

# **Attachment 7**

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Environmental Management Plan

Bromelton North Quarry

# Environmental Management Plan

**Prepared for:** Neilsens Quality Gravels Pty Ltd

**Date:** December 2022

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# DOCUMENT CONTROL

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# 1 Introduction

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## 1.1 Background

Neilsens Quality Gravels Pty Ltd ('Neilsens') operate the Bromelton Quarry located at 291 Sandy Creek Road, Bromelton, properly described as Lot 1 on RP98576 (herein referred to as the 'site'). The activity constitutes the following prescribed Environmentally Relevant Activities ('ERAs') in accordance with the *Environmental Protection Regulation 2019* ('EP Reg'):

- ERA Threshold 16 (2)(b) - Extractive and screening activities - extracting, other than by dredging more than 100,000 but not more than 1,000,000 tonnes of material in a year.
- ERA Threshold (3)(b) - Extractive and screening activities - screening more than 100,000 but not more than 1,000,000 tonnes of material in a year.

The site is currently operated in accordance with a Court Order regulated by Scenic Rim Regional Council (formerly Beaudesert Shire Council) and an Environmental Authority ('EA') issued by the Department of Environment and Science ('DES').



Figure 1 – Aerial Photo and Cadastre

(Figure reprinted from the State of Queensland (2022))

This Environmental Management Plan ('EMP') describes the site operations, the potential environmental impacts of these activities, and how any potential impacts may be mitigated or managed to achieve acceptable environmental outcomes for the activity.



## 1.2 Site Details

Table 1 – Site Details Summary provides a summary of the site location details.

Table 1 – Site Details Summary

<b>Location</b>	291 Sandy Creek Road, Bromelton QLD 4285
<b>Access</b>	Sandy Creek Road
<b>Real Property Description</b>	Lot 1 on RP98576
<b>Total Site Area</b>	627.92 ha
<b>Tenure</b>	Freehold
<b>Local Authority</b>	Scenic Rim Regional Council
<b>Development Scheme</b>	Bromelton State Development Area

## 1.3 Activity Overview

Included as **Diagram 1 – Conceptual On-Site Extractive Operations** is an illustration of the quarry development. The quarry operations are anticipated to comprise the following basic elements:

- Clearing of vegetation and stripping of topsoil and overburden material using mechanical means (i.e., bulldozer or excavator) and stockpiling for incorporation into on-site rehabilitation works where required, or use in constructing stormwater control structures (e.g., perimeter banks).
- Drilling and blasting the exposed underlying rock to a manageable size for the developed quarry benches to the quarry pit or bench below.
- Transferring raw material from the quarry face or pit floor to a designated crushing and screening plant/stockpile hardstand areas using an excavator or front-end loader into off-road haul trucks.
- Crushing and screening the raw material using crushing and screening processing plant(s).
- Stockpiling the final products using a front-end loader and/or off-road haul trucks within designated hardstand areas until required to be loaded into road trucks for transportation off-site for sale.
- Rehabilitating disturbed areas progressively once terminal benches are reached.

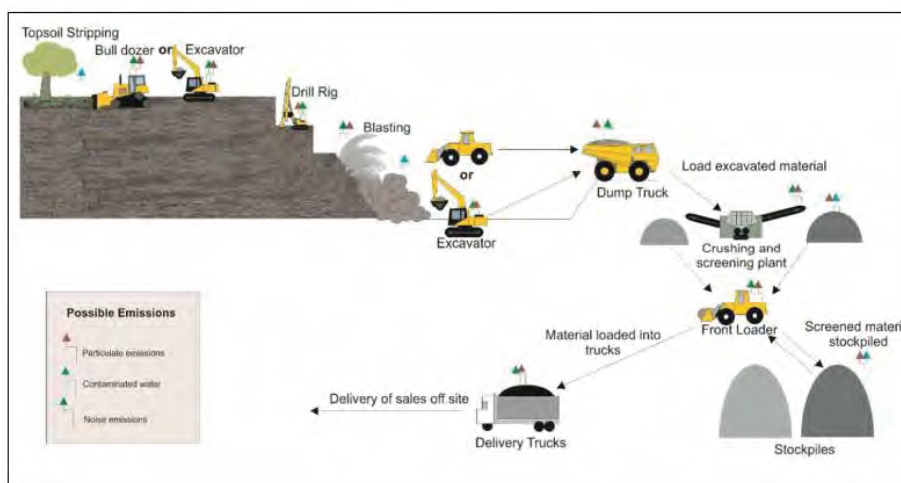


Diagram 1 – Conceptual On-Site Extractive Operations

Operations will be supported by a range of ancillary buildings and structures including, but not limited to:

- Site office and amenities block, visitor car park, staff car park and truck parking area(s).
- Weighbridge, workshop and truck wash down facility.
- Internal haul and access roads.

## 1.4 Plant and Equipment

The number of plant and equipment deployed on-site is anticipated to vary from time-to-time to service the project demands. Types of major plant and equipment may include, but not limited to:

- Bulldozer.
- Grader.
- Drill Rig.
- Excavator.
- Off-highway haul trucks.
- Front-end loader.
- Mobile crushing and screening plant.
- Haul road trucks.
- Highway haul trucks.

