



# **POLLUTION INCIDENT RESPONSE MANAGEMENT PLAN (PIRMP) FOR EPL 13218**

EPL 13218

December 2024

### **Acknowledgement of Country**

*Umwelt would like to acknowledge that the Project documented herein was undertaken on Wiradjuri, Country. We pay respect to their cultural heritage, beliefs, and continuing relationship with their lands, sky and waters. We pay our respects to all Elders and celebrate the diversity of Aboriginal and Torres Strait Islander peoples and their continuation of cultural, spiritual and educational practices.*

### **Document Status**

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	Name	Date	Name	Date
1	Rod Williams	15 April 2021	Rod Williams	15 April 2021
2	Rhys Wilson	6 October 2022	Luke Bettridge	6 October 2022
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# 1.0 Introduction

This Pollution Incident Response Management Plan (PIRMP) has been developed to satisfy the relevant requirements of the *Protection of the Environment Operations Act 1997* (POEO Act) and POEO (General) Regulation 2022 (The General Regulation).

Specific requirements of the PIRMP are set out in Part 5.7 of the POEO Act. These requirements include:

- The holder of an Environmental Protection Licence (EPL) must prepare a pollution incident response management plan in relation to the activity to which the licence relates (Section 153A);
- The EPA may, in accordance with the regulations, require the occupier of premises at which the industry is carried out to prepare a pollution incident response management plan in relation to activities at the premises (Section 153B).
- The plan must include the information detailed in the POEO Act (Section 153C) and The General Regulation (Clause 72), and additional information detailed in The General Regulation (Clause 73) and be in the form required by The General Regulation (Clause 71);
- A person who is required to prepare a pollution incident response management plan must ensure that it is kept at the premises to which the relevant EPL relates, or where the relevant activity takes place, and is made available in accordance with the regulations (Section 153D);
- A person who is required to prepare a pollution incident response management plan must ensure that it is tested in accordance with the regulations (Section 153E); and
- If a pollution incident occurs in the course of an activity so that material harm to the environment (within the meaning of section 147) is caused or threatened, the person carrying on the activity must immediately implement the plan in relation to the activity (Section 153F).

As holder of EPL 13218, Mackas Sand is required to comply with the POEO Act. As such, this document has been developed to satisfy the PIRMP requirements.

This document also details the procedures for notification of pollution incidents resulting in or having the potential to cause material harm to the environment. The notification of environmental incidents under this PIRMP is only required for those incidents causing or threatening to result in material environmental harm (a material harm incident) as defined in the POEO Act (refer to **Section 5.0**).

## 1.1 Regulatory Requirements

**Table 1.1** lists information mandated under Section 153C of the POEO Act and Clause 72C of The General Regulation and details where this information is in this PIRMP.

**Table 1.1 PIRMP Requirements and where they are addressed in this document**

Section 153C	Detail Required	Location in Document
(a)	<p>The procedures to be followed by the holder of the relevant EPL in notifying a pollution incident to:</p> <ul style="list-style-type: none"> <li>(i) The owners or occupiers of premises in the vicinity of the premises to which the environment protection licence or the direction under section 153B relates, and</li> <li>(ii) The local authority for the area in which the premises to which the environment protection licence or the direction under section 153B relates are located and any area affected, or potentially affected, by the pollution, and</li> <li>(iii) Any persons or authorities required to be notified by Part 5.7 (of the POEO Act).</li> </ul>	Section 5.2
(b)	A detailed description of the action to be taken, immediately after a pollution incident, by the holder of the relevant EPL, or the occupier of the relevant premises, to reduce or control any pollution.	Section 4.0
(c)	The procedures to be followed for co-ordinating, with the authorities or persons that have been notified, any action taken in combating the pollution caused by the incident and, in particular, the persons through whom all communications are to be made.	Section 5.2
(d)	Any other matter required by the Protection of the Environment Operations (General) Regulation 2022 (as set out below):	
	<p>72 (a)</p> <p><i>A description of the hazards to human health or the environment associated with the activity to which the licence relates (the “relevant activity”).</i></p>	Section 2.2
	<p>72 (b)</p> <p><i>The likelihood of the hazards occurring, including details of conditions or events that could, or would, increase the likelihood.</i></p>	Section 2.2
	<p>72 (c)</p> <p><i>Details of the pre-emptive action to be taken to minimise or prevent a risk of harm to human health or the environment arising out of the relevant activity.</i></p>	Section 4.0
	<p>72 (d)</p> <p><i>An inventory of potential pollutants on the premises or used in carrying out the relevant activity.</i></p>	Section 2.3
	<p>72 (e)</p> <p><i>The maximum quantity of a pollutant likely to be stored or held at particular, including underground tanks, at or on the premises to which the licence relates.</i></p>	Section 2.3
	<p>72 (f)</p> <p><i>A description of the safety equipment or other devices used to minimise the risks to human health or the environment and to contain or control a pollution incident.</i></p>	Section 4.0
	<p>72 (g)</p> <p><i>The names, positions and 24-hour contact details of individuals who –</i></p> <ul style="list-style-type: none"> <li><i>(i) are responsible for activating the PIRM plan, and</i></li> <li><i>(ii) are authorised to notify relevant authorities under the Act, section 148, and</i></li> <li><i>(iii) are responsible for managing the response to a pollution incident.</i></li> </ul>	Section 3.2

