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**STOCKYARD HILL WIND FARM  
PROPOSED QUARRY**

**Environmental Management  
Plan**

**Submitted to:**  
Stockyard Hill Wind Farm Pty Ltd,  
Level 45, Australia Square,  
264-278 George Street,  
Sydney NSW 2000

REPORT



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**Distribution:**

SHWFPL - 1 electronic copy  
Golder Associates - 1 electronic copy





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**RECORD OF ISSUE**

Company	Client Contact	Version	Date Issued	Method of Delivery
Stockyard Hill Wind Farm Pty Ltd	Adam Trethowan	Draft	July 2013	Email
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**Note. All revisions of this Environmental Management Plan must be approved by Stockyard Hill Wind Farm Pty Ltd.**



## **ABBREVIATIONS AND ACRONYMS**

<b>EMP</b>	Environmental Management Plan
<b>Environmental Aspects</b>	An element of an organisation's activities, products or services that can interact with the environment
<b>Environmental Impact</b>	A change in the environment whether adverse or beneficial, wholly or partially resulting from organisation activities, products or services
<b>EPA</b>	Victorian Environment Protection Authority
<b>SHWFPL</b>	Stockyard Hill Wind Farm Propriety Limited
<b>SHWF</b>	Stockyard Hill Wind Farm



### 1.0 INTRODUCTION

Stockyard Hill Wind Farm Pty Ltd (SHWFPL) is proposing to establish the Stockyard Hill Wind Farm (SHWF), a large scale wind energy project with the potential to generate 300-550 MW of electricity. The SHWF is a wind farm with 157 permitted turbines locations located approximately 35km west of Ballarat, between Beaufort and Skipton.

Golder Associates Pty Ltd (Golder) was commissioned by SHWFPL to prepare a Work Plan in support of Application for Work Authority for the operation and development of temporary quarry proposed on Lot 2 PS 604 561 Stockyard Hill – Wangatta Road, Stockyard Hill. The proposed quarry will provide crushed rock required for the construction of the proposed wind farm. Up to approximately 1.2 M tonnes of crushed rock will be required for the entire construction phase of the wind farm for tracks, hardstands and concrete aggregate.

This EMP has been prepared in support of the Work Plan (Golder document reference 137618018-007-R-Rev4 dated 14 November 2013), and considers potential environmental impacts associated with the operation of the quarry and the mitigation measures for those aspects of the environment. It is intended that this EMP will guide the operation of the temporary quarry and should be read in conjunction with the Work Plan.

#### 1.1 Scope of the EMP

The scope of the EMP relates to activities associated with quarry operation at the site, and is limited to potential impacts of these activities. The scope specifically excludes potential impacts that may be associated with other construction activity at the SHWF and related activities.

The EMP has been developed following a review of potential environmental risks that may be associated with site operations, as discussed in Section 2.2, and outlines the environmental management systems and operational processes to manage these risks. The impact of proposed site operations was assessed in relation to studies of ecology, cultural heritage, air quality, noise, blasting and groundwater for the project.

#### 1.2 Purpose

The purpose of the EMP is to describe the environmental management systems and operational processes that will be implemented and maintained throughout the operation of the quarry to mitigate potential environmental impacts that may be associated with site activities.

### 2.0 SITE DETAILS

#### 2.1 Site Conditions and Surrounding Land Use

The site is currently used for grazing cattle and sheep.

The topography of the site is gently undulating, and drains generally towards the north-west. No water courses currently transverse the site. Black Lake is located approximately 1.6 kilometres (km) south-east of the site and an unnamed water course is located approximately 1.2 km west of the site.

The properties surrounding the site to the north, south, east and west are used for farming purposes. A dwelling exists approximately 260m north of the proposed quarry. SHWFPL has purchased this property and will be vacant during the quarry operation, or use it for wind farm purposes such as managing the quarry. A vacant church which has been converted into a dwelling exists approximately 1.3 km east of the proposed quarry which is also owned by SHWFPL. It will remain vacant during the quarry operations or be used for wind farm purposes such as storage.



## 2.2 Operations

The site will be operated as temporary quarry, over approximately 3 years, to support construction activities associated with SHWF, with fresh basalt material being broken by conventional drilling and blasting techniques.

Mobile crushing and screening plant is proposed for the quarry operations and will be located in the proposed crushing and screening area in the north western portion of the site. It is anticipated approximately 700,000 tonnes of material is expected to be extracted over a 7 month period in the first year, with the balance of 500,000 tonnes to be extracted over the remaining life of the quarry.

Prior to commencement of the quarry operations top soil and overburden will be stripped and stored for use during rehabilitation.

During the operation of the quarry, portable site offices and amenities will be established and utilised. Designated parking spaces for employees and visitors will be provided within this area.

A weighbridge and a workshop for equipment repair and maintenance will also be established and utilised at the site. The workshop is expected to store relevant oils and chemicals for maintenance purposes.

The site is proposed to operate between the hours of 7am and 6pm Monday to Friday and 7am and 1pm Saturday.

Following completion of SHWF construction, excavation will cease and the quarry site will be rehabilitated and returned to pasture.

## 3.0 LEGISLATIVE AND POLICY FRAMEWORK

### 3.1 Regulatory Obligations

Environmental management and compliance at the site is broadly governed by the following legislative framework:

- The *Environment Protection Act 1970* (the Act)
- State Environment Protection Policies
- Mineral Resources (Sustainable Development) (Extractive Industries) Regulations 2010.

***Environment Protection Act 1970 (the Act):*** The Act provides the overarching environment protection legislation for Victoria, while also establishing the legal basis for implementation, and enforcement, of the Act's sub-ordinate regulations and policies. From an environment protection perspective the principles of environment protection outlined in the Act form the central basis of decision making regarding the management of environmental risks, and have been used to guide development of the EMP.

***State Environment Protection Policies (SEPPs):*** The SEPPs establish the 'beneficial uses' and values that are to be protected in different segments of the environment. The SEPPs also set out certain policies or provisions to control and reduce environmental pollution, and separate SEPPs have been established for the protection of land, atmosphere, water, groundwater and noise emissions. Essentially, they set objectives to protect the environment from adverse effects, including from pollution caused by waste discharges and noise.

***Mineral Resources (Sustainable Development) (Extractive Industries) Regulations 2010:*** These Regulations provide the basis for the regulation of the mining / extractive industry. Under these Regulations, a Work Plan may be required for extractive operations. The Extractive Industry Work Plan Guideline was published in September 2010 (DSDBI Guideline) to assist proponents of extractive industries to prepare work plans. Further, the DSDBI Guideline provides guidance on environmental management of extractive operations, including guidance on disposal of effluents, protection of groundwater and drainage



and erosion control. The EMP has been in accordance with the guidance provided in the DSDBI Guideline (refer to Section 3.2 for more information).

### 3.2 EMP and Guidelines

This EMP is intended to address the issues identified in *Section 7, Environmental Management Program* of the DSDBI Guideline, and describes the management measures necessary to protect environmental quality.

Table 1 summarises the elements of the DSDBI Guideline (Section 7) and where in this EMP that issue is considered.

**Table 1: DSDBI Guideline Requirements**

<b>Guideline Section</b>	<b>Relevant Section of this EMP</b>
7(a) Disposal of effluent	Sections 6.0, 7.0 and 10.0
7(a) Protection of groundwater	Sections 6.0 and 7.0
7(a) Drainage	Sections 6.0 and 7.0
7(a) Erosion control	Section 6.0
7(b) Control of noise	Section 9.0
7(b) Dust suppression	Section 8.0
7(b) Control of vibration from blasting	Section 9.0
7(c) Surface water monitoring	Section 6.0
7(c) Groundwater monitoring	Section 6.0
7(c) Air quality monitoring	Section 8.0
7(c) Noise and vibration monitoring	Section 9.0
Site security	Section 5.2
Environmental induction and awareness	Section 5.3
Community complaints procedure	Section 5.4
Protection of fauna and flora	Section 5.5
Pest and weed control	Section 5.5
Cultural heritage	Section 5.6
Waste minimisation	Section 10.0
Incident and emergency response	Section 13.0



<b>Guideline Section</b>	<b>Relevant Section of this EMP</b>
Fire preparedness	Section 13.3

## **4.0 RISK ANALYSIS**

Preparation of the EMP is based on a review of potential source-pathway-receptor linkages for each segment of the environment, which may present potential compliance or environmental risks.

For each environmental segment the EMP presents a review of potential risks based on an assessment of the risk posed by potential initiating events to receptors, considering both the likelihood of the event occurring and the consequence of the outcome. The risk assessment is then used to prioritise actions to manage that risk to acceptable levels.

The risk assessments undertaken in the development of the EMP are semi-quantitative, and have been undertaken through a review of existing information and data available for the site and surrounding area, as well as on our experience of similar projects. The risk assessment methodology is presented in Appendix A.

The results of the risk assessment are presented in Appendix B, and includes assessment of initial risks (prior to application of planned control measures) and assessment of residual risk following application of the mitigation measures summarised in the risk matrix and identified in Sections 4.0 to 10.0 below

Procedures to manage environmental risks assessed as 'medium' or 'higher' prior to the application of mitigation measures are described in Sections 4.0 to 10.0 below. The application of mitigation measures described in the EMP are intended to reduce risks identified as 'medium' or higher to 'low'.

Where environmental risks arising from site activities are assessed as being 'low', these activities will be monitored as part of routine site inspections. If additional potential risks are assessed during the course of site activities the EMP will be revised to include specific procedures and mitigation measures where required.

Table 2 below summarises the potential environmental impacts based on the risk assessment process that may be associated with site activities.



**Table 2 Environmental Aspects and Impacts**

Site Activity	Potential Environmental Impacts
Land clearance	<ul style="list-style-type: none"><li>■ Erosion</li><li>■ Generation of sediment laden wastewater</li><li>■ Dust generation</li><li>■ Damage to native flora</li></ul>
Excavation works	<ul style="list-style-type: none"><li>■ Generation of waste soils</li><li>■ Generation of sediment laden wastewater</li><li>■ Noise impacts</li><li>■ Vibration impacts</li><li>■ Dust generation</li></ul>
Stockpiled overburden and top soil	<ul style="list-style-type: none"><li>■ Generation of sediment laden wastewater</li><li>■ Dust generation</li></ul>
Waste Management	<ul style="list-style-type: none"><li>■ Generation of wastes to landfill</li><li>■ Inappropriate waste disposal</li><li>■ Visual pollution (litter)</li><li>■ Leaks from septic tank</li></ul>
Chemicals Management	<ul style="list-style-type: none"><li>■ Generation of waste materials from residual chemicals</li><li>■ Leaks and spills impacting soil, stormwater or groundwater</li></ul>
Resource Usage	<ul style="list-style-type: none"><li>■ Competitive use (local community) of portable water</li><li>■ Depletion of natural resources</li><li>■ Emission of greenhouse gases</li></ul>

## 5.0 GENERAL MANAGEMENT CONDITIONS

This section details general environmental management measures in relation to the EMP, including site security, roles and responsibilities for implementing the EMP, training and awareness requirements and process for managing complaints from members of the public.

Further sections of the EMP presents the management requirements to manage potential risks associated with the different elements of the environment. These will outline the following:

- Management and engineering controls to manage risks
- Timing and responsibilities with regards to implementing controls
- Training required
- Monitoring and reporting requirements
- Typical corrective actions in the event of a risk being realised
- Performance tracking and continuous improvement.



