Pseuderanthemum variabile</i>	Pastel Flower
<i>Scaevola ramosissima</i>	-
<i>Smilax glyciophylla</i>	Sweet Sarsaparilla
<i>Themeda australis</i>	Kangaroo Grass
<i>Xanthosia tridentata</i>	-

rehabilitation monitoring, reporting & certification

This monitoring and reporting program primarily focuses on the ecological aspects associated with this rehabilitation plan. The monitoring program should be read in conjunction with other monitoring requirements (ground water, air quality etc.) and should form part of the quarry operations Environmental Management Plan.

The monitoring and reporting requirements outlined in the tables below have been developed to meet the ecological monitoring requirements outlined in:

- the requirements of the Director-General of the Department of Environment and Climate Change for the preparation of a Species Impact Statement;
- the requirements of the Director General of the Department of Planning for the preparation of an Environmental Impact Statement (26/07/07), and
- other requirements of State Environmental Planning Policies, Local Environmental Plans and Development Control Plans.

The monitoring program is based upon the aims of rehabilitation procedures, identifies key assessment criteria and performance measures. Whilst reporting is required annually, it is acknowledged that not all stages of the rehabilitation program will be in progress in the initial years and measurable results may not be evident for 3 years after rehabilitation. In the event that bush fires occur locally and spread into the areas under rehabilitation, or in the event of extended drought periods and/or the effects of climatic changes, a review of this monitoring program and the performance measures will need to be made.

note: Certification by an independent qualified and experienced ecologist will be required:

- prior to clearing of native vegetation within each Cell stating that the cell does not contain any exotic or weed vegetation;
- prior to the translocation of top soil within each Cell stating that the recipient Cell does not contain any exotic or weed vegetation and the final grading and substrata has been suitably prepared;
- at the completion of rehabilitation and translocation works of each Cell stating that the rehabilitation and translocation works within the Cell are satisfactorily completed.

Rehabilitation Monitoring & Reporting						
Aims	Objectives	Assessment Method	Survey Parameters	Frequency and Timing of Assessment	Performance measure	Remedial Actions
Reintroduction of Tetratheca glandulosa	Propagation of Tetratheca glandulosa	% and number of plants surviving in propagation	Nursery production	6 monthly during production	1 in 24 cuttings taken surviving as tube stock.	Review propagation methods and the season when cuttings are taken.
	Reintroduction of Tetratheca glandulosa	% and number of planted tube stock surviving	All planting locations	6 monthly after planting then annually	95 % of planted tube stock surviving.	Increase the level of maintenance (eg hand watering)
		% and number of stems regenerating from translocated soil, root stock and seed.	All translocated soil from Tetratheca glandulosa areas.	6 monthly after translocation of soil then annually	20% of original number of stems regenerating from rootstock or seed.	Review maintenance (eg hand watering) practices and soil conditions and implement the application of smoke water.
Bushland Rehabilitation	Collection of base line data pre clearing	Floristic Assessment of Areas pre clearing and sand extraction	20, 2m x 2m quadrats within each Area randomly selected within a 4m x 4m grid system, recording stem abundance, species, species diversity, cover and abundance.	Prior to clearing of native vegetation	Not applicable	Not applicable
			Frequency or interpair distances of at least 20 canopy trees in each Area including data on their species, height and trunk DBH (Diameter at Brest Height)	Prior to clearing of native vegetation	Not applicable	Not applicable
			A minimum of 100 random Levy Pole placements along a minimum of 2 transects within each Area using a 3m long Levy Pole with 200mm graduations. Data should be collected of the number of dead or alive contacts with the pole, the height of contact and the species together with the projected canopy cover, depth of leaf litter and ground cover type (earth, rock, leaf litter etc.).	Prior to clearing of native vegetation	Not applicable	Not applicable
	Extent of Bushland Rehabilitation	Bushland rehabilitation works in progress	Extent of areas completed or under bushland rehabilitation (hectares)	Annually	All cells post extraction under bushland rehabilitation.	Undertake bushland rehabilitation procedures.
	Soil stability	Evidence of active soil erosion, sediment deposition or landform slumping.	All areas completed or under rehabilitation	Annually	No evidence of soil erosion, sediment deposition or landform slumping.	Implement soil & erosion controls (refer specifications sheet 10)
	Re-establishment of native flora	Species diversity and vegetation structure in the cells under rehabilitation	20, 2m x 2m quadrats within each Area randomly selected within a 4m x 4m grid system, recording stem abundance, species, species diversity, cover and abundance.	2 year intervals after rehabilitation commences.	Comparative analysis to pre-clearing data	Year 3 after rehabilitation; consideration of supplementary revegetation / planting if required.
			Frequency or interpair distances of at least 20 canopy species in each Area including data on their species, height and trunk DBH (Diameter at Brest Height)	2 year intervals after rehabilitation commences.	Comparative analysis to pre-clearing data	Year 3 after rehabilitation; consideration of supplementary revegetation / planting if required.
			A minimum of 100 random Levy Pole placements along a minimum of 2 transects within each Area using a 3m long Levy Pole with 200mm graduations. Data should be collected of the number of dead or alive contacts with the pole, the height of contact and the species together with the projected canopy cover, depth of leaf litter and ground cover type (earth, rock, leaf litter etc.).	2 year intervals after rehabilitation commences.	Comparative analysis to pre-clearing data	Year 3 after rehabilitation; consideration of supplementary revegetation / planting if required.
		Estimated percentage of weed biomass in the cells under rehabilitation	Randomly selected 10m x 10m m quadrats within each cell under rehabilitation	Annually	< 5% weed biomass	Bush regeneration weed control
	Recolonising Native Fauna	Level of bird autochthony (sensitive bushland species / generalist species)	2x 60 minutes - 2 ha (max) survey in areas under rehabilitation	Prior to extraction and Year 3 after rehabilitation commences	Year 3 after rehabilitation: Evidence of sensitive bushland bird species.	Year 3 after rehabilitation: Additional planting of understorey species to achieve pre clearing understorey densities.
Agricultural Land Rehabiitation	Extent of Agricultural Land Rehabilitation	Agricultural Land rehabilitation works in progress	Extent of areas completed or under agricultural rehabilitation (hectares)	Annually	All cells post extraction under agricultural land rehabilitation.	Undertake agricultural land rehabilitation procedures.
	Soils Stability	Evidence of active soil erosion of sediment deposition or landform slumping.	All areas completed or under rehabilitation	Annually	No evidence	Implement soil & erosion controls (refer specifications sheet 10)
	Vegetation Cover	Vegetation cover in each rehabilitation cell	Randomly selected 10m x 10m quadrats within each cell under rehabilitation	Annually after rehabilitation commences.	No areas of exposed soil without vegetation cover.	Application of temporary cover crop (refer specifications sheet 10) and fertiliser.
Impact on the ecology outside identified areas of extraction on site	Impact on adjacent vegetation and habitats	Evidence of disturbance to bushland habitats and vegetation onsite outside the approved extraction areas.	Visual survey of extraction boundary	Annually	No evidence of disturbance outside the approved extraction area boundaries.	Rehabilitate disturbed areas.
		Estimated counts of the local Red-crowned Toadlet population.	Within drainage depressions and drains adjacent access tracks outside proposed extraction areas	Year 3 after rehabilitation commences	Evidence of Red-crowned Toadlet using existing habitats outside extraction areas on the site.	Review results of water quality monitoring and controls to determine actions.
	Impact on faunal populations	Level of bird autochthony (sensitive bushland species / generalist species)	2x 60 minutes - 2 ha survey in bushland habitats outside the proposed extraction areas	Year 3 after rehabilitation commences	Evidence of sensitive bushland bird species outside extraction areas on the site.	Review of the success of bushland rehabilitation on the site.
		Elliott & hair-tube trapping program	Total of 25 elliot trap nights & 90 hair-tube trap nights	Year 3 after rehabilitation commences	Evidence of native mammals	Feral animal control within bushland habitats on the site / allotment.
		Monitoring of nest boxes	Survey of nest boxes installed.	Year 3 after rehabilitation commences	Evidence of nest boxes outside extraction areas on the site being used by native fauna	Removal of exotic species from nest boxes