Machinery repairs and maintenance will be carried out on-site where practicable within a designated workshop area. Stationary equipment will generally be serviced in the field unless it is practical for the parts to be dismantled and transported to the workshop. Consumables (e.g., tyres, oils and greases) will be supplied by contractors and removed (including associated packaging) for disposal off-site in accordance with the requirements of the prevailing legislation and the local authority on a regular basis.

## 1.5 Hours of Operations

The hours of operations will generally be:

- 6:00am to 6:00pm Monday to Friday.
- 7:00am to 5:00pm Saturdays.
- No operations on Sundays or Public Holidays.

Blasting will be limited to:

- 9:00am to 3:00pm Monday to Friday, except in the case of an emergency.

## 1.6 Purpose of the EMP

This EMP has been prepared to provide written procedures for the site activities that:

- 1) Identify potential risks to the environment from the activity during routine operations and emergencies; and
- 2) Establish and maintain control measures that minimise the potential for environmental harm; and
- 3) Ensure plant, equipment and measures are maintained in a proper and effective condition; and
- 4) Ensure plant, equipment and measures are operated in a proper and effective manner; and
- 5) Ensure that staff are trained and aware of their obligations under the EP Act; and
- 6) Ensure that reviews of environmental performance are undertaken at least annually.

## 1.7 Relevant Legislation

In Queensland, the EP Act is the principal legislation for protecting the environment. The EP Act was assented on 1 December 1994 and was proclaimed on 1 March 1995. The object of the EP Act is to:

*“protect Queensland’s environment while allowing for development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends (ecologically sustainable development)”.*

The EP Act imposes a General Environmental Duty on corporations, government departments and individuals, in order to meet the primary objective (s319 of the EP Act). The duty relates to the notion that everyone must take all reasonable and practicable measures to prevent or minimise environmental harm. The general environmental duty is extracted below for reference:

### **319 General environmental duty**

1. *A person must not carry out any activity that causes, or is likely to cause, environmental harm unless the person takes all reasonable and practicable measures to prevent or minimise the harm (the **general environmental duty**).*

*Note— See section 24 (3) (Effect of Act on other rights, civil remedies etc.).*

2. *In deciding the measures required to be taken under subsection (1), regard must be had to, for example—*
  - a) *the nature of the harm or potential harm; and*
  - b) *the sensitivity of the receiving environment; and*
  - c) *the current state of technical knowledge for the activity; and*
  - d) *the likelihood of successful application of the different measures that might be taken; and*
  - e) *the financial implications of the different measures as they would relate to the type of activity.*

In addition, the EP Act states that it is an offence to cause environmental nuisance (s440 of EP Act), material environmental harm (s438 of EP Act), serious environmental harm (s437 of EP Act), and it is an offence to contravene a condition of an EA (s430 of EP Act).

## 2 Policies and Procedures

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### 2.1 Staff Training

All site personnel, including contractors, are to be inducted on the environmental management requirements for the site and informed of the environmental management objectives and specifics of the EMP as well as obligations under the EP Act. Training may include awareness on impact minimisation measures, operational practices, maintenance measures, reporting, and individual responsibilities.

Site personnel are to be made aware of penalties if conditions of approval are breached and reporting requirements for incidents involving environmental nuisance and/or harm in accordance with the relevant environmental legislation. A record of all employee training is to be maintained on-site.

### 2.2 Communication

Communication must take place regarding environmental matters at the site between operational personnel, management and external stakeholders.

Internal communication mechanisms relating to environmental matters and potential impacts, objectives and targets, training and awareness, complaints and incidents, and suggestions for improvement may include, but shall not be limited to:

- Self-assessments and audits.
- Action requests, memos, noticeboards, etc.
- Environmental incident reporting.
- Environmental compliance monitoring and reporting.
- Inductions and environmental awareness training.
- Toolbox talks or verbal advice.
- Weekly construction meetings.
- Management reviews.
- Site meetings.

All external communications are to be undertaken by management. External communication mechanisms for environmental matters may include:

- Formal and informal correspondence with the administering authorities.
- Formal correspondence with interest groups.
- Community complaints and enquiries.

## 2.3 Compliant Recording and Response

All complaints received are to be reported to the Quarry Manager or delegate immediately.

The following details are to be recorded upon receipt of any complaint:

- Date and time the complaint was received.
- Name and contact details for the complainant when provided and authorised by the complainant.
- Nature of the complaint.
- Investigation undertaken.
- Conclusions formed.
- Actions taken.

The Quarry Manager is to liaise with any complainants to discuss the nature of the complaint and to determine a suitable resolution. Initial contact with the complainant is to be made within 24 hours of the complaint being received to initiate a resolution to the matter.

The administering authority may request additional monitoring to investigate any complaint of environmental nuisance received directly by the administering authority. A copy of any monitoring results must be provided within 10 business days to the administering authority.

## 2.4 Incident Response Procedure

### 2.4.1 Overview

The objective of this Incident Response Procedure is to ensure that any breaches of the EA, or incidents and activities that cause or threaten to cause serious or material environmental harm, are reported, investigated, and addressed to prevent recurrence or remedy harm caused. A diagrammatic overview of incidents procedure is provided in **Diagram 3 – Incident Response Procedure Overview**. The Quarry Manager will be responsible for ensuring that all employees at the site are familiar with the procedure for incidents procedures.