## 5.1 Roles and Responsibilities

SHWFPL has overall responsibility for ensuring the management strategies outlined in this EMP and related documents are implemented. We understand that SHWFPL will appoint a contractor to operate the site on its behalf (the Operator). The EMP has been developed on the basis that the Operator will be responsible for onsite activities and for implementation of the environmental control measures described herein. Table 3 below identifies the main environmental responsibilities in relation to the EMP.

**Table 3: Key Environmental Responsibilities**

Title	Responsibility
SHWFPL	<ul style="list-style-type: none"><li>Overall environmental management and due diligence</li><li>Approval of EMP revisions</li><li>Liaison with regulator(s)</li><li>Dissemination of information to all relevant parties on the environmental requirements</li><li>Taking appropriate action in response to any complaints or expressions of concern</li><li>Reviewing work plans to ensure that the requirements described herein are incorporated</li></ul>
Operator (Site Manager)	<ul style="list-style-type: none"><li>Maintain the EMP and related management documentation.</li><li>Ensure that activities undertaken at the site comply with the requirements of the EMP and related documents</li><li>Monitor performance of the EMP and its application by site personnel</li><li>Undertake EMP audits</li><li>Acting promptly to implement and record corrective actions for non-conformances</li><li>Communicate with community</li><li>Maintain the Complaints and Incidents Register</li><li>Ensure that site personnel receive appropriate environmental induction and awareness training</li><li>Report on the performance in accordance with the EMP to SHWFPL</li></ul>
Site personnel and subcontractors based at the site	<ul style="list-style-type: none"><li>Ensure that they are aware of the requirements of the EMP and related documents</li><li>Ensure their areas of control, works and associated activities comply with the requirements of the EMP and related documents.</li><li>Report incidents, non-conformance or corrective actions to the Site Manager</li><li>Report on controls' performances and improvement opportunities to the Site Manager</li></ul>

## 5.2 Site Security

The site will be securely fenced with gated access that will be securely locked when not in use. All visitors to the site will be required to report to the site office.



### 5.3 Training and Awareness

Prior to commencing work at the site, personnel and subcontractors will receive an Environmental Induction to the site, including the EMP and related environmental management measures. A copy of the EMP and related documents will be maintained onsite by the Site Manager, and it will be located in a position accessible to site personnel and subcontractors.

Site personnel will be familiar with the EMP and will be able to understand it.

Subcontractors are responsible for ensuring personnel are aware of site environmental management measures and adequate resources and/or materials are available to implement these measures. Environmental training for personnel and subcontractors will include, but not be limited to:

- Site induction, including communication of roles and responsibilities and familiarisation with environmental management controls and mitigation described in the EMP.
- Regular site “toolbox” training.
- Daily pre-start meetings covering environmental awareness topics.
- Training in contingency measures.

Additional environmental training will also be provided to specific personnel and sub-contractors by site management, as required.

The Site Manager will maintain an up to date Training Register for the site.

### 5.4 Community Complaints Response

Complaints received from the local community, and the actions taken by SHWFPL to manage or mitigate the cause of the impact noted by the community member, will be managed in accordance with the Stockyard Hill Wind Farm Quarry Stakeholder and Community Engagement Plan. Complaints will be recorded in a Complaint and Incidents Register to be maintained by the Site Manager.

The process for managing complaints will include the following stages:

- Preliminary contact – All complaints received will be recorded in a Contact Record Sheet which includes details of the complaint, complainant details and any immediate action taken.
- Preliminary investigation – The complaint/incident details will be entered into a Complaint Register and a decision reached as to whether the complaint is bona-fide. The complainant will be contacted in writing at this stage.
- Assigned actions – Actions will be assigned in the Complaints and Incidents Register to respond to the complaint.
- Proposed action – Communication with the complainant to discuss the proposed action will be organised. Once the actions are agreed the complaint will be closed off and recorded in the Complaints and Incidents Register.
- Failure to resolve a complaint – If a complaint is unable to be resolved the complainant should be notified and the complaint case should remain open and be reviewed at regular intervals.

For further details associated with community complaints refer to Stockyard Hill Wind Farm Quarry Stakeholder and Community Engagement Plan included in Appendix H of the Work Plan.



### 5.5 Conservation and Sensitive Locations

Ecology and Heritage Partners (E & H Partners) have conducted an ecology survey at the site, described in the document *Stockyard Hill Wind Farm: Detailed Flora and Fauna Surveys of the Proposed Quarry Site, Stockyard Hill* (July 2013). The survey identified the following three ecological features at the site that require conservation management:

- Plains Grassland Ecological Vegetation Class (EVC)
- Stony Rise Woodland EVC
- A scattered indigenous tree.

Potential impacts to fauna and flora associated with construction activities, identified by E & H Partners include:

- Removal and/or indirect impacts to the above-mentioned flora species
- Introduction and spread of weeds
- Removal of potential habitat (assessed as low likelihood) of the Striped Legless Lizard listed under the *Environment Protection and Biodiversity Conservation Act 1999*

The following mitigation measures will be implemented to address potential impacts to fauna and flora:

- While native vegetation that is classified as Minor Treeless Vegetation will be removed (and does not meet the threshold for remnant vegetation patch), no remnant vegetation patches or scattered indigenous trees will be removed from the site. Refer to Appendix G of the Work Plan for further information on the extent and types of native vegetation
- Site operations, including ground disturbance, stockpiling of soils and storage and operation of plant and machinery, will not occur within an area of 12 metres around the tree and remnant patches of native vegetation
- The tree and a 12 metre 'no go zone' will be protected by fencing. Signage on the fencing will state that the area is not to be disturbed
- A Striped Legless Lizard Salvage and Translocation Plan will be developed before construction commences. This has been recommended as a precautionary measure given the low probability of occurrence of the species within the quarry areas
- The spread of weeds and pathogens will be minimised through the implementation :
  - Vehicles entering and exiting the site will be visually inspected for weeds, and where required vehicles will be cleaned prior to exiting the site
  - All vehicles exiting the site will pass through a wheel wash to remove soil and weeds prior to leaving the site
  - Site personnel will be made aware of potential risks associated with removing soil and weeds from the site
  - Weeds will be controlled using chemical products with herbicidal action registered by the Australian Pesticides and Veterinary Medicines Authority. Any products used will be applied by personnel experienced and trained in the application of such products



## **5.6 Cultural Heritage**

A Desktop Cultural Heritage Assessment entitled *Stockyard Hill Wind Farm Desktop Cultural Heritage Assessment* (December 2008), was completed for the investigation areas by Tardis Enterprises. The desktop assessment did not identify any areas of cultural heritage sensitivity within the site.

A voluntary Cultural Heritage Management Plan (CHMP) is being developed for the site. Mitigation measures and recommendations made in this CHMP will be adopted and the EMP will be revised to reflect this update.



## 6.0 EROSION, SEDIMENT AND WATER QUALITY MANAGEMENT

The primary objectives of the erosion, sediment and water management component of the EMP are as follows:

- Filter and settle sediment from stormwater that has been in contact with the excavation.
- Prevent sediment laden stormwater runoff from adversely impacting on surface waters.
- Prevent soil erosion and sediment impacting water courses.
- Minimise land disturbance and prevent the removal of remnant native vegetation patches and scattered indigenous trees.

The EMP has assessed potential issues that may present environmental risks at the site. Putting into place control measures aimed at mitigating environmental risks will assist in avoiding adverse impacts to the environment via various pathways at the site. These control measures, monitoring and reporting requirements associated with erosion, sediment and stormwater runoff are identified in Table 4.

**Table 4: Erosion, Sediment and Water Quality Management Procedure**

Management Requirement	Actions and Strategies
Key Performance Indicators	<ul style="list-style-type: none"> <li>■ No sediment being discharged to the local environment.</li> <li>■ Erosion prevented or minimised.</li> <li>■ No adverse impact on groundwater</li> </ul>
Mitigation Measures	<ul style="list-style-type: none"> <li>■ Establishment of a water dam for sediment control and collection of run off prior to commencing operations at the site, located consistent with natural drainage of the site. The water dam will be sited and designed to achieve the key performance indicators</li> <li>■ Stormwater from the crushing and screening plant area will be directed to a dedicated pond for sediment control. This pond will then drain to the surrounding paddock</li> <li>■ Runoff from site process areas directed to the water dam</li> <li>■ Additional sumps and any necessary settling dams to be developed as excavation progresses, with collected water directed to the water dam.</li> <li>■ Vehicles are to be kept to defined roads within the site</li> <li>■ A rumble-pad or wheel wash are to be established at the site to remove sediment from site vehicles prior to leaving the site</li> <li>■ Routine sweep of external roads connecting to the site</li> <li>■ Work schedules will be arranged so that stockpiles do not remain unstabilised for long periods</li> <li>■ No removal of remnant native vegetation patches and scattered indigenous trees</li> <li>■ Temporary erosion and sediment controls must be implemented to prevent sediment and sediment laden water leaving the site. Controls may include the use of sand bags, booms, earthen bunds and/or straw bales. Silt fencing may be used during periods of excessive wet weather</li> <li>■ Overburden stockpiles to be seeded/ vegetated</li> <li>■ Excavation is to be undertaken so as not to intersect with the groundwater table (deepest excavation is proposed at least 10 m above approximate depth of groundwater)</li> <li>■ Low composition ammonium nitrate explosives will be used (similar in</li> </ul>



	composition to agricultural fertilisers)
<b>Monitoring and Reporting</b>	<ul style="list-style-type: none"> <li>■ Inspections and quarterly monitoring of the quality and capacity of the water dam</li> <li>■ Site employees must report incidents and non-conformances relating to stormwater management to the Site Manager</li> <li>■ Quarterly groundwater level monitoring to confirm the variation of groundwater elevations directly beneath the site</li> <li>■ One additional round of groundwater monitoring prior to commencement of operations associated with the construction of the quarry and its infrastructure</li> <li>■ Biannual groundwater monitoring to assess changes in groundwater quality directly beneath the site</li> </ul>
<b>Non-conformances</b>	<p>Typical examples of non-conformances include:</p> <ul style="list-style-type: none"> <li>■ Contaminated stormwater discharged beyond the boundary of the site</li> <li>■ Failure to maintain the integrity of the site's bunds, silt traps, onsite dam</li> <li>■ Failure to clean up spills</li> <li>■ Non-conformance with management procedures</li> </ul> <p>Incident or non-conformance is to be documented in the Complaints and Incidents Register</p>
<b>Corrective Actions</b>	<p>Corrective actions will be specific to the non-conformance and may include:</p> <ul style="list-style-type: none"> <li>■ A review of the engineering specifications of bunding</li> <li>■ A review of the capacity of the water dam</li> <li>■ Appropriate clean-up of spills / leaks</li> <li>■ A review of the operational and systematic controls and mitigation measures.</li> <li>■ A review of the training of personnel as required</li> <li>■ If significant groundwater is encountered during excavation activities, a Groundwater Management Plan (GMP) is to be developed for the site that details specific procedures for monitoring and controlling groundwater</li> </ul>
<b>Specific Additional Training</b>	<ul style="list-style-type: none"> <li>■ Spill response training</li> <li>■ Awareness of the impacts to the environment of contaminated stormwater runoff</li> </ul>
<b>Relevant Records and Forms</b>	<ul style="list-style-type: none"> <li>■ Monitoring and maintenance records for the water dam</li> <li>■ Complaints and Incidents Register</li> </ul>



## 7.0 CHEMICALS MANAGEMENT

The primary objective of the chemicals management component of the EMP is to ensure that stormwater, soils and groundwater do not become contaminated with chemicals, oils and/or fuels.

The EMP has assessed potential issues that may present environmental risks at the site. Putting into place control measures aimed at mitigating environmental risks will assist in avoiding any adverse impacts to the environment from various pathways at the site. The control measures, further monitoring and reporting requirements are included in Table 5.