### Attachment 3

#### REGISTER OF CORRECTIVE ACTION REQUESTS

CAR No.	Date CAR Received	CAR Responsibility	Date CAR Completed	Date Verified	Signature and Details of Any Non-Conforming Work
1					
2					
3					
4					
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28					
29					
30					

## Attachment 4

### CORRECTIVE ACTION REQUEST (CAR) NUMBER .....

#### PART A NOTIFICATION

*To be completed by Environmental Manager issuing CAR*

Date 201\_\_\_\_

Issued by ..... Signature .....

Environmental Commitment or Action No.

Responsibility

Reason for Non-Conformance

Recommended Corrective Action

Comments

---

#### PART B CORRECTIVE ACTION

*To be completed by Environmental Manager*

Date Received

Recommended Corrective Action

Responsibility

Comments

Date Completed 201\_\_\_\_ Signature .....

---

#### PART C VERIFICATION

*To be completed by Environmental Manager*

Verification Procedure

Date Corrective Action Verified 201\_\_\_\_

Signature .....

## Attachment 5

<b>REGISTER OF COMPLAINTS</b>
-------------------------------

DATE AND TIME OF COMPLAINT	BY WHOM AND CONTACT	NATURE OF COMPLAINT (what, when, where, how, why?)	CORRECTIVE ACTION AND DATE COMPLETED



## **Attachment 6**

### **Pollution Incident Response Management Plan**



## **18.0 POLLUTION/INCIDENT RESPONSE MANAGEMENT PLAN**

### **Contents**

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*Attachment – Form 9A Site Plan*

*Attachment – Form 9B Emergency Procedure & Emergency Location Map*

*Attachment – Form 15A Dangerous Hazardous Register*

*Attachment – Form 15B Non Dangerous Hazardous Register*

*Attachment – Form 18A Pollution Incident Response Management Plan Testing Checklist*

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## 1. Introduction

PF Formation has prepared this Pollution/Incident Response Management Plan in order to comply with the new requirements introduced by the *Protection of the Environment Legislation Amendment Act 2011* (POELA Act)

The objectives of this plan are to:

- Ensure comprehensive and timely communication about a pollution incident to staff at the premises, the Environment Protection Authority (EPA) and other relevant authorities specified in the Act.
- Ensure comprehensive and timely communication about a pollution incident to people outside the Quarry who may be affected by the impacts of pollution.
- Minimise and control the risk of a pollution incident at the site through the identification of risks and the development of planned actions to minimise and manage those risks.
- Ensure that the plan is properly implemented by trained staff, identifying staff responsible for implementing it, and ensuring that the plan is regularly tested for accuracy, currency and suitability.

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## **2. Legislative Requirements.**

The specific requirements for pollution incident response management plans are set out in Part 5.7A of the POEO Act and the Protection of the Environment Operations (General) Regulation 2009 (POEO (G) Regulation) in summary, this provision requires the following:

- All holders of environmental protection licences must prepare a pollution incident response management plan (section 153A, POEO Act)
- The plan must include the information detailed in the POEO Act (section 153C) and be in the form required by the POEO (G) Regulation (clause 98B)
- Licensees must keep the plan at the premises to which the environment protection licence relates to.
- Licensees must test the plan in accordance with the POEO (G) Regulation (clause 98E)

### **2.1. Definition of pollution incident.**

The definition of a pollution incident is:

*Pollution incident* means an incident or set of circumstances during or as a consequence of which there is or is likely to be a leak, spill or other escape or deposit of a substance, as a result of which pollution has occurred, is occurring or is likely to occur. It includes an incident or set of circumstances in which a substance has been placed or disposed of on premises, but it does not include an incident or set of circumstances involving only the emission of any noise.

### **2.2. Notification of a Pollution Incident.**

A pollution incident is required to be notified if there is a risk of 'material harm to the environment', which is defined in section 147 of the POEO Act as:

(a) Harm to the environment is material if:

1. It involves actual or potential harm to the health and safety of human beings or to ecosystems that is not trivial, or
2. It results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000 (or such other amount as is prescribed by the regulations), and

(b) Loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment.

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### **3. Description and Likelihood of Hazards. (*Clause 98C (1) (a) and (b)*)**

This section provides a description of the main hazards and potential hazards to human health and the environment associated with the operation and the likelihood of any such hazards occurring.

#### **3.1. Description of hazards**

The following hazards have been identified:

- 1 Fire or bushfire occurring on site.
- 2 Fuel Spillage.
- 3 Degradation of air quality.
- 4 Oil Spillage.
- 5 Chemical Spillage.
- 6 Contaminated water run-off.
- 7 Soil erosion and sediment run-off.
- 8 Silt Ponds.
- 9 Uncontrolled release of gas.
- 10 Groundwater Contamination

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### 3.2. Likelihood of identified hazards occurring on site.

Hazard	Likelihood	Reason
1. Fire or Bushfire	Likely	The site is situated in a bushfire prone area and has been subject to bushfires in the past. Electrical services located on the site also increase the risk of fire.
2. Fuel Spillage	Likely	There are several fuel containment vessels situated on the site. Each day large amounts of fuel are transferred into plant and equipment and also carted around the site in mobile fuel tanks.
3. Degradation of air quality	Likely	The use of unsealed haul roads by quarry vehicles increases the risk of dust being produced and causing the degradation of air quality.
4. Oil spillage	Likely	The most likely cause of an oil spillage occurring on site would be from a hose or a fitting failing on a machine. It is unlikely that an oil spill would occur as a result of a storage vessel leaking.
5. Chemical spillage	Unlikely	Only small amounts of hazardous chemicals are stored on site.
6. Contaminated water run-off.	Unlikely	The site has approved effluent treatment devices only.
7. Soil erosion and sediment run-off	Unlikely	Best practice guidelines used for erosion and sediment control. Methods approved by consent authorities.
8. Silt Ponds Rupturing	Unlikely	Silt ponds are well constructed and allowed to settle out before capping is undertaken.
9. Uncontrolled release of gas.	Unlikely	Only small amounts of gas are kept on site.
10. Groundwater contamination.	Unlikely	Appropriate management systems in place.

**4. Pre-emptive actions to be taken [clause 98C(1) @]**

The PF Formation Safety Booklet is explained to all staff upon employment. It contains the company's health and safety policies, procedures and first aid directions. Safety booklets are issued to all staff upon employment.

**1) Fire or Bushfire**

- Fire extinguishers are fitted to all plant and equipment and strategically placed at certain locations around the site.
- Personnel are trained on the use of fire extinguishers.
- Fire extinguishers are regularly inspected by a professional contactor.
- Site water carts are fitted with fire fighting pumps.
- Personnel are trained on the use of fire fighting pumps.
- Procedure to be undertaken in the event of a fire or bushfire is documented in the PF Formation Safety Booklet.
- Plant and equipment are inspected regularly for potential fire hazards.
- Vegetation around electrical services is removed periodically to reduce fire hazards caused by electricity.