Environmental harm is defined under the EP Act as:

- Any adverse effect, or potential adverse effect (whether temporary or permanent and of whatever magnitude, duration or frequency) on an environmental value, and includes environmental nuisance.
- May be caused by an activity—
  - whether the harm is a direct or indirect result of the activity; or
  - whether the harm results from the activity alone or from the combined effects of the activity and other activities or factors.

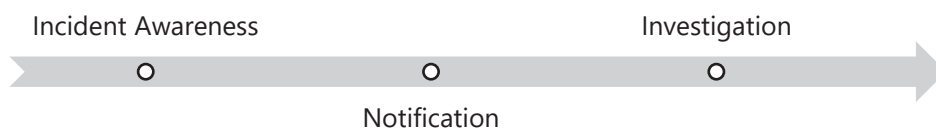


Diagram 2 – Incident Response Procedure Overview

## 2.4.2 Incident Awareness

When an employee becomes aware of an event resulting in the breach of an EA condition, or an incident with actual or potential environmental harm implications, the employee must report the incident to the Quarry Manager or delegate immediately (no more than 24 hours after becoming aware of the incident).

To demonstrate regard for the general environmental duty, all possible breaches of the EA should be reported to the administering authority as soon becoming aware of the matter, even if there is uncertainty as to whether a condition of the EA has been breached.

## 2.4.3 Notification

If the matter is an emergency, call 000.

Under Section 320 to 320G of the EP Act, persons have a duty to notify the administering authority within 24 hours of becoming aware of any incidents or activities that cause or threaten to cause serious environmental harm or material environmental harm. In addition, the EA requires that any breach of a condition of the EA is reported no more than as soon as practicable within 24 hours of becoming aware of the breach.

The Quarry Manager must notify the administering authority via telephone and email within 24 hours of becoming aware of the incident. The contact details of the administering authority for notification purposes are as follows:

Department of Environment and Science  
Phone: 1300 130 372 and select option 2 (during business hours of 8.30am to 5.00pm)  
Email: [PollutionHotline@des.qld.gov.au](mailto:PollutionHotline@des.qld.gov.au)

Notification must include the following where known:

- Contact details for a site representative.
- Details of the affected land (e.g., site address, real property description, local government area, maps / plans of affected areas).
- EA reference number.
- Nature of the activity / circumstances that led to the incident.
- Timeframes for the event and when staff became aware (date and time).
- Event type (e.g., spill, fire, leaks, release, etc), source and environment affect (e.g. waterways, drains, land, etc).
- Details of any potential contaminants.
- Actions taken to resolve or remedy potential impacts.

All records of the incident or breach are to be stored at the site and made available to the administering authority upon request.

## 2.4.4 Investigation

All incidents are to be investigated. The investigations should include:

- determining what activities were being carried out at the time of the incident and any equipment involved.
- identifying whether equipment or activities on-site were the cause of the incident.
- determining what potential actions may be carried out to resolve the matter and/or minimise the likelihood of further impacts.

Corrective action is to be implemented and an assessment conducted to determine what actions are to be taken to remedy the matter and/or prevent a similar incident from occurring.

Where monitoring is required to investigate an incident (e.g., water quality monitoring), a suitably qualified person as identified under the EP Act must be engaged to perform the monitoring and interpret any results.

## 2.5 Recording Keeping

All environmentally relevant documentation, including approvals, corporate policies, procedures, forms, records, and reports required to be kept as per this EMP or conditions of approval shall be available at the approved premises for a period of at least five (5) years, and must be available for inspection by an authorised person.

## 2.6 Monitoring

Any monitoring required by a condition of approval or by this EMP must be carried out by a suitably qualified person(s) as defined under the EP Act.

All instruments, equipment and measuring devices used for measuring or monitoring in accordance with a condition of approval must be calibrated and appropriately operated and maintained.

All analyses of samples must be carried out by a laboratory that has National Association of Testing Authorities ('NATA') certification, or an equivalent certification, for such analyses.

## 2.7 Periodic Review of Environmental Performance and Continual Improvement

The EMP has been prepared for implementation as a continuous improvement program. The following key aspects of this EMP ensures continuous improvement results from the implementation of this EMP.

### ***Commitment and Environmental Policy***

Senior management are to commit to environmental performance through ensuring regulatory compliance, prevention of actual or potential environmental harm, and continuous improvement.

### ***Planning***

The EMP identifies environmental aspects associated with the site operations, such as potential impacts. EMP outlines the environmental objectives, performance targets and management measures for each environmental aspect.

### ***Implementation***

Implementation of the EMP outlines responsibilities, training requirements, communication procedures, and contingency plans. Neilsens will be responsible for ensuring additional implementation requirements are in place, such as preparing monitoring documentation, following procedures, and establishing communication pathways.

### ***Checking***

Monitoring of compliance will determine whether the environmental objectives are being met and will identify non-compliances. Additional actions that will check environmental performance include audits and review of the EMP.

### ***Review***

Reviews of environmental performance are to be undertaken at least annually and should review:

- any monitoring data produced under the conditions of the EA and any trends.
- any non-compliances reported, or complaints received, over the preceding 12 months and actions taken to achieve compliance / resolution.
- changes in site approval documents, legislation and standards.
- the suitability of the EMP against the site development.
- any measures that are proposed to be implemented over the coming 12 months to improve the environmental performance of the site.

A template for annual environmental performance reviews is included as **Attachment 1 – Annual Environmental Performance Review**.