**Table 5: Chemicals Management Procedure**

Management Requirement	Actions and Strategies
Key Performance Indicators	<ul style="list-style-type: none"> <li>■ No spills or leaks of chemicals outside bunding</li> <li>■ All chemicals stored and used in such a manner so as to prevent spills and leaks</li> </ul>
Mitigation Measures	<ul style="list-style-type: none"> <li>■ A spill kit is to be available at all times for use</li> <li>■ Any major servicing and/or repairs are to be undertaken within the workshop or designated area.</li> <li>■ When onsite refuelling of plant and equipment is required, refuelling is to occur on impervious areas, away from drainage points, water course and stormwater drains, and will be undertaken in a temporary bunded area (e.g. over a drip tray, or within sediment sock bund)</li> <li>■ Chemicals must be stored and spills cleaned up in accordance with the Material Safety Data Sheets (MSDS)</li> <li>■ Oils, fuels, chemicals and wastes will be stored in designated storage areas within hard-stand surfaces, with appropriate bunding around the perimeter</li> <li>■ Limited volumes of fuels, greases, oils and chemicals will be stored onsite.</li> <li>■ Stored fuels, fluids, and chemicals are to be in clearly labelled, sealed containers</li> <li>■ Chemicals and fuels will not be stored in close proximity to stormwater drains</li> <li>■ Any waste oil from machinery or maintenance workshop to be stored in suitable containers and removed from the site by an EPA-accredited contractor</li> <li>■ Vehicle wash down and/or equipment wash out is to occur in a designated areas positioned away from drainage points, water dam and stormwater drains</li> </ul>
Monitoring and Reporting	<ul style="list-style-type: none"> <li>■ Routine inspections are to be conducted on bunding and the storage of fuels and oils</li> <li>■ Plant and equipment must be inspected upon arrival at the site and on a regular basis to detect and immediately rectify leakages of fuel, oil, hydraulic fluid, grease. Machinery and equipment found leaking must be repaired (where possible offsite) or replaced immediately. Damaged or leaking plant and equipment must be reported to the Site Manager immediately</li> <li>■ Site employees must report incidents and non-conformances relating to storage and use of chemicals to the Site Manager</li> </ul>



## STOCKYARD HILL WIND FARM PROPOSED QUARRY EMP

<b>Non-conformances</b>	<p>Typical examples of non-conformances include:</p> <ul style="list-style-type: none"><li>■ Failure to manage and remediate spills</li><li>■ Failure to undertake major service or repair of equipment and vehicles in designated areas</li><li>■ Failure to retain MSDS for chemicals used or stored on site</li><li>■ Inadequate or inappropriate storage conditions Inadequate spill kits provided</li><li>■ Non-conformance with management procedures</li></ul> <p>Incidents or non-conformances are to be documented in the Complaints and Incidents Register</p>
<b>Corrective Actions</b>	<p>Corrective actions will be specific to the non-conformance and may include:</p> <ul style="list-style-type: none"><li>■ Appropriate clean-up of spills/leaks</li><li>■ The provision of additional or required type of spill kit</li><li>■ Changes to the storage of chemicals to satisfy required conditions</li><li>■ Review design and maintenance of bunds.</li><li>■ A review of the training of personnel as required</li><li>■ A review of the operational and systematic controls and mitigation measures</li></ul>
<b>Specific Additional Training</b>	<ul style="list-style-type: none"><li>■ Spill response training</li><li>■ Toolbox talks on chemical management</li></ul>
<b>Relevant Records and Forms</b>	<ul style="list-style-type: none"><li>■ Monitoring and maintenance records for storage areas</li><li>■ Waste Certificates for the disposal of any prescribed industrial wastes</li><li>■ MSDS</li><li>■ Complaints Register and Incidents Register</li></ul>



## 8.0 AIR AND DUST EMISSIONS MANAGEMENT

The primary objectives of the air emission management controls of the EMP are as follows:

- To minimise odorous and dust emissions generated by operations at the site.
- To minimise the potential for disturbance to the local population.

The EMP has assessed potential issues that may present environmental risks at the site. Putting into place control measures aimed at mitigating environmental risks will assist in avoiding adverse impacts to the environment from potential air emissions from the site. Control measures, monitoring and reporting requirements associated with air emissions are described in Table 6.

**Table 6: Air and Dust Emissions Management Procedure**

Management Requirement	Actions and Strategies
<b>Key Performance Indicators</b>	<ul style="list-style-type: none"> <li>■ No complaints received from community or site personnel</li> <li>■ No odour detected beyond the boundary of the premises</li> <li>■ No visible dust beyond the boundary of the premises</li> </ul>
<b>Mitigation Measures</b>	<ul style="list-style-type: none"> <li>■ All equipment and vehicles are to be maintained and serviced to minimise potential odorous emissions</li> <li>■ Water sprays are to be used to minimise dust emissions in and around the excavation</li> <li>■ A water cart is to be used around the stockpiles, overburden dump, internal roads, stripping areas and ground bins during dry conditions to minimise dust generation</li> <li>■ Stockpiles are to be pre-wet before loading onto trucks</li> <li>■ Stockpile slopes and heights are to be minimised where possible</li> <li>■ Weather conditions are to be monitored and communicated at the inception of each day to guide water cart use and restriction of dust generating activities</li> </ul> <p>Dust suppression activities using the water cart and water sprayers to be conducted in the following manner:</p> <ul style="list-style-type: none"> <li>■ A toolbox meeting to be held each morning to discuss weather conditions expected for the day and whether dust suppression is recommended</li> <li>■ An assessment of ground conditions to be conducted each day to determine need for the water cart to operate Reporting of changes in ground conditions will occur through operational reporting processes</li> </ul>
<b>Monitoring and Reporting</b>	<ul style="list-style-type: none"> <li>■ Number of dust related complaints received</li> <li>■ Site personnel must report incidents and non-conformances relating to air emissions management to the Site Manager</li> <li>■ Dust monitoring is to be undertaken consistent with the requirements of the EPA <i>Protocol for Environmental Management - Mining and Extractive Industries (December 2007)</i>. An Air Quality Monitoring Plan (AQMP) will be developed that will take into account dust deposition and implementation of reactive management practices. The AQMP will describe monitoring location and equipment</li> <li>■ Monitoring frequency and requirements to be assessed after 12 months operation</li> </ul>



<b>Non-conformances</b>	<p>Typical examples of non-conformances include:</p> <ul style="list-style-type: none"><li>■ Visible dust emissions impacting on sensitive uses</li><li>■ Confirmed/validated third-party complaints of dust and/or odour emissions from the site</li><li>■ Failure to assess dust generation and apply appropriate dust suppression methods</li><li>■ Non-conformance with management procedures</li></ul> <p>Incidents or non-conformances are to be documented in the Complaints and Incidents Register</p>
<b>Corrective Actions</b>	<p>Corrective actions will be specific to the non-conformance and may include:</p> <ul style="list-style-type: none"><li>■ Immediate application of water cart to stockpiles, areas around the excavation and internal roads</li><li>■ Cease all high risk dust generating activities at the site until the root cause is identified and rectified</li><li>■ A review of the operational and systematic controls and mitigation measures</li><li>■ A review of the training of personnel as required</li></ul>
<b>Specific Additional Training</b>	<ul style="list-style-type: none"><li>■ Training in monitoring to specific employees</li><li>■ Awareness of the impacts to the environment and local population from odour emissions and dust generation</li><li>■ Toolbox talks discussing the values of effective odour and dust attenuation, working safely with dust, minimising vehicle movements, etc</li></ul>
<b>Relevant Records and Forms</b>	<ul style="list-style-type: none"><li>■ Toolbox forms</li><li>■ Inspection records of ground conditions</li><li>■ Complaints and Incidents Register</li></ul>



## 9.0 NOISE AND VIBRATION MANAGEMENT

The primary objectives of the noise management component of the EMP are as follows:

- To minimise noise and vibration generated by activities at the site.
- To minimise the potential for disturbance and disruption to surrounding local population.

The EMP has assessed potential issues that may present environmental risks at the site. Putting into place control measures aimed at mitigating environmental risks will assist in avoiding any adverse impacts to the environment from potential noise emissions from the site. These control measures, monitoring and reporting requirements associated with noise emissions are described in Table 7.

**Table 7: Noise and Vibration Management Procedure**

Management Requirement	Actions and Strategies
Key Performance Indicators	<ul style="list-style-type: none"> <li>■ No noise above 46dB(A) at any sensitive receptors that results from noise generated by site operations</li> <li>■ No complaints received from local community</li> <li>■ No complaints received from site personnel</li> <li>■ All non-conformances are reported and rectified</li> </ul>
Mitigation Measures	<ul style="list-style-type: none"> <li>■ Drilling and blasting methodology will occur in accordance with recommendations given in Terrock Consulting Engineers' document <i>Effects of Blasting, Stockyard Hill Wind Farm Quarry (WA 1518)</i> (22 August 2013)</li> <li>■ All equipment, machines and vehicles on site are to maintain the quietest reasonable standard consistent with operational requirements, and are to be routinely maintained to ensure effectiveness of noise suppression systems and equipment</li> <li>■ Operational hours (unless otherwise agreed by the Responsible Authority) to be restricted to: 7am to 6pm on Mondays to Fridays 7am to 1pm on Saturdays</li> <li>■ Minimise the reversing of vehicles to reduce reverse signal noise</li> <li>■ The use of 'quackers' broadband frequency type reversing alarms on any mobile equipment</li> <li>■ Vehicles not to use horns as signalling devices where it does not affect the safety of the workforce</li> <li>■ Service or replace equipment exhibiting noisy operation</li> <li>■ Maximum two trucks on loading crushed rock at any time</li> <li>■ Avoid dropping materials from excavator bucket from a height when loading into trucks</li> <li>■ Plant generating unidirectional noise emission should be orientated such that the noise is directed away from sensitive receivers</li> <li>■ Machines used intermittently to be shut down or throttled down to a minimum when not in use</li> <li>■ Mufflers to be fitted on all vehicles and equipment</li> <li>■ Through site induction programmes, all personnel and contractors are to be informed of the importance of managing noise levels and their responsibilities during the extractive phase of the project</li> </ul>
Monitoring and Reporting	<ul style="list-style-type: none"> <li>■ Vibration monitoring will be undertaken for the first three blasting events</li> </ul>



## STOCKYARD HILL WIND FARM PROPOSED QUARRY EMP

<b>Management Requirement</b>	<b>Actions and Strategies</b>
	<p>to validate the modelling undertaken by Terrock Consulting. Thereafter, subject to no impacts of blasting being reported at the nearest residence, monitoring will be discontinued.</p> <ul style="list-style-type: none"><li>■ All site employees must report any incidents and non-conformances relating to noise management to the Site Manager</li><li>■ All received complaints must be recorded and reported to the Site Manager</li><li>■ Following receipt of noise complaints, attended and/or unattended noise monitoring of the plant should be undertaken at the nearest sensitive receivers</li></ul>
<b>Non-conformances</b>	<p>Typical examples of non-conformances include:</p> <ul style="list-style-type: none"><li>■ Confirmed noise monitoring results that exceed the limits prescribed in EPA Publication Noise In Regional Victoria at a sensitive receptor</li><li>■ Vehicles/equipment not adequately maintained in accordance with the maintenance schedule</li><li>■ Non-conformance with management procedures</li></ul> <p>Incidents or non-conformances are to be documented in the Complaints and Incidents Register</p>
<b>Corrective Actions</b>	<p>Corrective actions will be specific to the non-conformance and may include:</p> <ul style="list-style-type: none"><li>■ A review of the operational and systematic controls and mitigation measures</li><li>■ A review of the training of personnel as required</li></ul>
<b>Specific Additional Training</b>	<ul style="list-style-type: none"><li>■ Increased site personnel's awareness of noise impacts</li><li>■ Toolbox talks discussing the values of effective noise and vibration attenuation, working safely with noise and vibration, minimising vehicle movements, etc</li></ul>
<b>Relevant Records and Forms</b>	<ul style="list-style-type: none"><li>■ Noise monitoring records</li><li>■ Plant and machinery maintenance records</li><li>■ Complaints and Incidents Register</li></ul>



### 10.0 WASTE MANAGEMENT

Waste minimisation and management during operation of the site will follow the waste hierarchy as follows:

- Waste avoidance and/or reduction (most preferred)
- Reuse
- Recycling
- Disposal (least preferred).