Section 153C	Detail Required	Location in Document
	<p>72 (h) The contact details of each relevant authority referred to in the Act, section 148.</p>	Section 5.2
	<p>72 (i) Details of the mechanisms for providing early warnings and regular updates to the owners and occupiers of premises near the premises to which the licence relates or where the scheduled activity is carried on.</p>	Section 5.3
	<p>72 (j) The arrangements for minimising the risk of harm to any persons who are on the premises or who are present where the scheduled activity is being carried on.</p>	Section 4.0
	<p>72 (k) A detailed map, or set of maps, showing the location of the premises to which the licence relates, the surrounding area likely to be affected by a pollution incident, the location of potential pollutants on the premises and the location of any stormwater drains on the premises.</p>	<p><b>Figure 2.1</b> Note: No stormwater drains are located on the premises.</p>
	<p>72 (l) A detailed description of how any identified risk of harm to human health will be reduced, including, as a minimum, by early warnings, updates and the action to be taken during or immediately after a pollution incident to reduce that risk.</p>	Section 4.0 and Section 5.3
	<p>72 (m) The nature and objectives of any staff training program in relation to the PIRM plan.</p>	Section 6.1
	<p>72 (n) The dates on which the PIRM plan has been tested and the name of the person who carried out the test.</p>	Section 6.2
	<p>72 (o) The dates on which the PIRM plan is updated.</p>	Section 6.2
	<p>72 (1)(p) The way in which the PIRM plan is to be tested and maintained.</p>	Section 6.2

## 2.0 Premises Details

### 2.1 Site Details

Mackas Sand is located within the Williamtown (Lot 218) and Salt Ash (Lot 220) localities, approximately 25 km north-east of Newcastle, NSW. The sites are located within the Port Stephens Local Government Area (refer to **Figure 2.1**). Mackas Sand operations are regulated through a number of state and federal approvals, including Environment Protection Licence (EPL) 13218.

The operation is serviced by the Mackas Sand and Soil administration and workshop facilities which are located outside EPL 13218 premiss boundary, and are regulated under a separate EPL, EPL 12108.

Operations at Lot 218 and 220 are contract mined by Mackas Sand through a lease agreement with landholders, Worimi Local Aboriginal Land Council. The site is located within the coastal zone of Stockton Bight, is part of the North Stockton Catchment Area and is predominantly surrounded by rural residential land and remnant bushland which could potentially be impacted by a pollution incident as a result of operations.

Stockton Bight has a high conservation value due to its rich Aboriginal cultural heritage and archaeological value, and habitat for threatened and endangered species.

The Mackas Sand operational areas are also located adjacent to the Worimi Conservation Lands which were proclaimed during 2007 forming a 4438-hectare (ha) conservation area that includes:

- Worimi State Conservation Area
- Worimi National Park
- Worimi Regional Park.