**2) Fuel Spillage**

- Fuel containment vessels are inspected regularly for any leaks and corrosion.
- Mobile fuel tanks are placed in impervious bunds.
- All fuel containment vessels are to comply with AS 1692 and AS 1940.
- Spill containment kits are located at various locations around the site and personnel trained on correct procedure in the event of a spill.

**3) Degradation of air quality.**

- All haul roads and trafficked areas will be kept damp at all times to prevent the generation of dust.
- All staff are required to contact management immediately if smoke or dust is noticed.
- Air quality is monitored at four locations in Maroota and reported on in each respective Environmental Management Plan and EPA License.
- Dust mitigation measures are addressed in the Hitchcock Road Annual Environmental Management Report (AEMR), Hitchcock Road Environmental Strategy Document, Pit 5 Environmental Management Plan (Dust Monitoring Plan) and the Pit 4 Environmental Management Plan.

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**4) Oil Spillage**

- Oil storage vessels are inspected regularly for leaks and corrosion.
- Spill containment kits are located at various locations around the site and personnel trained on the correct procedure in the event of a spill.
- Any oil leaks detected on machinery is to be reported to management immediately.
- Machines are inspected daily by staff for oil leaks.
- The cleaning of greasy or oily machinery or parts of machinery may only be undertaken in the approved wash down area.

**5) Chemical spill**

- Material Safety Data Sheets are kept on site for all chemicals used.
- Spill containment kits are located at various locations around the site and personnel trained on the correct procedure in the event of a spill.
- Hazardous chemicals stored on site are clearly labelled and access is restricted to trained personnel only.
- Details for procedure to be carried out in the event of a spill is in the PF Formation Safety Booklet.

**6) Contaminated water run-off**

- Regular maintenance and inspections of effluent treatment devices.
- All liquid wastes are removed from the site and disposed of appropriately and responsibly.
- Containment measures in place in the event of any oil, fuel or chemical spillage that may occur on site.
- Impervious bunding around fuel storage areas.

**7) Soil erosion and sediment run-off.**

- Soil erosion and sediment control plans containing procedures and mitigation measures used on the site are implemented and reviewed by the Department of Planning, Hills Shire Council and Hornsby Shire Council.
- Refer to Hitchcock Road Environmental Strategies, Hitchcock Road Annual Environmental Management Report, Telegraph Road (Pit 4) Environmental Management Plan and Old Northern Road (Pit 5) Environmental Management Plan.

**8) Silt Ponds.**

- Haul roads are clearly delineated on the ground.
- Silt ponds located in high traffic areas are clearly delineated on the ground.
- Silt ponds are constructed using clay to form an impervious membrane which contains the silt within the dam and prevents any possible groundwater contamination.
- Procedures to follow in the event of an accident involving a silt pond are in the PF Formation Safety Booklet.

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**9) Uncontrolled release of gas.**

- Refer to PF Formation Safety Booklet for safety procedures involving the use of Oxygen and Acetylene.
- Only certified storage vessels are permitted on site.
- Access to oxygen and acetylene is restricted to trained personnel only.
- Safe handling and storage methods have been adopted and implanted.

**10) Groundwater contamination.**

- Groundwater Management Plans are prepared annually and included in the Hitchcock Road Annual Environmental Management Report, Old Telegraph Road (Pit 4) Environmental Management Plan and the Old Northern Road (Pit 5) Environmental Management Plan.
- Groundwater management plans include water quality analysis.

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## 5. Inventory of pollutants [clause 98C (1)(d) and (e)]

- See Section 15 Hazardous Substances & Dangerous goods in PF Formation Mine Safety Management Plan. ( Hazardous Substance Register) Includes Material Safety Data Sheets for all substances listed.
- See Attachments - Form 15A Hazardous Substances Register and  
- Form 15B NON Dangerous Hazardous Substance Register.

## 6. Safety equipment [clause 98C(1)(d) and (e)]

The following safety equipment is kept on site and made available to personnel.

### Personal Protective Equipment (PPE)

#### 1. Heavy duty chemical resistant gloves.

*Used when handling particularly hazardous substances such as Barrel Kleen Safe (used to clean concrete agitators) and heavy duty degreasers (used for removing grease and oil off engines and parts.)*

#### 2. High quality leather rigging gloves.

*Used when tying down loads or rigging loads using chains, cables or slings. Can be used when greasing machines to avoid contact with grease. Also used by operators when re fuelling machines.*

#### 3. Safety glasses

*To be worn at all times when cutting or grinding. Must be worn when slumping concrete.*

#### 4. High Visibility Vest

*To be worn if high visibility clothing has not been issued or not available.*

#### 5. Hard Hat

*Must be worn when working around conveyor belts and running plant.*

#### 6. Ear plugs and Ear muffs.

*To be worn when undertaking noisy activities or working in proximity to loud noise.*

#### 7. Gum boots

*In the event of a fuel, oil or chemical spill gum boots are to be worn to avoid contact with skin. Also used by maintenance staff during wet weather.*

#### 8. Water proof clothing.

*Used by maintenance personnel when undertaking work in wet weather.*

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## **9. Welding PPE.**

*Used by authorised personnel or contractors when undertaking welding on the site. Includes, flash barriers, welding helmets and heat resistant gloves.*

### **Other Safety Equipment.**

- Spill Containment Kits - *Contains highly absorbent material for cleaning up liquid chemical spills.*
- Safety Harnesses - *Used by authorised personnel when undertaking work at a height.*
- Fire Extinguishers - *Located at strategic locations around the site and fitted to all plant and equipment*
- Fire Fighting Pumps - *Fitted to site water cart for use in the event of a bushfire.*

## **7. Contact details [clause 98C (1)(g) and (h)]**

The following persons are responsible for implementing this plan in the event of an incident and notifying the relevant authorities.

### **Joshua Graham (Managing Director)**

Business Phone – 02 45668314

Mobile – 0418439923

E Mail – [josh@pfformation.com.au](mailto:josh@pfformation.com.au)

### **Luke Graham (Managing Director)**

Business Phone – 02 45668314

Mobile – 0407415413

E Mail – [luke@pfformation.com.au](mailto:luke@pfformation.com.au)

### **Peter Watt (Quarry Manager)**

Business Phone – 02 45668314

Mobile – 0418279624

E Mail – [peterw@pfformation.com.au](mailto:peterw@pfformation.com.au)

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## **Protocol for industry notification of pollution incidents.**

Part 5.7 of the Protection of the Environment Operations Act requires the occupier of premises, employer or any person carrying on the activity on which a pollution incident occurs to *immediately* notify each of the relevant authorities (identified below) when material harm to the environment is caused or threatened.

1) Call 000 if the incident presents an immediate threat to human health or property. Fire and Rescue NSW, the NSW Police and the NSW Ambulance Service are the first responders, responsible for controlling and containing incidents.

2) If the incident does not require an initial combat agency, or once the 000 call has been made, notify the relevant authorities in the following order:

- Environmental Protection Authority (EPA)
- Department of Resources & Energy
- NSW Planning & Environment or Local Council (depending on which pit incident occurred.)
- Maroota Rural Fire Service.