The primary objectives of the waste management component of the EMP are as follows:

- Minimise waste and adopt reduce, re-use, recycle principles.
- Securely contain waste in bins and skips for the shortest period of time possible.
- The final destination must be considered before sending waste off site to ensure responsible disposal - adopt the waste hierarchy principles.
- Comply with statutory requirements.

The EMP has assessed potential issues that may present environmental risks at the site. Putting into place control measures aimed at mitigating environmental risks will assist in avoiding any adverse impacts to the environment from waste production at the site. These control measures, monitoring and reporting requirements to minimise waste production are recommended in Table 8.

**Table 8: Waste Management Procedure**

Management Requirement	Actions and Strategies
<b>Key Performance Indicators</b>	<ul style="list-style-type: none"> <li>■ Waste segregated appropriately</li> <li>■ Waste removed/reused/disposed of at regular intervals</li> <li>■ No excessive litter dispersal at the site</li> <li>■ Proper storage and treatment of sewerage at the site</li> <li>■ All disposal of waste in accordance with statutory requirements</li> </ul>
<b>Mitigation Measures</b>	<ul style="list-style-type: none"> <li>■ Assess the number and locations of waste bins around the site</li> <li>■ Waste must be stored in a safe and secure way to prevent land and water contamination</li> <li>■ Waste will be stored in such a manner that it is secured and does not attract vermin</li> <li>■ Ensure that bins and skips are designed and labelled, to hold the intended waste stream securely</li> <li>■ Waste will not be buried or burned on site</li> <li>■ Waste streams must be segregated at the source</li> <li>■ Re-usable materials are to be segregated and stored in a specified location</li> <li>■ Materials not suitable for reuse on the site will be stored in sealed drums / containers and collected for disposal at facilities licensed to receive the waste</li> <li>■ A portable amenities building are to be established utilising an approved septic toilet system</li> <li>■ Septic tank must be regularly inspected, monitored and maintained as required</li> </ul>



<b>Management Requirement</b>	<b>Actions and Strategies</b>
<b>Monitoring and Reporting</b>	<ul style="list-style-type: none"> <li>■ Monitor and report to Site Manager on waste volumes generated at the site</li> <li>■ Inspection and cleaning of septic tanks</li> <li>■ Site employees must report incidents and non-conformances relating to air emissions management to the Site Manager</li> </ul>
<b>Non-conformances</b>	<p>Typical examples of non-conformances include:</p> <ul style="list-style-type: none"> <li>■ spills/leaks from septic tank</li> <li>■ litter leaving the site</li> <li>■ waste deposited outside of designated bins</li> <li>■ waste stream contamination</li> <li>■ failure to regularly inspect and pump clean septic tanks</li> <li>■ non-conformance with management procedures</li> </ul> <p>Incidents or non-conformances are to be documented in the Complaints and Incidents Register</p>
<b>Corrective Actions</b>	<p>Corrective actions will be specific to the non-conformance and may include:</p> <ul style="list-style-type: none"> <li>■ A review of the number, type and location of bins</li> <li>■ Collection of off-site litter</li> <li>■ A review of the operation, engineering design and maintenance of the septic tank</li> <li>■ A review of the operational and systematic controls and mitigation measures</li> <li>■ A review of the training of personnel as required</li> <li>■ Consider additional waste management methods</li> </ul>
<b>Specific Additional Training</b>	<ul style="list-style-type: none"> <li>■ Toolbox talks on effective waste management</li> </ul>
<b>Relevant Records and Forms</b>	<ul style="list-style-type: none"> <li>■ Septic tank inspection and maintenance records</li> <li>■ Waste volume records</li> <li>■ Waste disposal certificates</li> <li>■ Complaints and Incidents Register</li> </ul>



## 11.0 RESOURCE USE MANAGEMENT

The primary objectives of resource use management are to use resources prudently and to re-use resources where practicable.

These control measures, monitoring and reporting requirements are described in Table 9.

**Table 9: Resource Management Procedure**

Management Requirement	Actions and Strategies
Key Performance Indicators	<ul style="list-style-type: none"><li>Undertake operations to avoid unnecessary use of town water supply, electricity and fuel</li></ul>
Mitigation Measures	<ul style="list-style-type: none"><li>Develop indicators and performance measures that establish targets for use of town water supply, electricity and fuel</li></ul>
Monitoring and Reporting	<ul style="list-style-type: none"><li>Routine monitoring and reporting to the Site Manager in accordance with the KPIs to be developed</li></ul>
Non-conformances	<p>Typical examples of non-conformances include:</p> <ul style="list-style-type: none"><li>Failure to meet KPIs established</li><li>Non-conformance with management procedures</li></ul> <p>Incidents or non-conformances are to be documented in the Complaints and Incidents Register</p>
Corrective Actions	<ul style="list-style-type: none"><li>The commissioning of additional rainwater tanks</li><li>Commissioning or hiring of diesel fuelled equipment and vehicles</li><li>A review of the operational and systematic controls and mitigation measures</li><li>A review of the training of personnel as required</li><li>Consider additional resource management methods</li></ul>
Specific Additional Training	<ul style="list-style-type: none"><li>Toolbox talks on effective resource management</li></ul>
Relevant Records and Forms	<ul style="list-style-type: none"><li>Resource use records</li></ul>



## 12.0 SUMMARY OF ENVIRONMENTAL MONITORING

Table 10 below provides a summary of the environmental monitoring proposed for the various aspects of the environment discussed within this EMP.

**Table 10: Summary of Environmental Monitoring**

Environmental Aspect	Location	Rationale	Frequency	Parameters
Water	Water Dam	Measurement of water quality and volume in dam	Quarterly	pH, temperature, conductivity, turbidity, visible oil, TPH
	Groundwater wells	To confirm the variation of groundwater elevations directly beneath the site	Quarterly	Groundwater elevations
		To confirm groundwater elevations prior to commencement of operations associated with the construction of the quarry and its infrastructure	Once prior to commencement of quarrying	Groundwater elevations
		To assess changes in groundwater quality directly beneath the site	Biannual	pH, total dissolved solids (TDS), electrical conductivity ( $\mu\text{S}/\text{cm}$ ), major ions (calcium, potassium, magnesium, sodium, chloride, sulphate, carbonate alkalinity (as $\text{CaCO}_3$ ), bicarbonate alkalinity (as $\text{CaCO}_3$ ), total alkalinity (as $\text{CaCO}_3$ ), manganese, total iron, ammonia (as nitrogen), nitrate (as nitrogen), nitrite (as nitrogen), total nitrogen (as nitrogen), TPH, BTEX
Air (Dust)	At suitable locations on the boundary of the site (precise locations to be confirmed)	To assess dust concentrations in air.	Annual assessment to be conducted for first year of operation. Monitoring frequency and requirements to be assessed after 12 months operation	PM10 ( $\mu\text{g}/\text{m}^3$ )
Vibration from Blasting	At suitable locations on the boundary of the site (precise locations to be confirmed)	To validate the vibration modelling undertaken by Terrock Consulting	First three blasting events	Vibration levels



### 13.0 INCIDENT AND EMERGENCY RESPONSE

Implementation of the EMP will limit the potential for system failures and impacts to the environment occurring. In the event of a failure of process, where a risk to the environment or offsite receptors is realised, this section will present the actions to be applied in managing the issue. The roles and responsibilities, and key contact details are provided, relative to the segment of the environment impacted by the incident.

An incident or non-conformance will be documented in the Complaints and Incidents Register, stating the nature of the non-conformance and the actions implemented to rectify the problem. In each section of the EMP discussion will be provided on who must be notified in response to an incident.

Where necessary, the preventative actions identified to mitigate a future reoccurrence of the issue will be included in a revision of the EMP.

#### 13.1 Emergency Contact Details

Contacts for emergencies have been outlined in Table 11 below.

**Table 11: Emergency Contacts**

Contact	Phone Number
Site Manager	TBA
Fire and Emergency Services	000
EPA Pollution Watchline	1300 372 842
Country Fire Authority	000
Country Fire Authority District 16	03 – 5352 9600
Glenelg Hopkins Catchment Management Authority	03 - 5571 2526
Aboriginal Affairs Victoria	03 - 9651 5111
State Emergency Services	132 500

#### 13.2 Environmental Incidents

Incident response during operations will comply with site-specific emergency response requirements. The Site Manager should be contacted in the event that an environmental incident occurs.

The following process will be followed in addressing environmental incidents during operation:

- Stop action(s) causing the incident (e.g. switch-off equipment), if safe to do so.
- Stop all work in the immediate vicinity of the incident until advised to continue work by the Site Manager.
- Notify the Site Manager immediately.
- If there is a fuel or chemical spill, use spill response equipment, for example, booms or sandbags to contain the spill, and use absorbent material to clean up the spill.
- Dispose any contaminated spill containment materials to an appropriately licensed landfill.



- Ensure that the problem rectified and preventive measures are implemented to prevent a recurrence of the incident.
- The Site Manager will notify relevant authorities where required.

When an environmental incident occurs, regardless of its scale or nature, the Site Manager is to be notified of the incident immediately. All necessary steps are to be taken to contain the incident, and its impact within the site.

In the event that an environmental incident results in the offsite discharge of contaminants to the environment that cannot be satisfactorily rectified within 24 hours, the Site Manager will contact EPA via the EPA Pollution Watchline on 1300 372 842. The Site Manager will follow the instructions of the attending EPA Officer.

The Site Manager will inform SHWFPL management of the incident, and actions taken to mitigate impact to the environment. The incident and response will be recorded in the Complaints and Incidents Register to be maintained as part of the sites health, safety and environment procedures.

### 13.3 Fire Management

An emergency response procedure will be developed in consultation with Country Fire Authority (CFA) District 16 and local brigades for responding to fire related incidents at the site. The measures summarised below will be implemented to reduce the environmental risks that may be associated with fire related incidents:

- Plant areas and access roads will be cleared of vegetation. Grass within approximately 2-3 metres either side of access roads will be slashed and maintained at a height not exceeding 10 centimetres.
- Plant and vehicles will carry fire extinguishers that meet requirements in accordance with guidance provided in the Australian Standard 2444.1 *Portable Fire Extinguishers and Fire Blankets - Selection and Location*.
- No blasting will be undertaken on days of Total Fire Ban
- Activities such as welding, cutting or grinding will not be undertaken on days of Total Fire Ban. Where undertaken at other times they will be undertaken in accordance with CFA requirements, including but not limited to the following:
  - Cutting, welding and grinding equipment will be operated with a fire-resistant shield or guard in place to prevent sparks.
  - The work area will include at least 1.5 m clearance of flammable material.
  - Water supply will be easily accessible and available at all times during the works.
  - Cut-offs and electrode stubs will be placed in fireproof bins for offsite removal.
- Mobile water facilities (e.g. water truck with minimum capacity of 10,000 litres) will be supported by portable pump and hose to be used for fire protection. Water for fire fighting operations will be obtained from the onsite water dam
- Fuel and other flammable chemicals will be stored in accordance with the requirements of the Australian Standard AS1940: *The Storage and Handling of Flammable and Combustible Liquids*



### **13.4 Non-conformance with the EMP**

Any non-conformance with the requirements of the EMP will be documented in the Complaints and Incidents Register, stating the nature of the non-conformance and the actions implemented to rectify the problem.