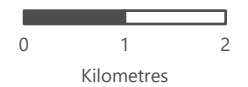
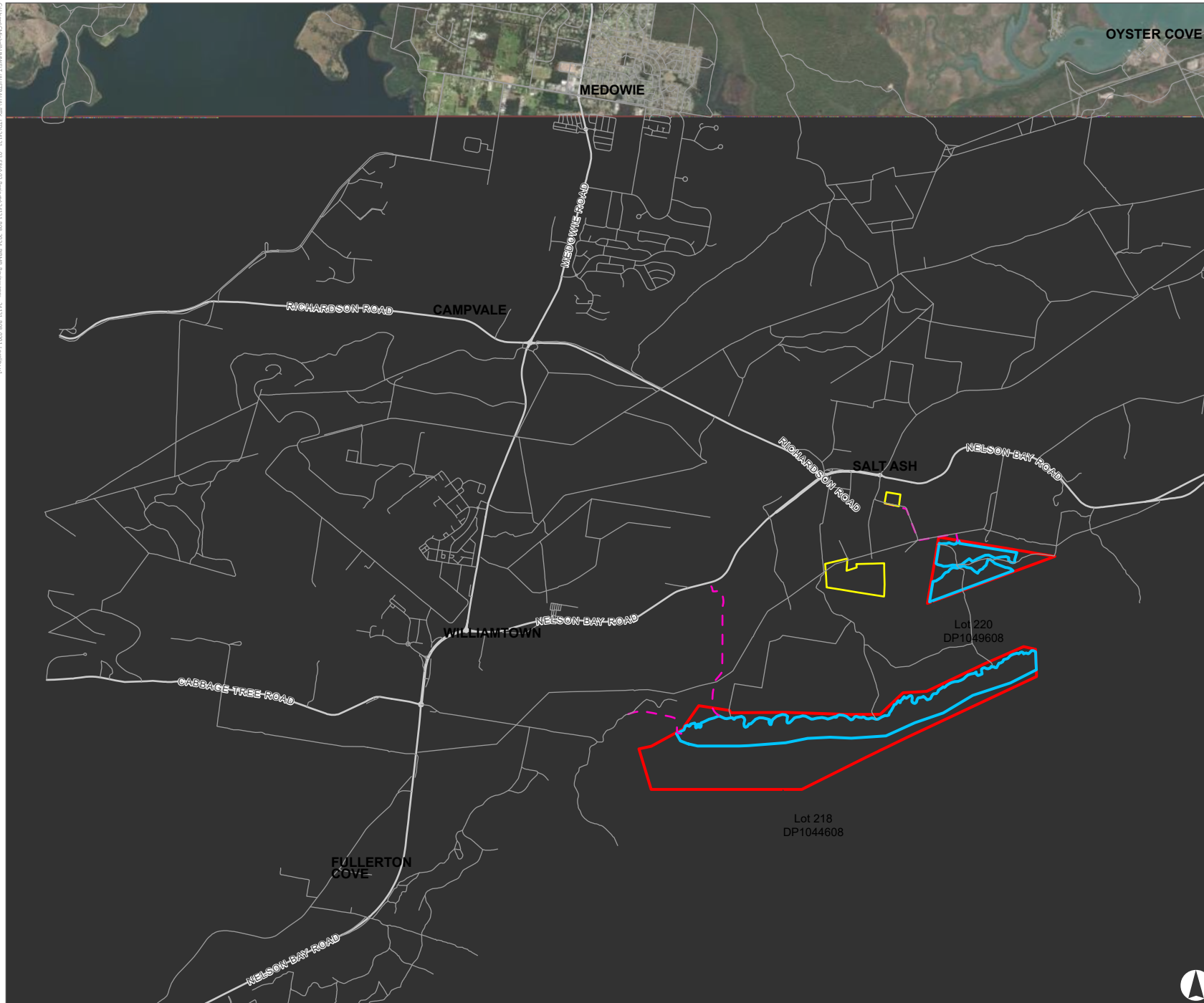
The conservation lands are now leased back to the NSW government under an agreement that allows for the lands to be co-managed between the WLALC and the government.

The nearest private landholders are also located approximately 100 m north of Lot 220 and approximately 1.5 km from Lot 218. Local industry, including other sand extraction operations, Holcim and Redisand are located in close proximity to Lot 220. Rural and other agricultural activities, such as grazing also occur across the general locality.

**FIGURE 2.1**  
Locality Plan

**Legend**

- ▬ EPL 13218 Premises Boundary
- ▬ EPL 12108 Premises Boundary
- ▬ Approval Areas
- - - Approved Site Access
- ▬ Major Roads
- ▬ Minor Roads



Scale 1:75,000 at A4  
GDA 1994 MGA Zone 56

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## 2.2 Hazards

The potential main hazards relevant to this PIRMP which have been identified for Mackas Sand operations are:

- spills (e.g., hydrocarbon, chemicals, greases and oils etc.) resulting in land contamination;
- spills (e.g., hydrocarbon, chemicals, saline or sediment laden water, etc.) resulting in contamination of water bodies (such as groundwater); and
- fire (for example, bushfires or plant and machinery fires).

The likelihood of environmental hazards occurring at Mackas Sand has been captured through an internal risk review. The purpose of the risk review is to identify the environmental aspects and impacts resulting from operations at Mackas Sand.

The risk review identifies the potential hazards and the controls necessary to effectively manage day to day hazards. Environmental pollution hazards that have been identified on the premises of EPL 13218 have been included in this PIRMP.

## 2.3 Chemicals and Potential Pollutants

No chemicals or potential pollutants are stored at either Lot 220 or Lot 218.

Refuelling of mobile equipment occurs at the Mackas Sand and Soil administration area and maintenance facility, at the vehicle storage area near the Alternate Access Route or by mobile refuelling plant, as appropriate. Mackas Sand uses sieves and/or stockpilers at Lot 220 and Lot 218 that have limited mobility, being moved once or twice a year. Refuelling of plant with limited mobility off-site is not considered feasible. As such, refuelling of some plant (particularly with limited mobility) occurs within the extraction areas via the usage of mobile refuelling equipment.