For each relevant authority, the appropriate point of 24 hour contact is:

- EPA NSW – EPA's Pollution Line Service 131555
- Resources & Energy – John Tsallios 02 4222 8333
- NSW Planning & Environment ( if incident occurred on Lot 198 or Hitchcock Rd Site) 9228 6111
- Hills Shire Council (if incident occurred on Lot 198 or Hitchcock Road site.) 9843 0555
- Hornsby Council (if incident occurred at Pit 4 or 5) 9847 6666
- Maroota Rural Fire Service – 4566 4302

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## **8. Communicating with neighbours and the local community [clause98C(1)(i)]**

As part of the Hitchcock Road Sand Extraction and Rehabilitation Project a Community Consultative Liaison and Review Committee is established for the site and holds meeting bi annually. Local members of the community attend the meetings along with representatives from council and OEH.

## **9. Actions taken to minimise harm to persons on the premises.**

The course of action to be taken in the event of an incident will be determined by the Quarry Manager. In the case of a bushfire the course of action to be taken will have to be determined at the time, in consultation with the local RFS as wind direction and the location of the fire could be anywhere.

The PF Formation Mine Safety Management Plan provides a detailed description of the different activities that are carried out on the site and looks at the hazards and methods of controlling the hazards for each task. Safe Work Method Statements are discussed at Toolbox Safety Meetings quarterly.

PF Formation has an Emergency Procedure Policy in place which is found in the PF Formation Safety Booklet and copies issued to all personnel.

- See Attachment – Form 9B Emergency Procedure.

## **10. Site Plans/Map [clause98C(1)(k)]**

- See Attachment – Form 9A Map of Pit & Emergency Location Map

## **11. Actions to be taken during or immediately after a pollution incident. [clause 98C(1)(l)]**

- The Quarry Manager is to ensure the best course of action is taken to minimise harm to persons on site and the environment during and after an incident occurring.
- Emergency Procedures are to be followed.
- Protocol for industry notification of pollution incidents is to be followed. Peter Cummins (General Manager) will be responsible for implementing the notification protocol and ensuring funds are available to cover any associated costs involved with the remediation works.

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## **12. Staff Training [clause 98C(1)(m)]**

Toolbox Safety Meetings are conducted quarterly and emergency procedures are discussed and reviewed. All full time employed plant operators are trained through Workskill at a Certificate III level. All employees and contractors are inducted into the site so the incident response procedures are clear.

Luke Graham and Peter Watt are the Production Managers for the site and are responsible for the day to day running of the operation. Both hold Production Managers Permits issued by the Department of Primary Industries.

Joshua Graham is the site Environmental Officer responsible for all environmental management of the site. Joshua holds a Diploma in Extractive Industries Management issued through TAFE NSW.

- Register of staff training is kept in the Mine Safety Management Plan.

## **13. Procedures for testing the plan [clauses 98C (1)(n), (o) and (p), 98C (2)(f) and (g), 98E (1) and 98E (2)]**

The plan is reviewed annually along with the Mine Safety Management Plan. All aspects of the plan are reviewed including:

- Check to see if any new hazards have been identified since the last review.
- Effectiveness of pre-emptive actions and any additional pre-emptive actions identified.
- Hazardous Substance Register reflects all pollutants on the site and Material Safety Data Sheets are up to date.
- Safety equipment register is up to date.
- All contact details for personnel responsible for implementing the plan are up to date.
- All contact details for notification of an incident are up to date.
- Review minutes for Community Liaison and Review Committee Meetings.
- Maps are up to date with assembly point locations and all haul roads and Pit numbers are accurate.
- Check that any incidents that may have occurred have been reported on and complaints register has been filled if any complaints were made.
- See Attachment - Form 18A Pollution Incident Response Management Plan testing Checklist

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# PF Formation

1 Patricia Fay Drive, Maroota NSW  
02 4566 8314

## Emergency Procedure

1. Follow First Aid Priorities
2. Get on the Two Way and call EMERGENCY, EMERGENCY, EMERGENCY Everyone is to remain quiet for the injured to state the nature of emergency and identify location
3. Weighbridge Officer to ring 000 for ambulance, ensure Quarry Manager is informed and arrange first aid kit to be delivered to accident site
4. Staff working near accident site should assist the injured person until help arrives.
5. Quarry Manager or Weighbridge Officer will advise by two-way if everyone should meet at the Emergency Meeting Point (Weighbridge)

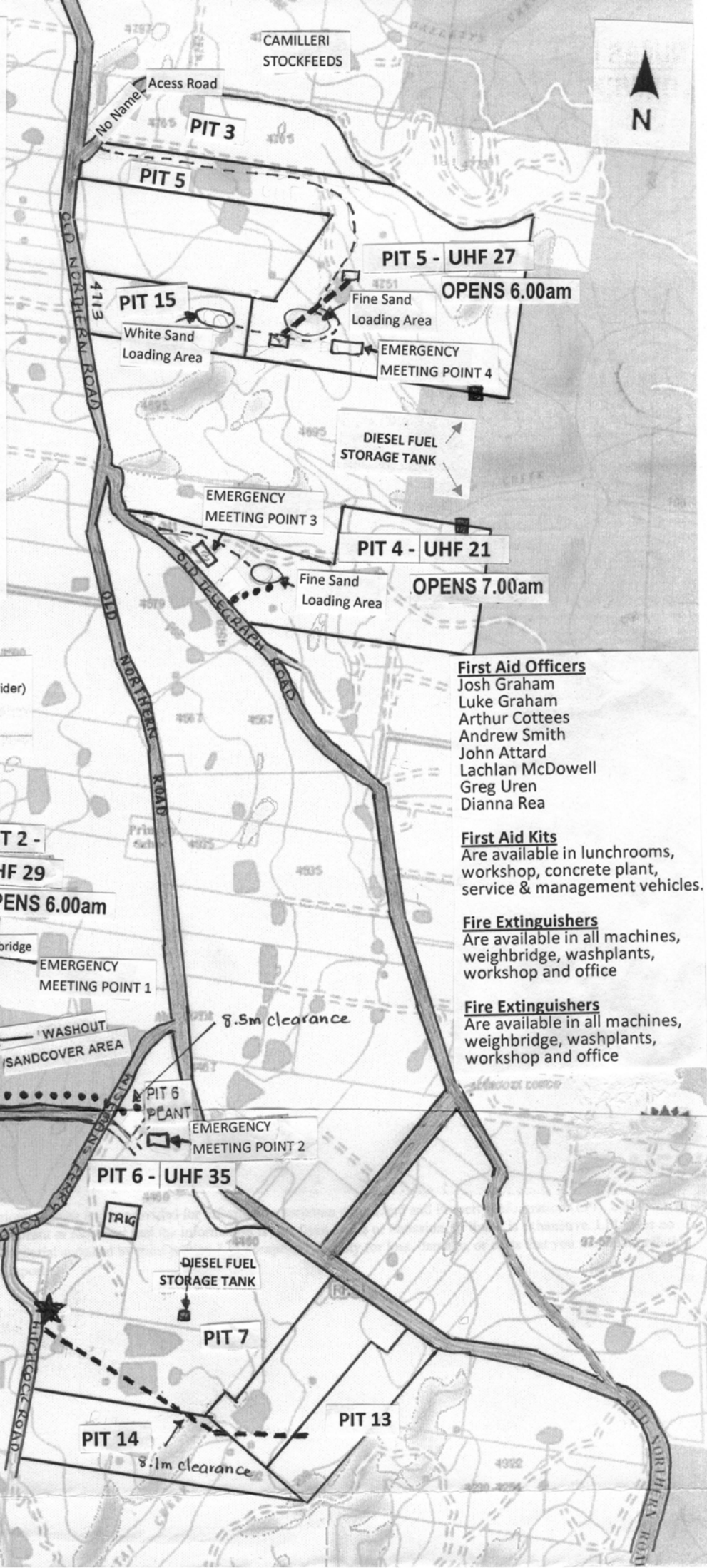
## Emergency Phone Numbers

Ambulance/Fire/Police... Dial 000 or 112  
Wisemans Ferry Police..... 4566 4302  
Windsor Hospital..... 4560 5555  
Josh Graham Mobile..... 0418 439 923  
Endeavour Electricity..... 131003

## Emergency Meeting Points

In lunchrooms at the four main pits.