The Site Manager will be notified of any non-conformance within 24 hours of the incident occurring. However, if it appears that legislation has been breached the above personnel must be immediately notified. Corrective/preventative action will be taken within a timely manner (e.g. within seven days of the event occurring) to ensure that the issue is addressed.

Where necessary, the preventative actions identified will be included in a revision of the EMP.

### **14.0 REVIEW AND CONTINUAL IMPROVEMENT**

The EMP is based on typical risks likely to be encountered during site works, and therefore describes general controls and mitigation measures. A further risk review will be undertaken prior to commencement of excavation activities to refine the controls as required to reduce the identified risks to acceptable levels. The risk register will be revised at this point if controls differ from those already implemented.

After 6 months of commencement of operations, a review is required for the implementation and appropriateness of the EMP. Any appropriate updates will be undertaken if required.



## Report Signature Page

### GOLDER ASSOCIATES PTY LTD

Alice Greenhill  
Environmental Scientist

Nalini Naidoo  
Senior Environmental Scientist

ALG-NN/BED/alg-nn

A.B.N. 64 006 107 857

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# APPENDIX A

## Risk Assessment Methodology



## RISK ASSESSMENT METHODOLOGY

The assessment of risk provided in this Appendix considers

- Site activities prior to the application of mitigation measures.
- Residual risk following application of mitigation measures

The risk assessment is intended to assist in identifying which aspects require mitigation measures to be incorporated in the EMP.

As shown in Figure 1, the level of risk is assessed using a semi-quantitative matrix by considering the likelihood of a risk occurring and the consequence if it does. In the first instance the level of potential hazard, or risk ranking, is the first order of prioritisation, followed by the risk ranking score (Likelihood X Consequence). For example, a 'Very High' level risk with a low likelihood of occurrence would be prioritised for monitoring or action, in advance of a 'High' level risk with a moderate-to-high likelihood of occurrence. The identification of risks has focused on:

- **Source identification.** Considering both sources and events, these may include potential emission sources, and may relate to the quarry design, or its operation.
- **Pathway identification.** These may include atmospheric conditions, geological fractures, groundwater flow, surface water flow, soil pore space migration, diffusion through air or direct physical contact by site personnel.
- **Receptor identification.** These may include on-site personnel or neighbouring residents, as well as the receiving environments (air, surface water, groundwater and land).

Where a source of risk exists, but a pathway or a receptor does not exist, the likelihood of an adverse outcome is negligible. The inverse of this may be significant; however, this depends on the magnitude of the consequence of an adverse outcome. The assessment of "likelihood" and "consequence" is a central component to the overall risk analysis.

Figure 1: Risk Matrix

Consequence	Likelihood				
	Almost Certain (5)	Likely (4)	Probable (3)	Not Likely (2)	Rare (1)
Severe (5)	V 25	V 20	V 15	V 10	H 5
Significant (4)	V 20	V 16	V 12	H 8	H 4
Medium (3)	V 15	H 12	H 9	M 6	M 3
Minor (2)	H 10	H 8	M 6	L 4	L 2
Negligible (1)	H 5	M 4	L 3	L 2	L 1

EPA Publication 1321.1 May 2010

- V = Very high risk; immediate action required.
- H = High risk; management required.
- M = Medium risk; specify required management.
- L = Low risk; manage with standard operating procedures.



# **APPENDIX B**

## **Risk Assessment Results**



## APPENDIX B: RISK ASSESSMENT RESULTS

**Table 1: Risk Assessment Ranking**

Environmental aspect or potential source of risk	Receptor	Potential consequences	Initial risk ranking prior to planned controls				Planned controls	Residual risk ranking (after implementation of planned controls)			
			Likelihood	Consequence	Risk rating	Descriptive risk rating		Likelihood	Consequence	Risk rating	Descriptive risk rating
Stormwater carrying silt from access roads into local environment	Surface waters / dams / creeks	Loss of habitat / habitat degradation (sedimentation)	1	3	3	Medium	<ul style="list-style-type: none"> <li>Water dam for sediment control and collection of runoff is to be established prior to commencing operations at the site</li> <li>Water dam located consistent with natural drainage of the site</li> <li>Stormwater from the crushing and screening plant area directed to water dam for sediment control (dam drains to the surrounding paddock)</li> <li>Vehicles kept to defined roads within the site</li> <li>A rumble-pad or wheel wash established to remove sediment from site vehicles prior to leaving the site</li> <li>Routine sweep of external roads connecting to the site</li> </ul>	1	2	2	Low
		Sediment migration impacting beneficial uses of surface water	1	3	3	Medium	<ul style="list-style-type: none"> <li>Water dam for sediment control and collection of runoff is to be established prior to commencing operations at the site</li> <li>Water dam located consistent with natural drainage of the site</li> <li>Stormwater from the crushing and screening plant area directed to settling pond</li> <li>Vehicles to be kept to defined roads within the site</li> <li>A rumble-pad or wheel wash established to remove sediment from site vehicles prior to leaving the site</li> <li>Routine sweep of external roads connecting to the site</li> </ul>	1	1	1	Low
		Algal blooms / nutrient loading	1	3	3	Medium	<ul style="list-style-type: none"> <li>Vehicles to be kept to defined roads within the site</li> <li>A rumble-pad or wheel wash established to remove sediment from site vehicles prior to leaving the site</li> </ul>	1	1	1	Low
Stormwater carrying sediment from excavation into local environment	Surface waters / dams / creeks	Loss of habitat / habitat degradation (sedimentation)	1	3	3	Medium	<ul style="list-style-type: none"> <li>Stormwater that has been in contact with the excavation is directed through the water dam for sediment settling</li> <li>Land disturbance is minimised</li> <li>No removal of native vegetation</li> </ul>	1	2	2	Low
		Sediment migration impacting beneficial uses	1	3	3	Medium	<ul style="list-style-type: none"> <li>Stormwater that has been in contact with the excavation is directed through the water dam for sediment settling</li> </ul>	1	1	1	Low
		Algal blooms / nutrient loading	1	3	3	Medium	<ul style="list-style-type: none"> <li>Stormwater that has been in contact with the excavation is directed through the water dam for sediment settling</li> </ul>	1	1	1	Low
Extreme rainfall event causing flooding and/or overflow of settling dam and/or quarry	Surface waters / dams / creeks	Loss of habitat / habitat degradation (sedimentation)	1	3	3	Medium	<ul style="list-style-type: none"> <li>Water dam for sediment control and collection of runoff is to be established prior to commencing operations at the site</li> <li>Water dam located consistent with natural drainage of the site</li> </ul>	1	2	2	Low



## APPENDIX B: RISK ASSESSMENT RESULTS

Environmental aspect or potential source of risk	Receptor	Potential consequences	Initial risk ranking prior to planned controls				Planned controls	Residual risk ranking (after implementation of planned controls)			
			Likelihood	Consequence	Risk rating	Descriptive risk rating		Likelihood	Consequence	Risk rating	Descriptive risk rating
Extreme rainfall event causing flooding and/or overflow of settling dam and/or quarry	Surface waters / dams / creeks	Sediment migration impacting beneficial uses	1	3	3	Medium	<ul style="list-style-type: none"> <li>Stormwater that has been in contact with the excavation is directed through the water dam for sediment settling</li> <li>Overflow from the dam drained to the surrounding paddock</li> </ul>	1	1	1	Low
		Algal blooms / nutrient loading	1	3	3	Medium	<ul style="list-style-type: none"> <li>Stormwater that has been in contact with the excavation is directed through the water dam for sediment settling</li> <li>Overflow from the dam drained to the surrounding paddock</li> </ul>	1	1	1	Low
Stormwater retention controls and settling dam creating flood risk	Surface waters / dams / creeks	Loss of habitat / habitat degradation (sedimentation)	1	3	3	Medium	<ul style="list-style-type: none"> <li>Water dam for sediment control and collection of runoff is to be established prior to commencing operations at the site</li> <li>Water dam located consistent with natural drainage of the site</li> <li>The water dam sited and designed to achieve the key performance indicators</li> </ul>	1	2	2	Low
		Sediment migration impacting beneficial uses	1	3	3	Medium	<ul style="list-style-type: none"> <li>Stormwater that has been in contact with the excavation is directed through the water dam for sediment settling</li> <li>Overflow from the dam drained to the surrounding paddock</li> </ul>	1	2	2	Low
		Algal blooms / nutrient loading	1	3	3	Medium	<ul style="list-style-type: none"> <li>Stormwater that has been in contact with the excavation is directed through the water dam for sediment settling</li> <li>Overflow from the dam drained to the surrounding paddock</li> </ul>	1	1	1	Low
	Employees	Injury / illness	1	3	3	Medium	<ul style="list-style-type: none"> <li>Water dam for sediment control and collection of runoff is to be established prior to commencing operations at the site</li> <li>Water dam located consistent with natural drainage of the site</li> <li>The water dam sited and designed to achieve the key performance indicators</li> </ul>	1	2	2	Low
	Local fauna / flora	Loss or damage to local fauna and flora	1	3	3	Medium	<ul style="list-style-type: none"> <li>Water dam for sediment control and collection of runoff is to be established prior to commencing operations at the site</li> <li>Water dam located consistent with natural drainage of the site</li> <li>The water dam sited and designed to achieve the key performance indicators</li> </ul>	1	2	2	Low
Oil / fuel spills from delivery trucks / site vehicles and machinery	Employees	Illness	2	3	6	Medium	<ul style="list-style-type: none"> <li>Chemicals stored and used in accordance with the Material Safety Data Sheets (MSDS)</li> <li>Limited volumes of fuels, greases, oils and chemicals stored onsite</li> <li>Stored fuels, fluids, and chemicals are in clearly labelled, sealed containers</li> </ul>	1	2	2	Low



**APPENDIX B: RISK ASSESSMENT RESULTS**

Environmental aspect or potential source of risk	Receptor	Potential consequences	Initial risk ranking prior to planned controls				Planned controls	Residual risk ranking (after implementation of planned controls)			
			Likelihood	Consequence	Risk rating	Descriptive risk rating		Likelihood	Consequence	Risk rating	Descriptive risk rating
Oil / fuel spills from delivery trucks / site vehicles and machinery	Local fauna / flora	Loss or damage to local fauna and flora	2	3	6	Medium	<ul style="list-style-type: none"> <li>A spill kit is available at all times for use</li> <li>Chemicals stored and spills cleaned up in accordance with the MSDS</li> <li>Oils, fuels, chemicals and wastes stored in designated storage areas within hard-stand surfaces, with appropriate bunding around the perimeter</li> <li>Limited volumes of fuels, greases, oils and chemicals stored onsite</li> <li>Stored fuels, fluids, and chemicals are in clearly labelled, sealed containers</li> <li>Chemicals and fuels are not stored in close proximity to stormwater drains</li> </ul>	1	2	2	Low
Contamination of soil from failure of controls for fuel and oils storage (bunds, hardstand)	Soil	Loss of habitat / habitat degradation	2	3	6	Medium	<ul style="list-style-type: none"> <li>A spill kit is available at all times for use</li> <li>Any major servicing and/or repairs are undertaken within the workshop or designated area</li> <li>Onsite refuelling of plant and equipment is undertaken on impervious areas, away from drainage points, water course and stormwater drains, and undertaken in a temporary bunded area (e.g. over a drip tray, or within sediment sock bund)</li> <li>Chemicals are stored and spills cleaned up in accordance with the MSDS</li> <li>Oils, fuels, chemicals and wastes are stored in designated storage areas within hard-stand surfaces, with appropriate bunding around the perimeter</li> <li>Limited volumes of fuels, greases, oils and chemicals stored onsite</li> <li>Stored fuels, fluids, and chemicals are in clearly labelled, sealed containers</li> <li>Chemicals and fuels are not stored in close proximity to stormwater drains</li> <li>Vehicles and machinery are parked in a designated area, upon a hard-stand surface</li> <li>Waste oil from machinery or maintenance workshop is stored in drums and removed from the site using an EPA-permitted contractor</li> <li>Vehicle wash down and/or equipment wash out is undertaken in a designated areas positioned away from drainage points, the water dam and stormwater drains</li> </ul>	1	2	2	Low