In order to minimise the risk of fuel spills, and the impact of spills should they occur, refuelling equipment consists of a fuel tank, spill catch tray and spill kit. An additional mobile spill kit is located within Lot 218 and Lot 220 extraction areas to enable prompt clean up in the event of a spill during refuelling activities.

Any spills, should they occur, will be managed and contaminated material will be disposed of in accordance with relevant waste management requirements. Incidents that harm or have potential to harm the environment will be managed in accordance with **Section 4.0**.

## 3.0 Management and Responsibilities

### 3.1 PIRMP Management

The specific responsibilities associated with the management and implementation of the PIRMP are outlined in **Table 3.1**.

**Table 3.1 PIRMP Management Responsibilities**

Name	Contact Details	Position	Responsibility
Robert Mackenzie	0408 490 911	Quarry Manager	<ul style="list-style-type: none"> <li>Determination and notification of material harm incidents to relevant authorities/stakeholders.</li> <li>Providing information as requested from relevant government agencies.</li> <li>Undertaking testing/updating of the PIRMP.</li> <li>Completing relevant training in regard to the implementation of the PIRMP, as required.</li> <li>Authorising the PIRMP and subsequent amendments.</li> </ul>
James Mackenzie	0427 490 911	Deputy Manager	<ul style="list-style-type: none"> <li>As delegated by the Quarry Manager.</li> </ul>
Jack Mackenzie	0400 490 911	Supervisor	<ul style="list-style-type: none"> <li>As delegated by the Quarry Manager.</li> </ul>
Bret Jenkins	0427 665 523	HSE Manager	<ul style="list-style-type: none"> <li>As delegated by the Quarry Manager.</li> </ul>

### 3.2 Legal Duty to Notify

All employees and contractors are responsible for alerting management personnel to all environmental incidents or hazards which may result in an environmental impact, regardless of the nature or scale.

Notification responsibilities are detailed in the POEO Act (Section 148), which encompasses all site personnel, including contractors and sub-contractors. These can be categorised broadly as:

- The duty of employee or any person undertaking an activity:
  - Any person engaged as an employee or undertaking an activity must, immediately after becoming aware of any potential incident that is believed to cause or threatens to cause material harm to the environment, notify the Quarry Manager or delegate of the Quarry Manager of the incident and all relevant information about it. This is to be undertaken as per **Section 5.2**.
- The duty of the employer or occupier of a premises to notify:
  - An employer or occupier of the premises on which the incident occurs, who is notified (or otherwise becomes aware of) a potential pollution incident, must undertake notification to the appropriate regulatory authority of any 'material harm incidents', including relevant information. Notification shall be undertaken by the Quarry Manager or delegate.

The definition of material harm provided in **Section 5.1**.

## 4.0 Incident Management

A pollution incident is defined in the POEO Act as an incident or set of circumstances during or as a consequence of which there is or is likely to be a leak, spill or other escape or deposit of a substance, as a result of which pollution has occurred, is occurring or is likely to occur.

It includes an incident or set of circumstances in which a substance has been placed or disposed of on premises, but it does not include an incident or set of circumstances involving only the emission of noise.

In the case of an environmental incident, prior to any other action, the site must contact Fire and Rescue NSW (1300 729 579 or 000) if the incident presents an immediate threat to human health or property. Fire and Rescue NSW are the first responders, as they are responsible for controlling and containing incidents.

Where there is no threat to human health or services, Fire and Rescue NSW must still be contacted for information purposes, but as the last point of contact as detailed in **Section 5.2**.

All possible actions should be taken to control the pollution incident in order to minimise health, safety and environmental consequences. The actions, listed in **Table 4.1** are to be implemented in the event of an incident:

**Table 4.1 Incident Management Responses and Controls**

Item	Action
1.	Provide for the safety of people at and within the vicinity of the incident;
2.	Secure the scene and contain any spills. Ensure that containment is carried out in a safe and effective fashion;
3.	Employees to notify manager or manager's delegate promptly and without delay;
4.	Contact Fire and Rescue New South Wales (NSW) (000) if the incident presents an immediate threat to human health or property;
5.	Manager to undertake notification of material harm incident (see Section 5.1);
6.	Commence cleanup. Engage specialist services such as suction truck etc where required. Ensure that responses are carried out in a safe, well organised, and effective fashion;
7.	Manage stakeholders arriving at site;
8.	Gather information (i.e., photographs, environmental sampling and testing);
9.	Continuously assess the incident to determine the adequacy of response operations and the need for further assistance;
10.	Undertake investigation into the cause of the incident;
11.	Review, collate and document information from the investigation.
12.	Implement preventive actions as identified by the investigation

Incident management at Mackas Sand focuses on actions to:

- provide for the safety and welfare of all responders, employees, contractors and visitors (where applicable);
- provide and maintain response resources, including equipment and/or training to minimise the environmental impacts associated with the incident;
- establish that response operations are carried out in a safe, well-organised, legal and effective fashion;
- continuously assess the incident to determine the adequacy of incident response operations;
- minimise effects on people, the environment, property, production, and company reputation; and
- where necessary, utilise environmental monitoring to quantify impacts as a result of the incident.