The outcomes of all environmental performance reviews must be communicated to senior management for actioning as required.

The Quarry Manager may commission updates to this EMP as required to ensure that it meets the operational needs of the site. Periodic review of the EMP will ensure continuous improvement of the site environmental performance through adaption of management strategies to meet the changing needs of the site.



## 3 Potential Environmental Risks

### 3.1 Risk Assessment Methodology

The purpose of this assessment is to determine the site activities requiring ongoing management to reduce residual risk of potential environmental impacts. This risk assessment methodology has been adopted from the process for risk management as set out in Clause 6 of the AS ISO 31000:2018 Risk management - Guidelines (Standards Australia 2018). The risk assessment follows the following process:

- Risk identification (source activity and potential impact).
- Risk Analysis (risk level = likelihood x consequence).
- Risk Evaluation (commentary on risk / management measures proposed).

The risk treatment outlines the controls / management measures that can be implemented to reduce the level of risk to as low as reasonably possible.

The risk analysis qualitative estimates the level of risk based on the likelihood of an environmental impact or event occurring (**Table 2 – Definitions of Likelihood**), and the consequences of the occurrence (**Table 3 – Definitions of Consequence**).

Table 2 – Definitions of Likelihood

Rating	Descriptor	Score
<b>Rare</b>	May occur only in exceptional circumstances	1
<b>Unlikely</b>	Could occur but doubtful	2
<b>Possible</b>	Might occur at some time in the future	3
<b>Likely</b>	Will probably occur	4
<b>Almost Certain</b>	Is expected to occur in most circumstances	5

Table 3 – Definitions of Consequence

Rating	Descriptor	Score
<b>Negligible</b>	Impacts not requiring any treatment or management action	1
<b>Minor</b>	Nuisance or insignificant environmental harm requiring minor management action	2
<b>Moderate</b>	Serious environmental impacts, readily manageable at low cost	3
<b>Major</b>	Substantial environmental impacts, manageable but at considerable cost and some disruption	4
<b>Severe</b>	Severe environmental impacts with major consequent disruption and heavy cost	5

The consequence and likelihood scores are plotted on the risk vs consequence matrix (**Table 4 – Risk Assessment Matrix**) and the final risk level assigned is a product of the likelihood and consequence scores, which equals the magnitude of the impacts. The higher the risk score, the higher the priority is for management.

Table 4 – Risk Assessment Matrix

Likelihood		Consequence				
		Negligible	Minor	Moderate	Major	Severe
		1	2	3	4	5
<b>Almost Certain</b>	<b>5</b>	5 Medium	10 High	15 High	20 Very High	25 Very High
<b>Likely</b>	<b>4</b>	4 Low	8 Medium	12 High	16 High	20 Very High
<b>Possible</b>	<b>3</b>	3 Low	6 Medium	9 Medium	12 High	15 High
<b>Unlikely</b>	<b>2</b>	2 Low	4 Low	6 Medium	8 Medium	10 High
<b>Rare</b>	<b>1</b>	1 Low	2 Low	3 Low	4 Low	5 Medium

**Table 5 – Indicative Management Option for Each Risk Assessment Rating** describes the possible actions required for each risk assessment rating.

Table 5 – Indicative Management Option for Each Risk Assessment Rating

Risk Rating	Risk Rating Scores	Indicative Management Option
<b>Very High</b>	<b>17 – 25</b>	Manage by implementing site management and emergency procedures, plant design controls and regular monitoring.
<b>High</b>	<b>10 – 16</b>	Manage by implementing site management procedures, specific monitoring and may require some operation/plant design controls.
<b>Medium</b>	<b>5 – 9</b>	Manage by implementing specific monitoring or response procedures.
<b>Low</b>	<b>1 – 4</b>	Manage by routine procedures, unlikely to need specific application of resources.

### 3.2 Environmental Risk Assessment

Activities associated with the ERAs which have the potential to cause environmental harm and/or nuisance and the potential impacts have been identified and tabulated. The inherent risk of the impacts occurring, and the residual risk following the implementation of management strategies, has then been assessed. Refer to **Table 6 – Identification of Potential Impacts and Risks** for the assessment.

Table 6 – Identification of Potential Impacts and Risks

Environmental Aspect	Potential Environmental Impact	Source Activity	Inherent Risk Rating <sup>a</sup>	Evaluation and Risk Treatment	Residual Risk Rating <sup>b</sup>
<b>Table notes:</b> (a) "Inherent risk" is the level of risk that exists if the impacts go unmitigated. (b) "Residual risk" is the risk that remains after implementation of the proposed control / management measures.					
Air	Emission of dust to air impacting nearby sensitive receptors.	<ul style="list-style-type: none"> <li>Clearing of vegetation and topsoil / overburden ahead of the extraction activity.</li> <li>Stockpiling of topsoil and overburden.</li> <li>Drilling and blasting activities.</li> <li>Extraction and handling of raw materials (e.g., transfer of materials, processing, blending, stockpiling, transportation).</li> </ul>	3 x 3 = 9 <b>(Medium)</b>	In the absence of control measures, potential incidents associated with air emissions impacting nearby sensitive receptors is scored medium due to the setting of the site a rural locality with limited nearby receptors.  The Air Quality Management Plan (refer to <b>Section 4.1 – Air Quality Management Plan</b> ) has been developed to manage the potential impacts to air from the site activities. Residual risk is reduced to a lower level as the likelihood of an incident occurring is reduced through the implementation of the EMP.  Provided Neilsens implement the measures outlined in the EMP and comply with the requirements of the EA conditions, the residual risk score is reduced, based on a reduced likelihood of impacts.	2 x 2 = 4 <b>(Low)</b>