**APPENDIX B: RISK ASSESSMENT RESULTS**

Environmental aspect or potential source of risk	Receptor	Potential consequences	Initial risk ranking prior to planned controls				Planned controls	Residual risk ranking (after implementation of planned controls)			
			Likelihood	Consequence	Risk rating	Descriptive risk rating		Likelihood	Consequence	Risk rating	Descriptive risk rating
Contamination of soil from failure of controls for fuel and oils storage (bunds, hardstand)	Soil	Contaminant migration impacting beneficial uses of surface water	2	3	6	Medium	<ul style="list-style-type: none"> <li>A spill kit is available at all times for use</li> <li>Any major servicing and/or repairs are undertaken within the workshop or designated area</li> <li>Onsite refuelling of plant and equipment is undertaken on impervious areas, away from drainage points, water course and stormwater drains, and undertaken in a temporary bunded area (e.g. over a drip tray, or within sediment sock bund)</li> <li>Chemicals are stored and spills cleaned up in accordance with the MSDS</li> <li>Oils, fuels, chemicals and wastes are stored in designated storage areas within hard-stand surfaces, with appropriate bunding around the perimeter</li> <li>Limited volumes of fuels, greases, oils and chemicals stored onsite</li> <li>Stored fuels, fluids, and chemicals are in clearly labelled, sealed containers</li> <li>Chemicals and fuels are not stored in close proximity to stormwater drains</li> <li>Vehicles and machinery are parked in a designated area, upon a crushed rock surface</li> <li>Vehicle wash down and/or equipment wash out is undertaken in a designated areas positioned away from drainage points, the water dam and stormwater drains</li> </ul>	1	2	2	Low
Increased flows to surface water due to groundwater infiltration into quarry	Surface waters	Increased salinity of surface water	1	2	2	Low	<ul style="list-style-type: none"> <li>Excavation does not to intersect with the groundwater table</li> <li>Deepest excavation is at least 10 m above approximate depth of groundwater</li> </ul>	1	1	1	Low
Failure of controls for fuel and oils storage (bunds, hardstand) and contact with groundwater	Groundwater	Loss of habitat / habitat degradation	2	3	6	Medium	<ul style="list-style-type: none"> <li>Any major servicing and/or repairs are undertaken within the workshop or designated area</li> <li>Onsite refuelling of plant and equipment is undertaken on impervious areas, away from drainage points, water course and stormwater drains, and undertaken in a temporary bunded area (e.g. over a drip tray, or within sediment sock bund)</li> <li>Chemicals are stored and spills cleaned up in accordance with the MSDS</li> <li>Oils, fuels, chemicals and wastes are stored in designated storage areas within hard-stand surfaces, with appropriate bunding around the perimeter</li> <li>Limited volumes of fuels, greases, oils and chemicals stored onsite</li> <li>Vehicles and machinery are to be parked in a designated area, upon a hard-stand surface</li> </ul>	1	2	2	Low



## APPENDIX B: RISK ASSESSMENT RESULTS

Environmental aspect or potential source of risk	Receptor	Potential consequences	Initial risk ranking prior to planned controls				Planned controls	Residual risk ranking (after implementation of planned controls)			
			Likelihood	Consequence	Risk rating	Descriptive risk rating		Likelihood	Consequence	Risk rating	Descriptive risk rating
Failure of controls for fuel and oils storage (bunds, hardstand) and contact with groundwater	Groundwater	Contaminant migration impacting beneficial uses	2	3	6	Medium	<ul style="list-style-type: none"> <li>Excavation does not to intersect with the groundwater table</li> <li>Deepest excavation is at least 10 m above approximate depth of groundwater</li> </ul>	1	2	2	Low
Contamination of groundwater from excavation into groundwater table	Groundwater	Loss of habitat / habitat degradation	1	2	2	Low	<ul style="list-style-type: none"> <li>Excavation does not to intersect with the groundwater table</li> <li>Deepest excavation is at least 10 m above approximate depth of groundwater</li> </ul>	1	1	1	Low
		Contaminant migration impacting beneficial uses	1	2	2	Low	<ul style="list-style-type: none"> <li>Excavation does not to intersect with the groundwater table</li> <li>Deepest excavation is at least 10 m above approximate depth of groundwater</li> </ul>	1	1	1	Low
Excavation into the groundwater table	Beneficial uses	Reduced groundwater quality, flow, volume and depth of groundwater table	1	2	2	Low	<ul style="list-style-type: none"> <li>Excavation does not to intersect with the groundwater table</li> <li>Deepest excavation is at least 10 m above approximate depth of groundwater</li> </ul>	1	1	1	Low
Generation and migration of odorous emissions from site operations	Local population	Odour affecting amenity	1	2	2	Low	<ul style="list-style-type: none"> <li>All equipment and vehicles are maintained and serviced to minimise potential odorous emissions</li> </ul>	1	1	1	Low
	Employees	Odour impacting employees	1	2	2	Low	<ul style="list-style-type: none"> <li>All equipment and vehicles are maintained and serviced to minimise potential odorous emissions</li> </ul>	1	1	1	Low
Excessive dust generation due to unforeseen / extreme weather conditions	Local population	Uncontrolled dust ingress on local population	2	3	6	Medium	<ul style="list-style-type: none"> <li>Water sprays are used to minimise dust in and around the excavation</li> <li>A water cart is used around the stockpiles, overburden dump, internal roads, stripping areas and ground bins during windy conditions to minimise dust generation</li> <li>Stockpiles are pre-wet before loading onto trucks</li> <li>Stockpile slopes and heights are minimised, with height not exceeding 3 m</li> <li>Weather conditions are monitored and communicated at the inception of each day to guide water cart use and restriction of dust generating activities</li> </ul>	1	2	2	Low



**APPENDIX B: RISK ASSESSMENT RESULTS**

Environmental aspect or potential source of risk	Receptor	Potential consequences	Initial risk ranking prior to planned controls				Planned controls	Residual risk ranking (after implementation of planned controls)			
			Likelihood	Consequence	Risk rating	Descriptive risk rating		Likelihood	Consequence	Risk rating	Descriptive risk rating
Excessive dust generation due to unforeseen / extreme weather conditions	Employees	Uncontrolled dust ingress on employees	2	3	6	Medium	<ul style="list-style-type: none"> <li>Water sprays are used to minimise dust in and around the excavation</li> <li>A water cart is used around the stockpiles, overburden dump, internal roads, stripping areas and ground bins during windy conditions to minimise dust generation</li> <li>Stockpiles are pre-wet before loading onto trucks</li> <li>Stockpile slopes and heights are minimised, with height not exceeding 3 m</li> <li>Weather conditions are monitored and communicated at the inception of each day to guide water cart use and restriction of dust generating activities</li> </ul>	1	2	2	Low
	Surface waters / dams / creeks	Loss of habitat / habitat degradation (sedimentation)	2	3	6	Medium	<ul style="list-style-type: none"> <li>Water sprays are used to minimise dust in and around the excavation</li> <li>A water cart is used around the stockpiles, overburden dump, internal roads, stripping areas and ground bins during windy conditions to minimise dust generation</li> <li>Stockpiles are pre-wet before loading onto trucks</li> <li>Weather conditions are monitored and communicated at the inception of each day to guide water cart use and restriction of dust generating activities</li> </ul>	1	2	2	Low
		Algal blooms / nutrient loading	2	3	6	Medium	<ul style="list-style-type: none"> <li>Water sprays are used to minimise dust in and around the excavation</li> <li>A water cart is used around the stockpiles, overburden dump, internal roads, stripping areas and ground bins during windy conditions to minimise dust generation</li> <li>Stockpiles are pre-wet before loading onto trucks</li> <li>Weather conditions are monitored and communicated at the inception of each day to guide water cart use and restriction of dust generating activities</li> </ul>	1	2	2	Low
	Local fauna / flora	Loss of habitat / habitat degradation	2	3	6	Medium	<ul style="list-style-type: none"> <li>Water sprays are used to minimise dust in and around the excavation</li> <li>A water cart is used around the stockpiles, overburden dump, internal roads, stripping areas and ground bins during windy conditions to minimise dust generation</li> <li>Weather conditions are monitored and communicated at the inception of each day to guide water cart use and restriction of dust generating activities</li> </ul>	1	2	2	Low



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Environmental aspect or potential source of risk	Receptor	Potential consequences	Initial risk ranking prior to planned controls				Planned controls	Residual risk ranking (after implementation of planned controls)			
			Likelihood	Consequence	Risk rating	Descriptive risk rating		Likelihood	Consequence	Risk rating	Descriptive risk rating
Excessive dust due to standard work practices (crushing and extraction, unloading trucks)	Local population	Uncontrolled dust ingress on local population	2	3	6	Medium	<ul style="list-style-type: none"> <li>Water sprays are used to minimise dust in and around the excavation</li> <li>A water cart is used around the stockpiles, overburden dump, internal roads, stripping areas and ground bins during windy conditions to minimise dust generation</li> <li>Stockpiles are pre-wet before loading onto trucks</li> <li>Stockpile slopes and heights are minimised, with height not exceeding 3 m</li> <li>Weather conditions are monitored and communicated at the inception of each day to guide water cart use and restriction of dust generating activities</li> </ul>	1	2	2	Low
	Employees	Uncontrolled dust ingress on employees	2	3	6	Medium	<ul style="list-style-type: none"> <li>Water sprays are used to minimise dust in and around the excavation</li> <li>A water cart is used around the stockpiles, overburden dump, internal roads, stripping areas and ground bins during windy conditions to minimise dust generation</li> <li>Stockpiles are pre-wet before loading onto trucks</li> <li>Stockpile slopes and heights are minimised, with height not exceeding 3 m</li> <li>Weather conditions are monitored and communicated at the inception of each day to guide water cart use and restriction of dust generating activities</li> </ul>	1	2	2	Low
	Surface waters / dams / creeks	Loss of habitat / habitat degradation	2	3	6	Medium	<ul style="list-style-type: none"> <li>Water sprays are used to minimise dust in and around the excavation</li> <li>A water cart is used around the stockpiles, overburden dump, internal roads, stripping areas and ground bins during windy conditions to minimise dust generation</li> <li>Stockpiles are pre-wet before loading onto trucks</li> <li>Stockpile slopes and heights are minimised, with height not exceeding 3 m</li> <li>Weather conditions are monitored and communicated at the inception of each day to guide water cart use and restriction of dust generating activities</li> </ul>	1	2	2	Low