- 1 - Pit 2    2 - Trig Plant (Pit 6)  
3 - Pit 4    4 - Pit 5



## First Aid Officers

Josh Graham  
Luke Graham  
Arthur Cottees  
Andrew Smith  
John Attard  
Lachlan McDowell  
Greg Uren  
Dianna Rea

## First Aid Kits

Are available in lunchrooms, workshop, concrete plant, service & management vehicles.

## Fire Extinguishers

Are available in all machines, weighbridge, washplants, workshop and office

## Fire Extinguishers

Are available in all machines, weighbridge, washplants, workshop and office



# EMERGENCY RESPONSE PROCEDURE

*In the event of an emergency*

## KEEP CALM

### DIAL 000 OR 112 (mobile)

1. Call for help, use the two-way radio to call weighbridge and start by saying **“EMERGENCY, EMERGENCY, EMERGENCY”** then state nature of the emergency and identify your location.
2. In the case of an Electrical Fire cut off the power supply at the nearest switch. **DO NOT USE WATER TO EXTINGUISH THE FIRE.** Do not attempt to restore the power supply or attempt to use the equipment until is examined by a competent person.
3. Weighbridge officer to ring the Emergency Services and tell the operator which service you require and provide them with the site’s address.
4. Quarry Manager (Peter Watt or Luke Graham) is required to co-ordinate to send a person to the front gate to direct Ambulance or Emergency Services if possible

<b>Address:</b>	1 Patricia Fay Drive MAROOTA
<b>Nearest Cross Road:</b>	Wisemans Ferry Road
<b>Contact Name:</b>	Joshua Graham
<b>Contact Number:</b>	45668314
<b>GPS Coordinates:</b>	Lat: 33° 27' 47.74" S Long: 150° 59' 31.00" E
<b>Fire Phone:</b>	4566 4302
<b>Windsor Hospital:</b>	4560 5555
<b>Josh Mobile:</b>	0418 439 923
<b>Endeavour Electricity:</b>	131 003

5. Staff working near accident site should assist the injured person until help arrives.
6. A Quarry Manager or Weighbridge Officer will advise by two way if everyone should meet at the assembly point (weighbridge)
7. In case of fire Different extinguishers are for different types of fires-  
**RED** - water (is only suitable for ordinary combustibles NOT for electrical or flammable liquid fires)  
**RED WITH WHITE BAND** - dry chemical powder suitable for all fires including electrical  
**BLUE & BLUE STRIPE** - foam (suitable for ordinary combustibles and flammable and combustible liquid NOT electrical fires)

FORM No.	VERSION	APPROVED	FORM NAME	PAGE No	REVIEW DATE
9B	V1	Dianna Rea	Emergency Procedure	Page 1 of 1	18/10/16



Are available in all machines,  
weighbridge, washplants,  
workshop and office

PIT 2 -	UHF 29
PIT 4 -	UHF 21
PIT 5 -	UHF 27
PIT 6 -	UHF 35





This hazardous substance Register will record all <b>DANGEROUS</b> hazardous substances and chemicals that are located on site. A folder will be located in the weighbridge with copies of all Material Safety Data Sheets (MSDS) and maintained by the Weighbridge Officer					
Ref No	Product Name/Chemical name	Supplier	Location Stored	Approx Quantity	MSDS date
D001	Diesel	Advantage	All Vehicles	40000L	Apr-15
D002	WRM 80S Part B	Chemtura	Workshop	N/A	Oct-13
D003	All sand gravel	PF Formatio	All over quarry	10000T	Oct-14
D004	WRM P4 Primer PartA	Chemtura	Workshop	20L	May-15
D005	WRM P4 Primer Part B	Chemtura	Workshop	20L	May-15
D006	625 Polythane Mixed Colour	Protec	Workshop	20L	Apr-15
D007	Oxygen based compressed gas	Air Liquide	Workshop	N/A	Nov-12
D008	Acetylene	Air Liquide	Workshop	N/A	Sep-12
D009	PRO EPT Spray Lubricant	Anglomoil	Workshop	2L	Feb-14
D010	WRM P4 KIT	Chemtura	Workshop	N/A	May-15
D011	Nitrogen (N2)	Air Liquide	Workshop	N/A	Jun-14
D012	Cement	Cement Aus	Concrete Plant	40T	Jun-14
D013	Polythane AU-625-Pack A	Protec	Concrete Plant	20L	Apr-15
D014	GSB Methyl Ethyl Ketone	GSB Chemic	Workshop	N/A	Sep-14
D015	Pre -mix concrete	PF Formatio	Concrete Plant	N/A	Oct-14
D016	Barrell kleen safe	Chemetall	Concrete Plant	100L	Dec-11
D017	KCB Methyl Ethy Ketone	Chemwatch	Workshop	N/A	Jul-14
D018	Araidite 5 Minute Epoxy Adesive	Selleys Aust	Workshop	50GR	Jun-14
D019	WRDA PN 20	Grace	Concrete Plant	1000L	Oct-13
D020	Anti Seize	Bakers	Workshop	500G	Feb-15
D021	Sikaflex 221	Bakers	Workshop	1L	Jun-14
D022	CRC 2087 bright zinc aerosol	Bakers	Workshop	2L	Feb-15
D023	Lanotec heavy duty liquid lanolin	Bakers	Workshop	2L	Aug-15
D024	Tubular ARC Welding Electrodes	Hobart Met	Workshop	N/A	May-14
D025	Micro Air 940	Basf Austral	Concrete Plant	500L	May-15
D026	Nonox SCR Solution	Anglomoil	Workshop	N/A	Jan-13
D027	WRM 80S PartA	Chemtura	Workshop	N/A	Oct-12
D028	WRM 80S Kit	Chemtura	Workshop	N/A	Oct-12
D029	Cat To-4 SAE 30 SAE 50	Anglomoil	Workshop	600L	Jul-13
D030	Coregas 5/2	Coregas	Workshop	Cylinder	Jun-16
D031	Acetylene (dissolved)	Coregas	Workshop	6 x 9.3 (M3) Bottles	Aug-16
D032	Oxygen based compressed gas	Coregas	Workshop	Cylinder	Feb-16
D033	Aluminium Brightener	Premier One	Workshop	5L	Jan-15
D034	Scale Away	Premier One	Concrete Plant	200L	Jul-15
D035					
D036					
D037					
D038					
D039					
D040					
D041					
D042					
D043					
D044					
D045					
D046					
D047					
D048					
D049					
D050					

# FORM 15B - NON DANGEROUS HAZARDOUS SUBSTANCE REGISTER

This hazardous substance Register will record all **NON-DANGEROUS** hazardous substances and chemicals that are located on site.  
A folder will be located in the weighbridge with copies of all Material Safety Data Sheets (MSDS)  
and maintained by the Weighbridge Officer