Environmental Aspect	Potential Environmental Impact	Source Activity	Inherent Risk Rating <sup>a</sup>	Evaluation and Risk Treatment	Residual Risk Rating <sup>b</sup>
<p><b>Table notes:</b>                      (a) "Inherent risk" is the level of risk that exists if the impacts go unmitigated.                      (b) "Residual risk" is the risk that remains after implementation of the proposed control / management measures.</p>					
Water	Release of contaminated water to the receiving environment.	<ul style="list-style-type: none"> <li>Vehicle movements on unsealed roads and access tracks.</li> <li>Wind erosion on exposed surfaces and stockpiles.</li> </ul>	4 x 3 = 12 <b>(High)</b>	<p>Stormwater runoff will interact with disturbed areas created through the development of the proposed extraction areas. Inherent risks to off-site waters are conservatively scored high in the absence of any environmental controls to mitigate these risks.</p> <p><b>Section 4.2 – Water Quality Management Plan</b> has been developed to mitigate the potential impacts to water as a result of the site activities. Provided the measures outlined in the EMP are implemented, and the EA conditions are complied with, the environmental outcomes of the EA are likely to be achieved.</p> <p>Residual risk is reduced to a lower level as the likelihood of an incident occurring is reduced through the implementation of the management measures nominated in the EMP. The consequence remains the same, which results in a residual risk rating of medium. A medium residual risk requires ongoing implementation of specific monitoring or response procedures. These are documented in <b>Section 4.2</b>.</p>	2 x 3 = 6 <b>(Medium)</b>

Environmental Aspect	Potential Environmental Impact	Source Activity	Inherent Risk Rating <sup>a</sup>	Evaluation and Risk Treatment	Residual Risk Rating <sup>b</sup>
<p><b>Table notes:</b>                      (a) "Inherent risk" is the level of risk that exists if the impacts go unmitigated.                      (b) "Residual risk" is the risk that remains after implementation of the proposed control / management measures.</p>					
Groundwater	Release of contaminants to groundwater.	<ul style="list-style-type: none"> <li>Extraction of raw materials.</li> <li>Storage and handling of hydrocarbons and chemicals (i.e., fuels, lubricants, herbicides and other chemicals).</li> </ul>	3 x 3 = 9 <b>(Medium)</b>	<p>Unmitigated, the potential for indirect impacts through release of contaminants to the receiving environment which may be transported to groundwaters is scored medium, based on a possible likelihood and a moderate consequence.</p> <p><b>Section 4.2</b> includes measures for capture and treatment of surface waters that may interact with potential contaminants at the site that could impact groundwater. The EMP also includes a Hydrocarbon and Chemical Management Plan that provides measures for management of other potential contaminants, refer to <b>Section 4.3 – Hydrocarbon and Chemical Management Plan</b> for details.</p> <p>Provided Neilsens implement the EMP, potential for indirect impacts to groundwater will be reduced, and the residual risk is reduced to a lower score based on a decreased likelihood of an impact event occurring, However, the risk remains medium, which will require ongoing management through the implementation of the EMP.</p>	2 x 3 = 6 <b>(Medium)</b>
Noise	Noise nuisance for nearby noise sensitive receptors.	<ul style="list-style-type: none"> <li>Clearing of vegetation and topsoil / overburden ahead of the extraction activity.</li> </ul>	4 x 3 = 12 <b>(High)</b>	<p>In accordance with the <i>Noise Impact Assessment</i> prepared by Assured Environmental (2022a), in the absence of any noise management measures for the Trio and Metso Crusher, there is potential for noise impacts during the night-time period at receptors.</p>	3 x 2 = 6 <b>(Medium)</b>

Environmental Aspect	Potential Environmental Impact	Source Activity	Inherent Risk Rating <sup>a</sup>	Evaluation and Risk Treatment	Residual Risk Rating <sup>b</sup>
<p><b>Table notes:</b>                      (a) "Inherent risk" is the level of risk that exists if the impacts go unmitigated.                      (b) "Residual risk" is the risk that remains after implementation of the proposed control / management measures.</p>					
		<ul style="list-style-type: none"> <li>Stripping and stockpiling of topsoil, subsoils and overburden.</li> <li>Extraction and handling of materials (e.g. transfer of materials, stockpiling, transportation).</li> <li>Screening and processing of the materials.</li> <li>Vehicle movements on unsealed roads and access tracks.</li> <li>Plant and equipment use, including reverse beepers.</li> <li>Radio / UHF use and Alarms.</li> </ul>		<p>The Noise Management Plan (refer to <b>Section 4.4 – Noise Management Plan</b>) has been developed to manage the potential impacts from noise at the site activities. Residual risk is reduced to a lower level as the likelihood of an incident occurring is reduced through the implementation of the EMP.</p> <p>Provided Neilsens implement the measures outlined in the EMP, and comply with the requirements of the EA conditions, the residual risk score is reduced to low based on a reduced likelihood of impacts.</p>	
Noise	Air blast overpressure and vibration nuisance for nearby sensitive receptors <sup>4</sup> .	Blasting activities undertaken for fragmentation of larger rock units.	3 x 4 = 12 <b>(High)</b>	The rural location of the site assists in reducing the number of sensitive receptors; however, blasting activities at the site inherently have the potential to cause air-blast overpressure and vibration impacts for sensitive receptors.  <b>Section 4.5 - Blasting Management Plan</b> provides measures to manage potential impacts to sensitive receptors	2 x 3 = 6 <b>(Medium)</b>