## 5.0 Notification Procedures

### 5.1 Definition of Material Harm

Following containment of the incident, and ensuring safety of personnel, immediate action must be taken to determine if the incident can be classified as a 'material harm incident'. As defined by Part 5.7, Section 147 of the POEO Act, a material harm incident has occurred if the incident:

- involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial or;
- results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000.00 (or such other amount as is prescribed by the regulations).

Note: actual or potential loss includes all reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment.

It is possible for a material harm incident to occur on land that is within the boundary of the EPL. The determination of a material harm incident will be made by the Quarry Manager or delegate at the time of the incident.

### 5.2 Internal and External Notification

As discussed in **Section 3.2**, notification of an environmental incident is the responsibility of all site and contractor personnel. In the event of a 'material harm incident', response and notification must be undertaken as per **Table 5.1**.

Site personnel will report an environmental incident or hazard immediately to the Quarry Manager or delegate. 'Immediately' is taken to mean 'promptly and without delay'.

The decision on whether to notify the incident as being a material harm incident, in accordance with Part 5.7 of the POEO Act should not delay immediate actions to provide the safety of people or contain a pollution incident. However, incident notification will be made as soon as it is safe to do so<sup>1</sup>.

After initial notification of any 'material harm incident', it will be the responsibility of the Quarry Manager or delegate to liaise with any authority listed in **Table 5.1** that requests additional information or is providing directions for management of the 'material harm incident'. This may include incident investigation reports and ongoing environmental monitoring results.

**Table 5.1 PIRMP Notification Requirements**

Agency	Contact Details
To be contacted immediately in order of priority	
<b>Fire and Rescue NSW (if required)</b>	<b>000 or 1300 729 579</b> To be contacted first if the incident presents an immediate threat to human health or property and emergency services are required. Fire and rescue to be contacted last if emergency response is not required.

<sup>1</sup> EPA, *Frequently Asked Questions Regarding the Duty to Notify of a pollution Incident* (August 2017)

Agency	Contact Details
Environment Protection Authority – Environment Line	131 555
Ministry of Health	24 Hour Line: <b>02 9391 9000</b> and ask to speak to the Environmental Health Officer
SafeWork NSW	13 10 50
Port Stephens Council	Work Hours: <b>02 4988 0255</b> After Hours: <b>02 4988 0255</b> and select options from menu. For urgent matters outside normal business hours or for emergencies, call SES on <b>132 500</b> .
<b>To be contacted within 24 hours of incident</b>	
Department of Planning, Housing and Infrastructure	Via Planning Portal (preferred) or 1300 305 695
Hunter Water	1300 657 657

### 5.3 Notification to Local Landholders and Community

Community notification shall be undertaken at the determination of the Quarry Manager or Fire and Rescue (as relevant) and may be based on environmental monitoring results. **Appendix 2** outlines the community notification requirements.

The following notification methodology is proposed to be utilised as required:

- early warnings: same day telephone notification to landholders who may be affected by the incident over the subsequent 24-hour period, and
- updates: follow up phone calls to all landholders who received an early warning notification or now require notification will be undertaken by relevant personnel. Updates are to be provided, as considered necessary, to the broader local community in affected areas via information sheets or newsletters, Community Consultative Committee meetings, Mackas Sand website, media statements or any other strategy as determined appropriate by the Quarry Manager.

Information provided to the community will be relevant to the incident and may include the following details:

- type of incident that has occurred;
- potential impacts on the local landholders and the community;
- site contact details; and
- advice or recommendations based on the incident type and scale.

## 6.0 Training, Testing and Communication

### 6.1 Training

All site personnel and contractors shall be made aware of their responsibilities with regard to avoiding pollution incidents, and their responsibilities in the event of an incident, including providing for the safety of personnel, reporting, containing and cleanup of environmental incidents.

Personnel nominated in **Table 3.1** being responsible for management and implementation of this PIRMP will be made aware of their responsibilities under this PIRMP.