Ref No	Product Name/Chemical name	Supplier	Location Stored	Approx Quantity	MSDS date
N001	Dash Vinyl protector	Premier one	Workshop	20L	May-15
N002	BL 10-B Turbo Truck Wash	Premier one	Workshop	100L	Jul-15
N003	Pozzolith 400Ri	Basf	Concrete Plant	200L	Oct-11
N004	Argon Compressed(Ar)	Air Liquide	Workshop	N/A	Nov-12
N005	Pozzolith 555	Basf	Concrete Plant	100L	Nov-11
N006	Master Pozzolith 370	Basf	Concrete Plant	100L	Nov-15
N007	Oatcool 50 Red	Anglomoil	Workshop	200L	Apr-15
N008	ATF DX3	Valvoline	Workshop	20L	Sep-12
N009	HP Gear oil 85W/140	Valvoline	Workshop	140L	Dec-12
N010	AdBlue	Shell	New vehicles	200L	Apr-15
N011	Roadmaster 300 15W40	Anglomoil	Workshop	800L	Jul-13
N012	Trans EP 85W140	Anglomoil	Workshop	N/A	Jan-14
N013	Hi-Tec 82220	Nalco	Workshop	1000L	Oct-13
N014	Hyd AW 68	Anglomoil	All vehicles	800L	Jan-13
N015	Citra-Clean with Grit	Premier One	Workshop	20L	May-15
N016	WRM 80S PART C	Chemtura	Workshop	N/A	Oct-13
N017	Daramene R	Grace	Concrete Plant	1000L	May-14
N018	AW Hydraulic Oil	Anglomoil	Workshop	N/A	Feb-14
N019	Nalcoag r 3268	Nalco	Workshop	1000L	Oct-13
N020	Oxalic acid dihydrate	Redox	Concrete Plant	20kg	May-14
N021	Roadmaster 600 15W40	Anglomoil	Workshop	200L	Jul-13
N022	Dara Set	Grace	Concrete Plant	500L	Dec-14
N023	HI_TEX 82220	Nalco	Workshop	N/A	Dec-14
N024	Oxygen Compressed	Coregas	Workshop	6 x 8.9 (M3)	Feb-15
N025	Coregas 5/2	Coregas	Workshop	6 x 10.6 (M3)	Feb-15
N026	CCS Onyx 44 Pigment	River Sands	Concrete Plant	200 kg	Jul-14
N027	Protecta Wash N Wax	Premier One	All vehicles	20L	Jul-15
N028	Pearly White Liquid Soap	Premier One	All Staff	5L	Jul-15
N029	AdBlue	Platinum Lubricants	Concrete Plant	1000lt	Apr-15
N030					
N031					
N032					
N033					
N034					
N035					
N036					

**Attachment 7**  
**Revised Dust Monitoring Plan**

**REVISED DUST MONITORING PLAN  
FOR EXTRACTIVE INDUSTRY  
AT LOT 3 DP 567166 AND LOT 2 DP 510812  
4713 AND 4751 OLD NORTHERN ROAD, MAROOTA**

Prepared for PF Formation  
Telephone (02) 4566 8314  
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[www.pfformation.com.au](http://www.pfformation.com.au)  
1774 Wisemans Ferry Road  
Maroota, NSW, 2756



by Environmental Planning Pty Ltd  
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**November 2016**

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## 1. Objectives

The main objective of the Dust Monitoring Plan is to minimise particulate matter emissions from the site and quarry. A secondary objective of the Dust Monitoring Plan is to maintain an annual deposited dust level for the site and quarry at or below 4 g/m<sup>2</sup>/month.

## 2. Background

This revised Dust Monitoring Plan has been produced to meet the relevant conditions of Hornsby Shire Council development consent No. 578/2009B and Environment Protection Licence 3829 for extractive industry on Lot 2 DP 510812 (Pit 15) and Lot 3 DP 567166 (Pit 5) located on Old Northern Road, Maroota. This Dust Monitoring Plan replaces the previous plan dated May 2011.

### 2.1 Development Consent 578/2009B Conditions

Condition 11 of the development consent requires an Environmental Management Plan for the site including air quality management.

Condition 54 of the development consent requires "Activities occurring at the premises must be carried out in a manner that will minimise emissions of dust from the premises".

Condition 55 of the development consent requires "Trucks entering and leaving the premises that are carrying loads must be covered at all times, except during loading and unloading".

Condition 64 of the development consent requires as follows.

- a) The proponent must prepare and implement a Dust Monitoring Plan, to the satisfaction of DECCW (now the Environment Protection Authority or EPA) that:
  - quantifies dust impacts at the most sensitive receptor(s) as defined by the results of the Environmental Assessment;
    - for the range of normal operating scenarios at the proposal site;
    - for variable meteorological conditions;
  - is implemented within 1 month of operational activities beginning at the proposal site; and
  - operates for a minimum period of 12 months.
- b) The proponent must submit a report to the Manager of Sydney Industry for DECCW approval detailing all elements of the Dust Monitoring Plan at least two months prior to commencement of operational activities at the proposal site.

### 2.2 Environment Protection Licence 3829 Conditions

Environment Protection Licence 3829 relevant conditions for the Dust Monitoring Plan are as follows.

#### Location of monitoring/discharge point and areas

P1.1 The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or the setting of limits for the emission of pollutants to the air from the point.

<i>Air</i>			
EPA identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
1	Dust monitoring		"Dust Monitoring Location" on the map titled "Staging of Sand Extraction at Part Lot 3 DP 567166 & Part Lot 2 DP510812 at Old Northern Rd, Maroota" which was emailed to the EPA on 3 June 2010.

#### Operating Conditions Dust

O3.1 The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.



O3.2 Trucks entering and leaving the premises that are carrying loads must be covered at all times, except during loading and unloading.

### Monitoring and Recording Conditions

M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence:

- (a) the date(s) on which the sample was taken;
- (b) the time(s) at which the sample was collected;
- (c) the point at which the sample was taken; and
- (d) the name of the person who collected the sample.

M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

#### M2.2 Air Monitoring Requirements

##### POINT 1

Pollutant	Units of measure	Frequency	Sampling Method
Particulates - Deposited Matter	grams per square metre per month	Monthly	AM-19

M4.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.

M4.2 The record must include details of the following:

- (a) the date and time of the complaint;
- (b) the method by which the complaint was made;
- (c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
- (d) the nature of the complaint;
- (e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
- (f) if no action was taken by the licensee, the reasons why no action was taken.

## 2.3 Environmental Assessment Data

The air quality impact assessment for the project in the *Environmental Impact Statement for Sand Extraction at Part Lot 3 DP 567166 and Part Lot 2 DP 510812 at Old Northern Road, Maroota* (Environmental Planning Pty Ltd, May 2009) included assessments for total suspended particulate matter, particulate matter and deposited dust. The Environment Protection Licence 3829 for the site only specifies conditions for deposited dust. Relevant extracts from the air quality impact assessment for the project for deposited dust include the following.

The main source of air emissions from the project will be dust. The air quality impact assessment was based on the use of a computer based dispersion model to predict ground level dust concentrations and deposition levels in the vicinity of the site. To assess the effect that the dust emissions would have on existing air quality the dispersion model predictions were compared to relevant air quality goals. Dispersion modelling procedures followed EPA guidelines. Table 1 shows the dust deposition criterion set out in EPA procedures for modelling air pollutants from sources.