Environmental Aspect	Potential Environmental Impact	Source Activity	Inherent Risk Rating <sup>a</sup>	Evaluation and Risk Treatment	Residual Risk Rating <sup>b</sup>
<p><b>Table notes:</b>                      (a) "Inherent risk" is the level of risk that exists if the impacts go unmitigated.                      (b) "Residual risk" is the risk that remains after implementation of the proposed control / management measures.</p>					
Waste	Improper disposal of wastes (general and regulated waste).	Storage and disposal of residual waste (i.e., general and regulated waste).	3 x 4 = 12 <b>(High)</b>	<p>as a result of blasting activities at the site. Only suitably experienced and qualified blasting personnel shall be employed or contracted to provide blasting services.</p> <p>Provided that the Blasting Management Plan is implemented, and only suitably qualified persons are engaged to undertake blasting activities at the site, the residual risk is reduced to a lower level as the likelihood of an incident occurring is reduced.</p> <p>The residual risk rating is scored medium, which will require ongoing management measure to be applied as outlined in the EMP.</p> <p>The type of wastes that may be generated at the quarry include, but are not necessarily limited to, the following:</p> <ul style="list-style-type: none"> <li>Regulated wastes (e.g., batteries, oil filters, waste oil/hydrocarbons and containers, oil/water emulsions and tyres).</li> <li>Scrap metal and used or faulty parts and equipment.</li> <li>General waste such as food waste, packaging and consumables.</li> <li>Green waste.</li> </ul> <p>The Waste Management Plan included as <b>Section 4.6 – Waste Management Plan</b> details measures for management of</p>	2 x 3 = 6 <b>(Medium)</b>

Environmental Aspect	Potential Environmental Impact	Source Activity	Inherent Risk Rating <sup>a</sup>	Evaluation and Risk Treatment	Residual Risk Rating <sup>b</sup>
<p><b>Table notes:</b>                      (a) "Inherent risk" is the level of risk that exists if the impacts go unmitigated.                      (b) "Residual risk" is the risk that remains after implementation of the proposed control / management measures.</p>					
Land	Release of hydrocarbons and fuels to land.	Storage and handling of chemicals and fuels on-site.	4 x 4 = 16 <b>(High)</b>	<p>waste at the site, with reference to the requirements of the <i>Waste Reduction and Recycling Act 2011</i> ('WRR Act').</p> <p>The inherent risk of handling fuels and chemicals is high due to an increased likelihood of potential release if handling and storage activities are unmanaged.</p> <p><b>Section 4.3 – Hydrocarbon and Chemical Management Plan</b> provides management measures for handling and storage of hydrocarbons and chemicals to reduce the potential impacts to land associated with spills and/or leaks.</p> <p>Provided Neilsens implements the measures outlined in the EMP, the residual risk is reduced to a lower level as the likelihood and consequence of an incident occurring is reduced through the implementation of the management measures outlined in the EMP.</p> <p>The residual risk is scored medium, which will require ongoing management in accordance with the EMP will be required to ensure risk is as low as reasonably possible.</p>	2 x 3 = 6 <b>(Medium)</b>



Environmental Aspect	Potential Environmental Impact	Source Activity	Inherent Risk Rating <sup>a</sup>	Evaluation and Risk Treatment	Residual Risk Rating <sup>b</sup>
<p><b>Table notes:</b>                      (a) "Inherent risk" is the level of risk that exists if the impacts go unmitigated.                      (b) "Residual risk" is the risk that remains after implementation of the proposed control / management measures.</p>					
	<p>Post-closure implementation and management of the site rehabilitation.</p>	<p>Failure of the operator to undertake rehabilitation of the disturbance area at the cessation of the activities.</p>	<p>3 x 4 = 12 <b>(High)</b></p>	<p><b>Section 4.7 – Rehabilitation Management Plan</b> outlines general rehabilitation requirements for the site. The life of the operation is anticipated to extend into the foreseeable future; therefore, a more detailed rehabilitation and closure plan should be prepared prior to cessation of the extractive industry use of the site to reflect a land use relevant to the planning scheme in place at the time.</p> <p>Residual risk is reduced to a lower level as the likelihood of failure of progressive and/or final rehabilitated landforms is reduced through the implementation of the EMP and compliance with the EA conditions.</p> <p>With future planning and implementation of successful rehabilitation, the likelihood of failure is reduced; however, the consequence remains the same, which result in a residual risk rating of medium.</p>	<p>2 x 3 = 6 <b>(Medium)</b></p>

## 4 Environmental Management Plans

### 4.1 Air Quality Management Plan

#### 4.1.1 Objective

The activity will be operated in a way that protects the environmental values of air.

#### 4.1.2 Purpose

This Air Quality Management Plan has been prepared to control potential air quality impacts occurring as a result of land disturbance necessary for the site operations. The *Environmental Protection Act 1994* and the associated *Environmental Protection (Air) Policy 2019* provide the legislation and regulatory controls for management of emissions to the atmosphere.