### 6.2 Testing, Review and Maintenance

Testing of the PIRMP will be undertaken to check that the information is accurate and current and that the plan is capable of being implemented in a workable and effective manner. Testing shall be undertaken in the following ways:

- The PIRMP will be tested by assessing and reviewing it and making any necessary changes as required. Testing is taken to be either a desktop review or an environmental emergency drill procedure. Testing will include all components of the plan, including training requirements.
- A review of the PIRMP will occur every 12 months commencing from the date of authorisation by the Quarry Manager. Dates on which the plan has been tested are shown in **Table 6.1**.
- The PIRMP will be reviewed within one month from the date of any pollution incident that occurs in the course of an activity to which the EPL relates. This review will be undertaken in light of the incident, to provide the information included in the plan is accurate and up to date and the plan is still capable of being implemented in a workable and effective manner.

Records of testing and review will be included in **Table 6.1** of this plan, including:

- the manner in which the test was undertaken;
- dates when the plan has been tested;
- the person who carried out the testing; and
- the date and description of any update of or amendment to the plan.

**Table 6.1 PIRMP Testing Dates**

Date of Test	Name of Personnel Undertaking Test/Review	Manner of Testing	Summary of Changes (include brief detail and section number)	Date of Document Update
17/01/2014	Andy Goodwin (Umwelt)	Desktop Review	<b>Section 2.1</b> – inclusion of MOD 1. <b>Section 2.3</b> – updated refuelling procedure to reflect updated Soil & Water Management Plan	20/01/2014

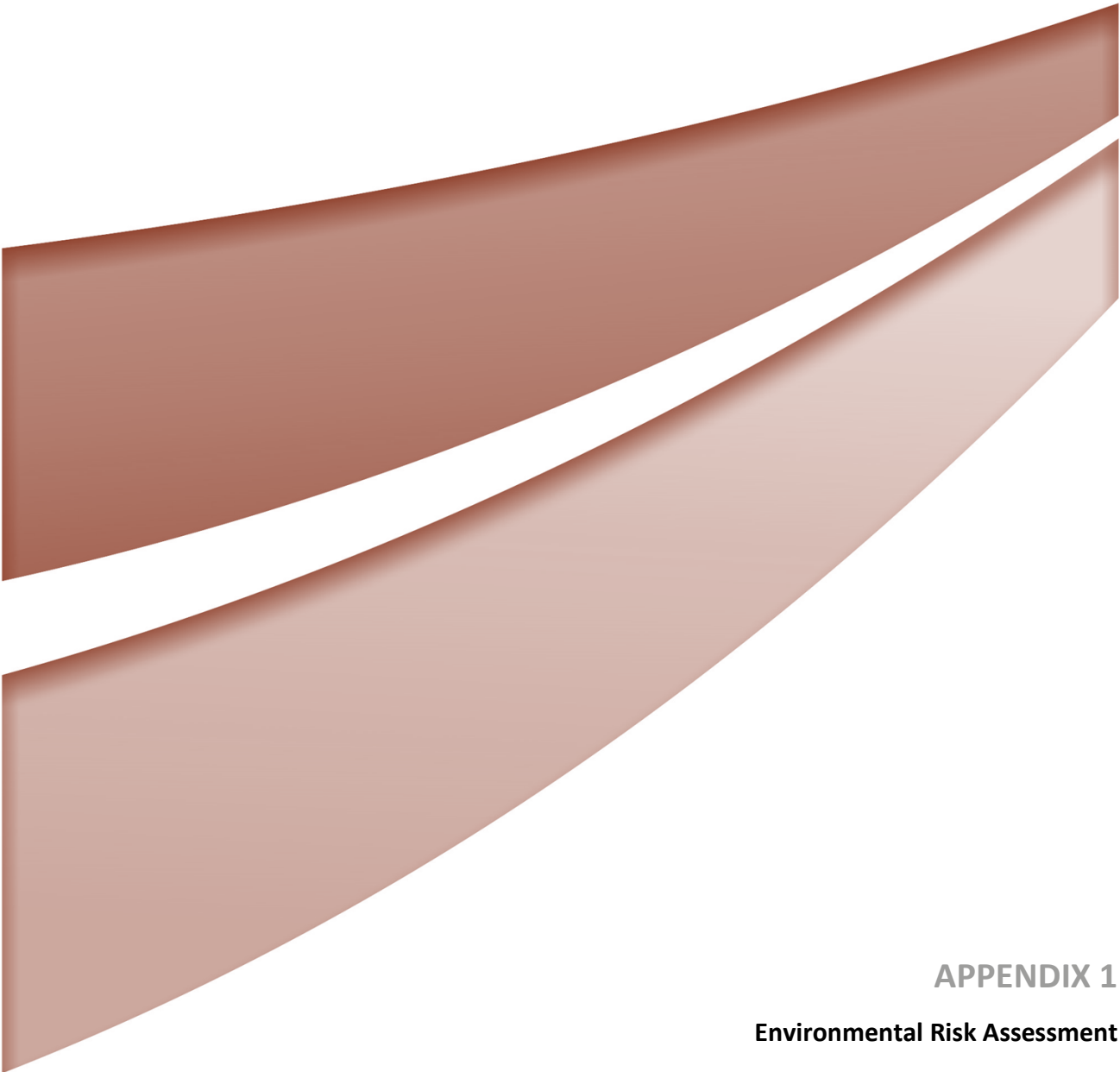
Date of Test	Name of Personnel Undertaking Test/Review	Manner of Testing	Summary of Changes (include brief detail and section number)	Date of Document Update
04/05/2016	Brendan Rice (Umwelt) Rob McKenzie (Mackas Sand)	Desktop Review	<b>Section 2.1</b> – inclusion of MOD2. Inclusion of Appendix 1 (Environmental Risk Assessment). <b>Section 5.2</b> – Agency contact details updated.	04/05/2016
22/08/2017	Brendan Rice (Umwelt) Rob Mackenzie (Mackas Sand)	Desktop Review	Minor formatting changes	23/08/2017
26/06/2019	Kai Neville (Umwelt) Rob Mackenzie (Mackas Sand)	Desktop Review	General formatting changes Verification and amendment of contact phone numbers in <b>Section 5.2</b>	27/06/2019
2/12/2020	Kai Neville (Umwelt) Rob Mackenzie (Mackas Sand)	Desktop Review	General formatting changes Verification and amendment of contact phone numbers in <b>Section 5.2</b>	8/12/2020
15/12/2021	Thomas Hall (Umwelt) Rob Mackenzie (Mackas Sand)	Desktop Review	No changes required.	N/A
25/08/2022	Rhys Wilson (Umwelt) Luke Bettridge (Umwelt) Rob Mackenzie (Mackas Sand)	Desktop Review	Verification and amendment of contact phone numbers in <b>Section 5.0</b> . Review and update of potential hazards relevant to the site in <b>Appendix 1</b> . Addition of <b>Appendix 2</b> - Local Landowner Notification contact phone numbers.	26/08/2022
21/09/2023	Rhys Wilson (Umwelt) Jai Roby (Umwelt) Bret Jenkins (Mackas Sand)	Desktop Review	General formatting changes. Verification of contact phone numbers in <b>Section 5.0</b> . Review and update of potential hazards relevant to the site. Review and update of the Environmental Risk Assessment found in <b>Appendix 1</b> . Update training requirements.	21/12/2023
10/10/2024	Jai Roby (Umwelt) Bret Jenkins (Mackas Sand)	Desktop Review	General formatting changes. Verification of contact phone numbers in <b>Section 5.0</b> . Review and update of potential hazards relevant to the site. Review and update of the Environmental Risk Assessment found in <b>Appendix 1</b> . Update training requirements.	1/11/2024