**Table 1 EPA Criterion for Dust (Insoluble Solids) Fallout**

Pollutant	Averaging Period	Maximum Increase in Deposited Dust Level	Maximum Total Deposited Dust Level
Deposited dust	Annual	2 g/m <sup>2</sup> /month	4 g/m <sup>2</sup> /month

### Existing Air Quality

There was a dust deposition gauge located near the common boundary between Lot 3 DP 567166 and Lot 2 DP 510812 in the vicinity of the existing extraction activity for 10 years from July 1999 to June 2010. There is also a dust gauge located at Maroota Public School which is approximately 2 km south-west of the site. An annual average dust deposition level above 4 g/m<sup>2</sup>/month indicates a level of air quality unsuitable for residential purposes. Levels measured are affected by dust from other extraction activities in the area as well as other sources of dust normally expected in rural areas.

Based on data between July 1998 and October 2007 inclusive the annual average dust deposition levels near the existing extraction area at Lot 3 DP 567166 have been measured to be a maximum of 8.7 g/m<sup>2</sup>/month. However, since January 2006 the annual average dust deposition levels have been below 4 g/m<sup>2</sup>/month and have not exceeded 2.5 g/m<sup>2</sup>/month since January 2007.<sup>1</sup> Aside from the proximity of the gauge to the extraction activities, there were no identifiable causes of the elevated deposition levels recorded at Lot 3 DP 567166. There have been no complaints from residents near the site since operations commenced until November 2015.

The maximum annual levels at Maroota Public School have been measured to be 4.8 g/m<sup>2</sup>/month but since July 2005 annual average dust deposition levels have been below 4 g/m<sup>2</sup>/month.

The predicted annual average dust deposition levels at all the residences due to the proposed operations are less than 0.3 g/m<sup>2</sup>/month and therefore the current dust deposition level would only be marginally impacted.

### Estimated Emissions

Dust emissions will arise from the operation of the extraction activities. Total dust emissions due to the operation have been estimated by analysing the activities taking place during 2008 and 2028 on the site. Table 2 shows details of the activities and estimated dust emissions during the two years of operation that have been assessed. These estimates assume that an appropriate level of control of dust emissions is achievable through the use of watering carts on all unsealed areas of the active extraction area.

**Table 2 Estimated Dust Emissions of the Proposed Activities (kg/year)**

Activity	2008	2028
Bulldozer activity (clearing vegetation and breaking up sandstone)	9,920	9,920
Excavation of sandstone by front-end-loader	72	72
Dumping to stockpiles by front-end-loader	72	72
Transferring material to processing sites	13,547	11,199
Front-end-loader transfer from stockpiles to crusher	18	18
Crushing	951	951
Front-end-loader transfer from stockpiles to wash plant	18	27

<sup>1</sup> While annual average levels are consistently below the EPA criterion, occasional spikes can result in monthly exceedances. The source of these exceedances is not clear from the available data but may result from agricultural activities and other sand extraction operations in the surrounding area and bushfires. In addition, grazing cattle and a car racing dirt circuit adjoining Lot 3 DP 567166 may have affected results in the past.

Activity	2008	2028
Wet screening	-	-
Front-end-loader transfer from stockpiles to screen	72	72
Dry screening	2,438	2,438
Product stacking from conveyor	72	72
Front-end-loader loading sand to trucks for haulage off-site	139	139
Hauling off-site	27,028	34,399
Wind erosion from exposed areas	7,710	7,710
<b>Total Dust (kg)</b>	<b>62,055</b>	<b>67,087</b>

### Assessment of Air Quality Impacts

The predicted annual average dust deposition levels in 2008 and 2028 at the nearest residences (most sensitive receptors) are predicted to be a maximum of 0.3 g/m<sup>2</sup>/month (at residence 1 located within Lot 3 DP 567166) and 0.5 g/m<sup>2</sup>/month (at residence 2 located within Lot 2 DP 510812) respectively. The majority of the predictions at the residences show no impact at all. Therefore, it is unlikely that the cumulative impact of the proposal with the existing dust deposition levels of 3 g/m<sup>2</sup>/month would result in any additional exceedances of the EPA goal of 4 g/m<sup>2</sup>/month.

Results from the dispersion modelling indicated that off-site dust concentrations at all nearby residences due to the proposed operations would be below relevant air quality goals. The predicted impacts due to this proposal are minimal and unlikely to result in an exceedance of the dust deposition goals. The cumulative impact with existing air quality is also unlikely to result in exceedance of the air quality goals.

### Air Quality Mitigation Measures

The air quality assessment was based on the assumption that PF Formation applied control measures to minimise dust emissions that can be generated from two primary sources; being wind blown dust from exposed areas and dust generated by quarrying activities. The following control procedures were proposed for the management of dust emissions from the quarry. The aim of these procedures is to minimise the emission of dust.

- Disturb only the minimum area necessary for quarrying. Reshape, topsoil and rehabilitate completed extraction areas as soon as practicable after the completion of extraction.
- Maintain stockpiles in a moist condition using water carts to minimise wind-blown and traffic-generated dust.
- All roads and trafficked areas will be watered as required using water trucks/carts to minimise the generation of dust.
- All haul roads will have edges clearly defined with marker posts or equivalent to control their locations.

In October 2015, a manually operated dust suppression system designed by professional irrigation contractors was installed along approximately 1.5km of internal haul roads to help reduce traffic generation of on-site dusts. A mechanical road sweeper and water cart are also available to reduce dust emissions.

## 3. Dust Monitoring Plan

### 3.1 Outline of Dust Monitoring Plan

PF Formation will undertake monthly monitoring of deposited dust levels at one location near Old Northern Road in accordance with the Environment Protection Licence conditions to establish that any dust deposition generated by its activities on the site is within the acceptable limit of 4 g/m<sup>2</sup>/month. Various procedures and corrective actions will be implemented to minimise dust emissions from the site and quarry. A complaints procedure will be followed to address any adverse air quality issues. Results will be reported in the Annual Environmental Management Plans for the site. In addition, a PM<sub>10</sub> dust action plan will be included as part of the overall Dust Monitoring Plan.

### 3.2 Dust Gauge Monitoring Location

The dust deposition gauge formerly located on the site near the common boundary between Lot 3 DP 567166 and Lot 2 DP 510812 was relocated with the consent of the EPA on 3 August 2010 to near Old Northern Road as shown in Figures 1 and 2. The dust deposition gauge was located in accordance with AS/NZS 3580.1.1:2007 *Methods for sampling and analysis of ambient air – Guide to siting air monitoring equipment*.

**Figure 1 Location of Dust Deposition Gauge as Supplied to EPA on 3 June 2010**



**Figure 2 Photograph of Dust Deposition Gauge On-Site**



### 3.3 Air Quality Measurements

As part of the Environment Protection Licence monitoring of particles - deposited matter or dusts is required monthly at one location near Old Northern Road, Maroota. The sampling and analysis of dust deposition will be conducted in accordance with the *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW* (EPA 1998). The units of measurement are grams per square metre per month ( $\text{g/m}^2/\text{month}$ ) and the frequency of sampling is monthly in accordance with sampling method AM-19. Sampling method AM-19 is AS/NZS 3580.10.1:2003 *Methods for sampling and analysis of ambient air – Determination of particulate matter – Deposited matter – Gravimetric method*.