#### 4.1.3 Performance Targets

- No environmental nuisance complaints in relation to air quality impacts (i.e., unmitigated emissions of dust, odours or light) associated with the site activities.
- Dust and particulate matter emissions generated by the activities must not cause exceedances of Dust and particulate matter not exceeding the levels shown in **Table 7 – Air Quality Parameters** when measured at the sensitive receptor.

Table 7 – Air Quality Parameters

Contaminant	Measure	Target Upper Limit
Dust Deposition	Deposition rate	120 mg/m <sup>2</sup> /day
PM <sub>10</sub>	Concentration	50 µg/m <sup>3</sup> averaged over 24 hours
	Concentration	25 µg/m <sup>3</sup> annual average
PM <sub>2.5</sub>	Concentration	25 µg/m <sup>3</sup> averaged over 24 hours
	Concentration	8 µg/m <sup>3</sup> annual average
Total Suspended particles (TSP)	Concentration	90 µg/m <sup>3</sup> averaged over 24 hours

#### 4.1.4 Management Strategies

The following site-specific control measures are to be implemented in accordance with the recommendations of the *Bromelton North Quarry – Air Quality Assessment* (Assured Environmental 2022a, p.43):

##### WORK AREAS / TRAFFICABLE AREAS

- *Limit high dust generating activities (vehicle movements) to periods of favourable weather conditions.*

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## 4.1 Air Quality Management Plan

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- *The dry stacking will have a high moisture content which will minimise emissions; if visual surveillance indicates dust generation water the dry stacking where operations are occurring.*
- *Dampen down (approx. rate of 2 litres/m<sup>2</sup>/hour) the internal haul roads by water spraying when visual surveillance indicates excessive dust generation.*
- *Restrict vehicle movements to designated routes to the extent practicable.*
- *Enforce speed limits on internal roads.*
- *Maintain road surfaces in good condition.*
- *Prevent and clean up any spillages or dust accumulation on driveways or sealed roads.*

### Processing Plant

- *Use shielding and/or windbreaks where possible.*
- *Maintain equipment in accordance with the original equipment manufacturers' specifications.*
- *Water or use foam-based products when dust from the crushing area is visibly dispersing towards the north.*

### Stockpiles

- *Limit the height of any stockpiles to <6m, where practicable.*
- *Regularly water stockpiles to keep down dust emissions if visual surveillance indicates excessive dust generation.*

The following supplementary measures are recommended in addition to the above:

- Ensure sufficient on-site water supply is available for dust suppression.
- Apply good housekeeping practices.
- Pave and/or seal high trafficable access roads and/or tracks, where practicable.
- Establishing / maintaining tree and shrub screens and constructing amenity banks
- Use water sprays and/or dust collection systems at transfer points.
- Use dust extraction systems on drill rigs where possible, or wet down drilling via water sprays.
- Apply additional water sprays to stockpiles during high wind conditions.
- Dampen materials prior to transport/handling.
- Ensure that incoming and outgoing truckloads of materials are covered during transport.
- Ensure that truck bodies and trailers leaving the premises are clean, focusing on draw bars and tail gates, to prevent material spillages causing dust nuisance and being tracked onto external roads.

### 4.1.5 Monitoring

Daily visual surveillance must be undertaken by all employees to ensure dust generation on-site is controlled appropriately.

Dust and particulate monitoring must be undertaken at the request of the administering authority in accordance with the relevant conditions of the EA. Dust and particulate monitoring must be undertaken to investigate any complaint of environmental nuisance caused by dust and/or particulate matter.

When requested to undertake monitoring, monitoring results are to be provided to the administering authority following completion of the monitoring event.

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## 4.1 Air Quality Management Plan

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Monitoring shall be carried out at a place(s) relevant to the potentially affected dust sensitive place and must include:

- For a complaint alleging dust nuisance, dust deposition.
- For a complaint alleging adverse health effects caused by dust, PM<sub>10</sub> and PM<sub>2.5</sub> over a 24hr averaging time.

The monitoring must determine the extent to which the air quality achieves the performance targets specified in **Table 7 – Air Quality Parameters**.

Methods of monitoring for the specified parameters are as follows:

### DUST DEPOSITION

- *Australian Standard (AS) 3580.10.1 Methods for sampling and analysis of ambient air – Determination of particulates – Deposited matter – Gravimetric method* (Standards Australia 2016).

### PM<sub>10</sub>

- *AS 3580.9.6 Determination of Suspended Particulate Matter-PM10 High Volume Sampler with Size Selective Inlet-Gravimetric Method* (Standards Australia 2015).
- *AS 3580.9.9 Methods for sampling and analysis of ambient air Determination of suspended particulate matter – PM<sub>10</sub> low volume sampler– Gravimetric method* (Standards Australia 2017).
- Any alternative method of monitoring PM<sub>10</sub> which may be permitted by the Air Quality Sampling Manual as published from time to time by the administering authority.

The monitoring results must be provided within 10 business days to the administering authority upon its request.