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Environmental aspect or potential source of risk	Receptor	Potential consequences	Initial risk ranking prior to planned controls				Planned controls	Residual risk ranking (after implementation of planned controls)			
			Likelihood	Consequence	Risk rating	Descriptive risk rating		Likelihood	Consequence	Risk rating	Descriptive risk rating
Excessive dust due to standard work practices (crushing and extraction, unloading trucks)	Surface waters / dams / creeks	Algal blooms / nutrient loading	2	3	6	Medium	<ul style="list-style-type: none"> <li>Water sprays are used to minimise dust in and around the excavation</li> <li>A water cart is used around the stockpiles, overburden dump, internal roads, stripping areas and ground bins during windy conditions to minimise dust generation</li> <li>Stockpiles are pre-wet before loading onto trucks</li> <li>Stockpile slopes and heights are minimised, with height not exceeding 3 m</li> <li>Weather conditions are monitored and communicated at the inception of each day to guide water cart use and restriction of dust generating activities</li> </ul>	1	2	2	Low
	Local fauna / flora	Loss of habitat / habitat degradation	2	3	6	Medium	<ul style="list-style-type: none"> <li>Water sprays are used to minimise dust in and around the excavation</li> <li>A water cart is used around the stockpiles, overburden dump, internal roads, stripping areas and ground bins during windy conditions to minimise dust generation</li> <li>Stockpiles are pre-wet before loading onto trucks</li> <li>Stockpile slopes and heights are minimised, with height not exceeding 3 m</li> <li>Weather conditions are monitored and communicated at the inception of each day to guide water cart use and restriction of dust generating activities</li> </ul>	1	2	2	Low
Excessive dust due to drought / extended period with lack of rainfall	Local population	Uncontrolled dust ingress on local population	2	3	6	Medium	<ul style="list-style-type: none"> <li>Weather conditions are monitored and communicated at the inception of each day to guide water cart use and restriction of dust generating activities</li> </ul>	1	2	2	Low
	Surface waters / dams / creeks	Loss of habitat / habitat degradation (sedimentation)	2	3	6	Medium	<ul style="list-style-type: none"> <li>Weather conditions are monitored and communicated at the inception of each day to guide water cart use and restriction of dust generating activities</li> </ul>	1	2	2	Low
		Algal blooms / nutrient loading	2	3	6	Medium	<ul style="list-style-type: none"> <li>Weather conditions are monitored and communicated at the inception of each day to guide water cart use and restriction of dust generating activities</li> </ul>	1	2	2	Low
	Local fauna / flora	Loss of habitat / habitat degradation (sedimentation)	2	3	6	Medium	<ul style="list-style-type: none"> <li>Weather conditions are monitored and communicated at the inception of each day to guide water cart use and restriction of dust generating activities</li> </ul>	1	2	2	Low



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Environmental aspect or potential source of risk	Receptor	Potential consequences	Initial risk ranking prior to planned controls				Planned controls	Residual risk ranking (after implementation of planned controls)			
			Likelihood	Consequence	Risk rating	Descriptive risk rating		Likelihood	Consequence	Risk rating	Descriptive risk rating
Excessive noise due to site traffic (excavators, front loaders, forklifts, compactors, trucks)	Local population	Unacceptable impact on local population	3	2	6	Medium	<ul style="list-style-type: none"> <li>All equipment, machines and vehicles on site are maintained to the quietest reasonable standard consistent with operational requirements, and are routinely maintained to ensure effectiveness of noise suppression systems and equipment</li> <li>Operational hours are restricted to: 7am to 6pm on Mondays to Fridays 7am to 1pm on Saturdays</li> <li>'Quackers' broadband frequency type reversing alarms are used on mobile equipment</li> <li>Maximum of two trucks are loaded with crushed rock at any time</li> <li>Plant generating unidirectional noise emission is orientated such that the noise is directed away from sensitive receivers</li> <li>Mufflers are fitted on all vehicles and equipment</li> </ul>	1	2	2	Low
	Employees	Unacceptable impact on employees	3	2	6	Medium	<ul style="list-style-type: none"> <li>All equipment, machines and vehicles on site are maintained to the quietest reasonable standard consistent with operational requirements, and are routinely maintained to ensure effectiveness of noise suppression systems and equipment</li> <li>'Quackers' broadband frequency type reversing alarms are used on mobile equipment</li> <li>Maximum of two trucks are loaded with crushed rock at any time</li> <li>Plant generating unidirectional noise emission is orientated such that the noise is directed away from sensitive receivers</li> <li>Mufflers are fitted on all vehicles and equipment</li> </ul>	1	2	2	Low
	Fauna	Unacceptable impact on local fauna	3	2	6	Medium	<ul style="list-style-type: none"> <li>All equipment, machines and vehicles on site are maintained to the quietest reasonable standard consistent with operational requirements, and are routinely maintained to ensure effectiveness of noise suppression systems and equipment</li> <li>Operational hours are restricted to: 7am to 6pm on Mondays to Fridays 7am to 1pm on Saturdays</li> <li>'Quackers' broadband frequency type reversing alarms are used on mobile equipment</li> <li>Maximum of two trucks are loaded with crushed rock at any time</li> <li>Plant generating unidirectional noise emission is orientated such that the noise is directed away from sensitive receivers</li> <li>Mufflers are fitted on all vehicles and equipment</li> </ul>	1	2	2	Low



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Environmental aspect or potential source of risk	Receptor	Potential consequences	Initial risk ranking prior to planned controls				Planned controls	Residual risk ranking (after implementation of planned controls)			
			Likelihood	Consequence	Risk rating	Descriptive risk rating		Likelihood	Consequence	Risk rating	Descriptive risk rating
Excessive noise from site operations (rock hammering, crushing and screening plant, excavators, compactors, truck loading, etc)	Local population	Unacceptable impact on local population	3	2	6	Medium	<ul style="list-style-type: none"> <li>Drilling and blasting methodology is in accordance with recommendations given in Terrock Consulting Engineers' document <i>Effects of Blasting, Stockyard Hill Wind Farm Quarry (Borrow Pit 4) Draft</i> (June 2013)</li> <li>All equipment, machines and vehicles on site are maintained to the quietest reasonable standard consistent with operational requirements, and are routinely maintained to ensure effectiveness of noise suppression systems and equipment</li> <li>Operational hours are restricted to: 7am to 6pm on Mondays to Fridays 7am to 1pm on Saturdays</li> <li>'Quackers' broadband frequency type reversing alarms are used on mobile equipment</li> <li>Maximum of two trucks are loaded with crushed rock at any time</li> <li>Plant generating unidirectional noise emission is orientated such that the noise is directed away from sensitive receivers</li> <li>Mufflers are fitted on all vehicles and equipment</li> </ul>	1	2	2	Low
	Employees	Unacceptable impact on employees	4	3	12	High	<ul style="list-style-type: none"> <li>Drilling and blasting methodology is in accordance with recommendations given in Terrock Consulting Engineers' document <i>Effects of Blasting, Stockyard Hill Wind Farm Quarry (Borrow Pit 4) Draft</i> (June 2013)</li> <li>All equipment, machines and vehicles on site are maintained to the quietest reasonable standard consistent with operational requirements, and are routinely maintained to ensure effectiveness of noise suppression systems and equipment</li> <li>Operational hours are restricted to: 7am to 6pm on Mondays to Fridays 7am to 1pm on Saturdays</li> <li>'Quackers' broadband frequency type reversing alarms are used on mobile equipment</li> <li>Maximum of two trucks are loaded with crushed rock at any time</li> <li>Plant generating unidirectional noise emission is orientated such that the noise is directed away from sensitive receivers</li> <li>Mufflers are fitted on all vehicles and equipment</li> </ul>	1	2	2	Low



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			Likelihood	Consequence	Risk rating	Descriptive risk rating		Likelihood	Consequence	Risk rating	Descriptive risk rating
Excessive noise from site operations (rock hammering, crushing and screening plant, excavators, compactors, truck loading, etc)	Fauna	Unacceptable impact on local fauna	2	3	6	Medium	<ul style="list-style-type: none"> <li>Drilling and blasting methodology is in accordance with recommendations given in Terrock Consulting Engineers' document <i>Effects of Blasting, Stockyard Hill Wind Farm Quarry (Borrow Pit 4) Draft</i> (June 2013)</li> <li>All equipment, machines and vehicles on site are maintained to the quietest reasonable standard consistent with operational requirements, and are routinely maintained to ensure effectiveness of noise suppression systems and equipment</li> <li>Operational hours are restricted to: 7am to 6pm on Mondays to Fridays 7am to 1pm on Saturdays</li> <li>'Quackers' broadband frequency type reversing alarms are used on mobile equipment</li> <li>Maximum of two trucks are loaded with crushed rock at any time</li> <li>Plant generating unidirectional noise emission is orientated such that the noise is directed away from sensitive receivers</li> <li>Mufflers are fitted on all vehicles and equipment</li> </ul>	1	2	2	Low
Excessive noise from blasting	Local population	Unacceptable impact on local population	2	2	4	Medium	<ul style="list-style-type: none"> <li>Drilling and blasting methodology is in accordance with recommendations given in Terrock Consulting Engineers' document <i>Effects of Blasting, Stockyard Hill Wind Farm Quarry (Borrow Pit 4) Draft</i> (June 2013)</li> </ul>	1	2	2	Low
	Employees	Unacceptable impact on employees	4	3	12	High	<ul style="list-style-type: none"> <li>Drilling and blasting methodology is in accordance with recommendations given in Terrock Consulting Engineers' document <i>Effects of Blasting, Stockyard Hill Wind Farm Quarry (Borrow Pit 4) Draft</i> (June 2013)</li> </ul>	1	2	2	Low
	Fauna	Unacceptable impact on local fauna	2	3	6	Medium	<ul style="list-style-type: none"> <li>Drilling and blasting methodology is in accordance with recommendations given in Terrock Consulting Engineers' document <i>Effects of Blasting, Stockyard Hill Wind Farm Quarry (Borrow Pit 4) Draft</i> (June 2013)</li> </ul>	1	1	1	Low
Excessive litter generation due to poor waste storage	Local population	Uncontrolled litter ingress on local residents	1	2	2	Low	<ul style="list-style-type: none"> <li>Waste stored on site in sealed waste bins or skips</li> <li>Routine removal of waste from the site</li> <li>Bins and skips are fit for purpose, including designed to hold the intended waste stream securely</li> </ul>	1	1	1	Low