### 3.4 Data Recording and Reporting

The deposited dust and its container will be removed each month and sent under chain of custody procedures to a NATA accredited laboratory for analysis. The monthly results of the dust deposition monitoring will be held at 1774 Wisemans Ferry Road, Maroota and presented in the Annual Environmental Management Plans for the site. This will include an analysis of the monitoring results against the EPA criterion of  $4 \text{ g/m}^2/\text{month}$ , previous monitoring results and the air quality modelling described in the environmental assessment. Any trends in local air quality will be identified and any complaints and non-compliances noted. If applicable, any relevant results from the  $\text{PM}_{10}$  dust action plan for the Maroota area will be included in the annual report.

A meteorological monitoring station will be maintained at PF Formation's weighbridge at 1774 Wisemans Ferry Road, Maroota.

### 3.5 Complaints

Any complaints on air quality issues for the site will be dealt with and recorded in accordance with EPA conditions as follows.

- (a) the date and time of the complaint;
- (b) the method by which the complaint was made;
- (c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
- (d) the nature of the complaint;
- (e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
- (f) if no action was taken by the licensee, the reasons why no action was taken.

Any complaints will be noted and included in the Annual Environmental Management Plans for the site.

### 3.6 $\text{PM}_{10}$ Dust Action Plan

Although not specified in the Environment Protection Licence particulate matter less than 10 microns diameter ( $\text{PM}_{10}$ ) is measured by Dixon Sands (an adjacent sand mine operator) with a continuous ambient particulate monitor using a tapering element oscillating microbalance (TEOM) at a monitoring station located near Maroota Public School.

Dixon Sands have agreed to contact PF Formation in the event the rolling 24-hour average  $\text{PM}_{10}$  result nears or exceeds  $42 \mu\text{g/m}^3$  in working hours. PF Formation has agreed to the following plan in the event they become aware of high  $\text{PM}_{10}$  dust recordings in the Maroota area. The aim is to determine whether PF Formation operations could be a source or contributor to the high results and if this is the case and if there could be a potential impact on the school to take measures to reduce this potential impact.

In the event PF Formation are contacted by Dixon Sands advising that the  $\text{PM}_{10}$  result is near or exceeds the trigger then the plan is as follows.

1. Joshua Graham, Luke Graham and Peter Watt (management team) are all to be advised by telephone/two-way immediately.
2. The current wind direction is to be assessed by them at the weather monitoring station.
3. If the wind direction is from PF Formation operations to the Dixon monitoring location then action must be taken to reduce PF Formation's  $\text{PM}_{10}$  emissions.

4. The management team are to advise all staff to assess all dust generating activities for all areas that could impact the Maroota Public School except for activities solely undertaken to reduce dust impacts.
5. The management team is to evaluate the conditions, liaise with Dixon Sands regarding the status of the rolling 24-hour PM<sub>10</sub> average and undertake necessary dust suppression activities such as watering roads, exposed areas and stockpiles.
6. If the dust levels have not reduced to allowable levels within 1 hour of ceasing dust generating activities and it is within school hours plus 30 minutes then all dust generating activities within the relevant area must stop.

### **3.7 Air Quality Commitments**

The following air quality commitments or safeguard measures will be implemented as required by PF Formation. The Environmental Manager, Mr Joshua Graham and Site Manager/Quarry Manager, Mr Peter Watts will be responsible for implementation of the safeguard measures.

- Only the minimum areas necessary for extraction activities will be disturbed.
- After completion of extraction the areas will be progressively reshaped, topsoiled and rehabilitated.
- Stockpiles will be maintained in a moist condition using a water truck or water cart to minimise wind-blown and traffic-generated dust.
- All haul roads and trafficked areas will be watered as required using a water truck or water cart to minimise the generation of dust.
- The manually operated dust suppression system installed along approximately 1.5km of internal haul roads will be maintained and operated as required.
- All haul roads will have edges clearly defined with marker posts or equivalent to control their locations.
- Checks will be made that there is no visible dust blowing across the site on windy days.
- Exhaust systems and engines of all mobile site plant, equipment and vehicles will be regularly serviced and properly maintained to minimise exhaust emissions and adverse impacts on air quality.
- All internal combustion motors will not be permitted to emit continuous visible smoke for greater than 10 seconds on public lands.
- Trucks entering and leaving the premises that are carrying loads will be covered at all times, except during loading and unloading.
- Mobile equipment used for ripping and loading of friable sandstone will have enclosed cabs to avoid exposure of operatives to generated dust.
- If the annual deposited dust level exceeds 4 g/m<sup>2</sup>/month PF Formation will implement corrective actions within their operations and control.

## **Attachment 8**

### **Erosion and Sediment Control Strategy**

The objective of the erosion and sediment control strategy is to minimise the water quality impacts from erosion and sedimentation by implementing the following principles during operations of the quarry.

- minimise the area of soil disturbed and exposed to erosion through staging of operations.
- conserve topsoil for site rehabilitation in accordance with the rehabilitation plans.
- ensure that all 'dirty' water and sediment from disturbed areas is contained within the sediment basins.
- where possible divert runoff around the quarry site to minimise external runoff flowing into operational areas.
- where possible reuse stormwater for dust suppression and irrigation of rehabilitation areas.
- progressively rehabilitate disturbed lands and final landform in accordance with the rehabilitation plans.
- maintain erosion and control measures appropriately and for the long term.
- review monitoring results and address any implementation problems that may arise.

Each stage of the quarry is internally self-draining and incorporates sediment basins in the low areas to collect runoff. There is normally no discharge to Coopers Creek and erosion and sediment controls will not be needed in the catchment areas for the sediment basins within the quarry.

Copies of *Managing Urban Stormwater: Volume 2E Soils and Construction - Mines and Quarries* and *Soils and Construction 2004* (the Blue Book) are held on site by the Environmental Manager and relevant measures will be implemented and monitored.



## Attachment 9

### Waste Management Plan

Material	Destination for Reuse and Recycling		Destination for Disposal	
	Estimated Volume	On-site	Estimated Volume	Off-site
<b>Surplus extraction material</b>	Varies ~30% of total volume of extracted material	Completely reused as backfill in site rehabilitation	Not applicable	Not applicable
<b>Topsoil</b>	Varies	Stockpiled and completely reused in site rehabilitation	Not applicable	Not applicable
<b>Vegetation</b>	Varies depending on area of extraction	Completely reused on-site for sediment control and as mulch in landscaping	Not applicable	Not applicable
<b>Wash water</b>	~130,000 m <sup>3</sup> per month but varies	Completely recycled and reused on-site	Not applicable	Not applicable
<b>Sullage</b>	Varies	Held in 4,000 litre underground holding tank for off-site disposal at an approved facility	Not applicable	Not applicable
<b>Amenities shed garbage (food scraps, wrappers etc)</b>	~1 m <sup>3</sup> per month	Held on-site in Council wheelie bins	~1 m <sup>3</sup> per month	Council provides weekly service for disposal at landfill
<b>Glass, Plastics, Metals, Paper and Cardboard</b>	~1 m <sup>3</sup> per month	Stockpiled on-site for transfer to waste bins at 1774 Wisemans Ferry Road, Maroota	~1 m <sup>3</sup> per month	Recycled by approved waste contractors with two weekly collection
<b>Oils, lubricants, used filters</b>	~100 litres per month	Held on-site for transfer to waste oil tank at 1774 Wisemans Ferry Road, Maroota	~100 litres per month	Recycled by an approved waste oil contractor