## 6.3 Availability of the PIRMP

The PIRMP shall be kept in written form at the EPL premises and shall be made available to all personnel responsible for implementing the plan, and to an authorised officer (as defined in the POEO Act) on request. The PIRMP will be made publicly available within 14 days of approval by the Quarry Manager, or delegate of the Quarry Manager, and following any subsequent revisions.

No personal information (within the meaning of the *Privacy and Personal Information Protection Act 1998*) will be made publicly available as part of the PIRMP.



## APPENDIX 1

### Environmental Risk Assessment

**Table A1 Qualitative Measures of Environmental Consequence**

Severity Level	Natural Environment	Legal/Government	Heritage	Community/Reputation/ Media
<b>(1) Insignificant</b>	Limited damage to minimal area of low significance.	Low-level legal issue. On the spot fine. Technical non-compliance prosecution unlikely. Ongoing scrutiny/attention from regulator.	Low-level repairable damage to commonplace structures.	Low level social impacts. Public concern restricted to local complaints. Could not cause injury or disease to people.
<b>(2) Minor</b>	Minor effects on biological or physical environment. Minor short-medium term damage to small area of limited significance.	Minor legal issues, non-compliances and breaches of regulation. Minor prosecution or litigation possible. Significant hardship from regulator.	Minor damage to items of low cultural or heritage significance. Mostly repairable. Minor infringement of cultural heritage values.	Minor medium-term social impacts on local population. Could cause first aid injury to people. Minor, adverse local public or media attention and complaints.
<b>(3) Moderate</b>	Moderate effects on biological or physical environment (air, water) but not affecting ecosystem function. Moderate short-medium term widespread impacts (e.g., significant spills).	Serious breach of regulation with investigation or report to authority with prosecution or moderate fine possible. Significant difficulties in gaining approvals.	Substantial damage to items of moderate cultural or heritage significance. Infringement of cultural heritage/scared locations.	Ongoing social issues. Could cause injury to people, which requires medical treatment. Attention from regional media and/or heightened concern by local community. Criticism by Non-Government Organisations. Environmental credentials moderately affected.
<b>(4) Major</b>	Serious environmental effects with some impairment of ecosystem function. Relatively widespread medium-long term impacts.	Major breach of regulation with potential major fine and/or investigation and prosecution by authority. Major litigation. Project approval seriously affected.	Major permanent damage to items of high cultural or heritage significance. Significant infringement and disregard of cultural heritage values.	On-going serious social issues. Could cause serious injury or disease to people. Significant adverse national media/public or NGO attention. Environment/management credentials significantly tarnished.
<b>(5) Catastrophic</b>	Very serious environmental effects with impairment of ecosystem function. Long term, widespread effects on significant environment (e.g., national park).	Investigation by authority with significant prosecution and fines. Very serious litigation, including class actions. License to operate threatened.	Total destruction of items of high cultural or heritage significance. Highly offensive infringement of cultural heritage.	Very serious widespread social impacts with potential to significantly affect the wellbeing of the local community. Could kill or permanently disable people. Serious public or media outcry (international coverage). Damaging NGO campaign. Reputation severely tarnished. Share price may be affected.