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Environmental aspect or potential source of risk	Receptor	Potential consequences	Initial risk ranking prior to planned controls				Planned controls	Residual risk ranking (after implementation of planned controls)			
			Likelihood	Consequence	Risk rating	Descriptive risk rating		Likelihood	Consequence	Risk rating	Descriptive risk rating
Excessive litter generation due to poor waste storage	Native fauna and flora	Loss of habitat / habitat degradation	2	3	6	Medium	<ul style="list-style-type: none"> <li>Waste stored on site in sealed waste bins or skips</li> <li>Routine removal of waste from the site</li> <li>Bins and skips are fit for purpose, including designed to hold the intended waste stream securely</li> <li>Waste stored in such a manner that it is secured and does not attract vermin</li> </ul>	1	2	2	Low
		Damage or degradation	2	3	6	Medium	<ul style="list-style-type: none"> <li>Waste stored on site in sealed waste bins or skips</li> <li>Routine removal of waste from the site</li> <li>Bins and skips are fit for purpose, including designed to hold the intended waste stream securely</li> <li>Waste stored in such a manner that it is secured and does not attract vermin</li> </ul>	1	1	1	Low
	Surface waters / dams / creeks	Loss of habitat / habitat degradation	2	3	6	Medium	<ul style="list-style-type: none"> <li>Waste stored on site in sealed waste bins or skips</li> <li>Routine removal of waste from the site</li> <li>Bins and skips are fit for purpose, including designed to hold the intended waste stream securely</li> <li>Waste storage is away from stormwater drains and water dam</li> <li>Waste stored in such a manner that it is secured and does not attract vermin</li> </ul>	1	1	1	Low
	Site dam	Contaminant migration impacting amenity	2	3	6	Medium	<ul style="list-style-type: none"> <li>Waste stored on site in sealed waste bins or skips</li> <li>Routine removal of waste from the site</li> <li>Bins and skips are fit for purpose, including designed to hold the intended waste stream securely</li> <li>Waste storage is away from stormwater drains and water dam</li> </ul>	1	1	1	Low
Poor storage and/or treatment of sewerage	Surface waters / dams / creeks	Loss of habitat / habitat degradation	2	3	6	Medium	<ul style="list-style-type: none"> <li>A portable amenities building is established utilising an approved septic toilet system</li> <li>Septic tank is regularly inspected and pumped clean</li> <li>Septic tank is located away from stormwater drains and water dam</li> </ul>	1	2	2	Low
	Native fauna and flora	Damage or degradation	2	3	6	Medium	<ul style="list-style-type: none"> <li>A portable amenities building is established utilising an approved septic toilet system</li> <li>Septic tank is regularly inspected and pumped clean</li> <li>Septic tank is located away from stormwater drains and water dam</li> </ul>	1	2	2	Low
	Soil	Loss of habitat / habitat degradation	2	3	6	Medium	<ul style="list-style-type: none"> <li>A portable amenities building is established utilising an approved septic toilet system</li> <li>Septic tank is regularly inspected and pumped clean</li> <li>Septic tank is located away from stormwater drains and water dam</li> </ul>	1	2	2	Low



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			Likelihood	Consequence	Risk rating	Descriptive risk rating		Likelihood	Consequence	Risk rating	Descriptive risk rating
Poor storage and/or treatment of sewerage	Soil	Loss of soil quality	2	3	6	Medium	<ul style="list-style-type: none"> <li>A portable amenities building is established utilising an approved septic toilet system</li> <li>Septic tank is regularly inspected and pumped clean</li> <li>Septic tank is located away from stormwater drains and water dam</li> </ul>	1	2	2	Low
		Contaminant migration impacting amenity	2	3	6	Medium	<ul style="list-style-type: none"> <li>A portable amenities building is established utilising an approved septic toilet system</li> <li>Septic tank is regularly inspected and pumped clean</li> <li>Septic tank is located away from stormwater drains and water dam</li> </ul>	1	2	2	Low
Excessive waste production	Landfill	Reducing landfill cell capacity	2	2	4	Low	<ul style="list-style-type: none"> <li>Recyclable packaging is sourced where practicable</li> <li>Waste streams are segregated at the source</li> <li>Re-usable materials are segregated and stored in a specified location</li> <li>Food waste and other organic materials are composted</li> </ul>	1	1	1	Low
Excessive use of town water supply	Local population	Over use of potable water resources	2	3	6	Medium	<ul style="list-style-type: none"> <li>Town water supply is not used water suppression</li> <li>Water collected from excavation in water dam is used in dust suppression</li> <li>Rainwater tanks are installed for site amenities in preference of town water supply</li> </ul>	1	2	2	Low
	Native fauna and flora	Over use of potable water resources	2	3	6	Medium	<ul style="list-style-type: none"> <li>Town water supply is not used water suppression</li> <li>Water collected from excavation in water dam is used in dust suppression</li> <li>Rainwater tanks are installed for site amenities in preference of town water supply</li> </ul>	1	2	2	Low
	Surface waters / dams / creeks	Loss of habitat / habitat degradation	2	3	6	Medium	<ul style="list-style-type: none"> <li>Town water supply is not used water suppression</li> <li>Water collected from excavation in water dam is used in dust suppression</li> <li>Rainwater tanks are installed for site amenities in preference of town water supply</li> </ul>	1	1	1	Low
Excessive use of electricity from grid	Natural resources	Loss of habitat / habitat degradation	2	3	6	Medium	<ul style="list-style-type: none"> <li>A generator is used for powering the site office, amenities and batching/blending plants</li> <li>Off-grid, diesel-fuelled crushing and screening equipment</li> <li>Equipment and vehicles are powered off when not in use</li> <li>Diesel fuelled equipment and vehicles are used for greater fuel efficiency</li> </ul>	1	2	2	Low



## APPENDIX B: RISK ASSESSMENT RESULTS

Environmental aspect or potential source of risk	Receptor	Potential consequences	Initial risk ranking prior to planned controls				Planned controls	Residual risk ranking (after implementation of planned controls)			
			Likelihood	Consequence	Risk rating	Descriptive risk rating		Likelihood	Consequence	Risk rating	Descriptive risk rating
Excessive use of electricity from grid	Natural resources	Depletion of natural resource	2	3	6	Medium	<ul style="list-style-type: none"> <li>A generator is used for powering the site office, amenities and batching/blending plants</li> <li>Off-grid, diesel-fuelled crushing and screening equipment</li> <li>Equipment and vehicles are powered off when not in use</li> <li>Diesel fuelled equipment and vehicles are used for greater fuel efficiency</li> </ul>	1	2	2	Low
	Atmosphere	Emission of greenhouse gases	2	3	6	Medium	<ul style="list-style-type: none"> <li>Equipment and vehicles are powered off when not in use</li> <li>Diesel fuelled equipment and vehicles are used for greater fuel efficiency</li> </ul>	1	1	1	Low
Excessive use of fuel for site equipment and vehicles	Natural resources	Loss of habitat / habitat degradation	2	3	6	Medium	<ul style="list-style-type: none"> <li>Off-grid, diesel-fuelled crushing and screening equipment</li> <li>Equipment and vehicles are powered off when not in use</li> <li>Diesel fuelled equipment and vehicles are used for greater fuel efficiency</li> </ul>	1	2	2	Low
		Depletion of natural resource	2	3	6	Medium	<ul style="list-style-type: none"> <li>Off-grid, diesel-fuelled crushing and screening equipment</li> <li>Equipment and vehicles are powered off when not in use</li> <li>Diesel fuelled equipment and vehicles are used for greater fuel efficiency</li> </ul>	1	2	2	Low
	Atmosphere	Emission of greenhouse gases	2	3	6	Medium	<ul style="list-style-type: none"> <li>Equipment and vehicles are powered off when not in use</li> <li>Diesel fuelled equipment and vehicles are used for greater fuel efficiency</li> </ul>	1	1	1	Low
Excessive use of packaging and non-reusable or recyclable materials	Native fauna and flora	Loss of habitat / habitat degradation	2	3	6	Medium	<ul style="list-style-type: none"> <li>Recyclable packaging is sourced where practicable</li> <li>Materials are reused where practicable</li> </ul>	1	2	2	Low



## APPENDIX B: RISK ASSESSMENT RESULTS

Environmental aspect or potential source of risk	Receptor	Potential consequences	Initial risk ranking prior to planned controls				Planned controls	Residual risk ranking (after implementation of planned controls)			
			Likelihood	Consequence	Risk rating	Descriptive risk rating		Likelihood	Consequence	Risk rating	Descriptive risk rating
Potential impacts of site operations to native fauna and flora	Native fauna and flora	Loss or damage to native fauna and flora, loss or degradation of habitat or loss of biodiversity	2	3	6	Medium	<ul style="list-style-type: none"> <li>No native vegetation will be removed from the site</li> <li>Site operations, including ground disturbance, stockpiling of soils and storage and operation of plant and machinery, will not occur within an area of 12 metres around the tree and native vegetation</li> <li>The tree and a 12 metre 'no go zone' will be protected by fencing. Signage on the fencing will state that the area is not to be disturbed</li> <li>A Striped Legless Lizard Salvage and Translocation Plan will be developed before construction commences. This has been recommended as a precautionary measure given the low probability of occurrence of the species within the quarry areas</li> <li>The spread of weeds and pathogens will be minimised through the implementation :</li> <li>Vehicles entering and exiting the site will be visually inspected for weeds, and where required vehicles will be cleaned prior to exiting the site</li> <li>All vehicles exiting the site will pass through a wheel wash to remove soil and weeds prior to leaving the site</li> <li>Site personnel will be made aware of potential risks associated with removing soil and weeds from the site</li> <li>Weeds will be controlled using chemical products with herbicidal action registered by the Australian Pesticides and Veterinary Medicines Authority. Any products used will be applied by personnel experienced and trained in the application of such products</li> </ul>	1	2	2	Low
Potential for fire incidents at the site	Project infrastructure	Property and plant damage	1	3	3	Medium	<ul style="list-style-type: none"> <li>Plant areas and access roads will be cleared of vegetation</li> <li>Grass will be slashed and maintained at a height not exceeding 10 cm and a width of approximately 2-3m on either side of access roads</li> <li>Plant and vehicles will carry suitable fire extinguishers</li> <li>No blasting will be undertaken on days of Total Fire Ban</li> <li>Activities such as welding, cutting or grinding will not be undertaken on days of Total Fire Ban. Where undertaken at other times they will be undertaken in accordance with CFA requirements</li> <li>Mobile water facilities (e.g. water truck) will be supported by portable pump and hose to be used for fire protection. Water for fire fighting operations will be obtained from the onsite water dam</li> <li>Fuel and other flammable chemicals will be stored in accordance with the requirements of the Australian Standard AS1940: <i>The Storage and Handling of Flammable and Combustible Liquids</i></li> </ul>	1	2	2	Low
	Site employees	Injury	1	3	3	Medium		1	2	2	Low
	Native fauna and flora	Loss or damage to native fauna and flora, degradation of habitat or loss of biodiversity	1	3	3	Medium		1	2	2	Low
Potential for fire spreading to the site from offsite incidents /	Project infrastructure	Property and plant damage	1	2	2	Low	<ul style="list-style-type: none"> <li>Fire breaks will be established and maintained along northern, western and south western areas abutting the plant site</li> </ul>	1	1	2	Low
	Site employees	Injury	1	3	3	Medium		1	2	2	Low



**APPENDIX B: RISK ASSESSMENT RESULTS**

Environmental aspect or potential source of risk	Receptor	Potential consequences	Initial risk ranking prior to planned controls				Planned controls	Residual risk ranking (after implementation of planned controls)			
			Likelihood	Consequence	Risk rating	Descriptive risk rating		Likelihood	Consequence	Risk rating	Descriptive risk rating
sources or resulting from bush fires	Native fauna and flora	Loss or damage to native fauna and flora, degradation of habitat or loss of biodiversity	1	2	2	Low	<ul style="list-style-type: none"> <li>Plant areas will be cleared of vegetation</li> <li>Grass will be slashed and maintained at a height not exceeding 10 cm and a width of approximately 2-3m on either side of access roads</li> <li>Mobile water facilities (e.g. water truck) will be supported by portable pump and hose to be used for fire protection. Water for fire fighting operations will be obtained from the onsite water dam</li> </ul>	1	1	2	Low

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Africa	+ 27 11 254 4800
Asia	+ 86 21 6258 5522
Australasia	+ 61 3 8862 3500
Europe	+ 356 21 42 30 20
North America	+ 1 800 275 3281
South America	+ 55 21 3095 9500

[solutions@golder.com](mailto:solutions@golder.com)  
[www.golder.com](http://www.golder.com)

**Golder Associates Pty Ltd**  
**Building 7, Botanicca Corporate Park**  
**570 – 588 Swan Street**  
**Richmond, Victoria 3121**  
**Australia**  
**T: +61 3 8862 3500**