### 4.1.6 Contingency Plan

Any complaint received in relation to dust impacts is to be managed by the Quarry Manager in accordance with **Section 0 -**

#### **Compliant Recording and** Response.

Any exceedance of the approved limits is to be reported to the administering authority in accordance with **Section 2.4 - Incident Response Procedure**, and corrective action is to be identified and undertaken in consultation with the administering authority. In the event that air quality monitoring (dust and/or particulate matter) determines an exceedance of the approved limits (noted under *Performance Targets*), the Quarry Manager, in consultation with management, may engage the services of a suitably qualified person to determine additional management strategies to mitigate impacts.

Additional air quality monitoring should be undertaken as necessary to determine the effectiveness of any additional management strategies employed in response to exceedance of approved limits.

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## 4.2 Water Quality Management Plan

### 4.2.1 Objective

The activity will be operated in a way that protects the environmental values of water.

### 4.2.2 Purpose

This Water Quality Management Plan has been prepared to control potential environmental impacts occurring as a result of land disturbance necessary for the site operation.

### 4.2.3 Performance Targets

- To ensure all prescribed water contaminants (Schedule 10 EP Reg) including sand, suspended solids, turbid waters, chemicals, lubricants, or fuels are not released from the site.
- Stormwater runoff from disturbed areas of the site, generated by (up to and including) a 24-hour storm event with an Average Recurrence Interval ('ARI') of 1 in 5 years must be retained on site or managed to remove contaminants prior to release.
- An uncontrolled release from site should only occur under exceptional circumstances such as the site receiving a rainfall event larger than a 24-hour storm event with an ARI of 1 in 5 years.
- Water that is controlled released from the site is to comply with conditions of the EA. The development conditions and EA do not prescribe release limits; therefore, performance targets have been nominated for the quarry operations based on other extractive industries local to the site within the same Logan River Catchment. Refer to **Table 8 – Nominated Performance Targets – Settling Pond 2**.

Table 8 – Nominated Performance Targets – Settling Pond 2

Parameter	Nominated Performance Target
pH	6.5 to 8.5
Total Suspended Solids	50 mg/L <sup>1</sup>
Salinity	732 <sup>2</sup>
Visible Oil and Grease	Not visible or otherwise noticeable

Table notes:

- 1) TSS sourced from the *Guideline: Stormwater and environmentally relevant activities* (DES 2014).
- 2) Salinity values sourced from the Southern Coastal, 90<sup>th</sup> percentile rateable value of the *Queensland Water Quality Guidelines 2009* (EHP 2013).

### 4.2.4 Management Strategies

All stormwater infrastructure is to be designed and installed in accordance with the stormwater management plan prepared for the site included as **Attachment 2 – Stormwater Management Plan Drawing**.

In addition, the **Table 9 – Guide to Water Quality Management** outlines the water quality management strategy on the site to ensure all reasonable measures are undertaken to capture rainfall during wet weather events.

The following provides supplementary control measures:

### **SEDIMENT BASINS**

- Within 120 hours of the most recent rainfall event, the required design capacity of the upper settling volume is available for capture and storage of stormwater runoff from the next rainfall event<sup>1</sup>.
- Sediment basins must be designed to capture sediment up to a depth of 0.5 m within the base of the pit. An indicator marker is to be installed at the base of the pit to identify the level of sediment accumulated.
- Site features such as extraction pits and drop cuts may be utilised as on-site storage<sup>1</sup>.
- Sediment is to be removed to return the sediment basins to full capacity on a periodic basis or when the sediment level is approaching the sediment storage capacity.
- Coagulants or flocculants may be used to treat stormwaters in sediment basins; however, their use must be in accordance with the manufacturer's dosage specifications to ensure that they do not cause environmental harm to receiving waters.

### **DRAINAGE CONTROL**

- Clean stormwater runoff external to the operational areas must be prevented from entering disturbed areas through use of catch drains or flow diversion drains.
- Drainage inlets / outlets (inclusive of sediment and waste baskets) are to be maintained at all times.
- Grass filter strips are to be retained for surface water discharge locations.

### **SEDIMENT CONTROL**

- Sediment is to be trapped within the site, and as close as practicable to its source.
- Materials, whether liquid or solid, removed from sediment control devices during maintenance or decommissioning, must be disposed of in a manner that does not cause ongoing soil erosion or environmental harm.
- Site exit points must be appropriately managed to minimise the risk of sediment being tracked onto sealed, public roadways.

### **LAND CLEARING**

- No land clearing shall be undertaken unless preceded by the installation of adequate drainage and sediment control measures, unless such clearing is required for the purpose of installing such measures, in which case, only the minimum clearing required to install such measures shall occur.
- Land clearing to be undertaken in conjunction with development of each stage of the quarry.
- Bulk tree clearing must occur in a manner that minimises disturbance to existing ground cover (organic or inorganic).
- Disturbance to natural watercourses (including bed and banks) and their associated riparian zones must be limited to the minimum practicable extent and be accompanied by the relevant approval.
- Prior to land clearing, areas of protected vegetation, and significant areas of retained vegetation must be clearly identified for the purposes of minimising the risk of unnecessary land clearing.

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<sup>1</sup> DES, (2014). *Guideline: Stormwater and environmentally relevant activities*. Accessed via [https://environment.des.qld.gov.au/data/assets/pdf\\_file/0028/89119/pr-gl-stormwater-guideline-era.pdf](https://environment.des.qld.gov.au/data/assets/pdf_file/0028/89119/pr-gl-stormwater-guideline-era.pdf)