**Table A2 Qualitative Measure of Likelihood**

Level	Descriptor	Description	Guideline
A	Almost Certain	Consequence is expected to occur in most circumstances.	Occurs more than once per month.
B	Likely	Consequence will probably occur in most circumstances.	Occurs once every 1 month – 1 year.
C	Occasionally	Consequence should occur at some time.	Occurs once every 1 year – 10 years.
D	Unlikely	Consequence could occur at some time.	Occurs once every 10 years – 100 years.
E	Rare	Consequence may only occur in exceptional circumstances.	Occurs less than once every 100 years.

Source: Based on AS ISO 31000:2018 Risk Management - Guidelines.

**Table A3 Qualitative Risk Matrix**

Likelihood of the Consequence	Maximum Reasonable Consequence				
	(1) Insignificant	(2) Minor	(3) Moderate	(4) Major	(5) Catastrophic
(A) Almost certain	High	High	Extreme	Extreme	Extreme
(B) Likely	Moderate	High	High	Extreme	Extreme
(C) Occasionally	Low	Moderate	High	Extreme	Extreme
(D) Unlikely	Low	Low	Moderate	High	Extreme
(E) Rare	Low	Low	Moderate	High	High

Source: Based on AS ISO 31000: 2018 Risk Management – Guidelines.

**Table A4 Mackas Sand Environmental Risk Review – Lot 218 and Lot 220**

Activity	Aspect	Potential Impact	Status and Implemented Control	Risk Assessment with Controls Implemented			Further Assessment Requirements or Ongoing Actions
				C	L	R	
General Operations	Ground Disturbance	Loss of Native Flora and Fauna.	<ul style="list-style-type: none"> <li>No ground disturbance outside approved disturbance limits will be undertaken without appropriate regulatory approval.</li> </ul>	2	D	L	Should ground disturbance be required outside the current approved disturbance area, an environmental assessment will be undertaken as required by regulatory authorities for this activity.
		Sedimentation of water ways.	<ul style="list-style-type: none"> <li>Appropriate erosion and sediment control measures to be adhered to. Monitoring and maintenance of onsite sediment/runoff dam to be ongoing.</li> </ul>	2	E	L	In that event that erosion is observed, develop appropriate controls for implementation.
	Water Quality	Contamination of groundwater quality.	<ul style="list-style-type: none"> <li>Groundwater quality monitoring is undertaken both upstream and downstream of the quarry to assist in identification of potential impacts resulting from operations at the quarry.</li> </ul>	2	D	L	Groundwater monitoring data is reviewed to identify any potential impacts from operations undertaken at Mackas Sand. Remedial measures / corrective measures to be developed if required based on monitoring data.
Equipment Refuelling and Maintenance	Hydrocarbon spills during equipment operation	Spill to land/water.	<ul style="list-style-type: none"> <li>Regular maintenance and inspections will be undertaken of all equipment in operation.</li> <li>Spill kits will be maintained on site.</li> <li>Training will be made available to all staff as required.</li> </ul>	2	D	L	Maintenance of equipment and inspections of controls will be ongoing throughout operations.
Quarry Operations	Explosion from unexploded ordnance	Release of dust into atmosphere.	<ul style="list-style-type: none"> <li>Operations have now moved past area of risk (2023).</li> <li>Employees aware of hazard and trained in action of discovery.</li> <li>Unexploded Ordnance Management Plan (MP.8)</li> </ul>	3	E	M	No further actions other than implementation of existing controls.

Activity	Aspect	Potential Impact	Status and Implemented Control	Risk Assessment with Controls Implemented			Further Assessment Requirements or Ongoing Actions
				C	L	R	
		Inadvertent combustion.	<ul style="list-style-type: none"> <li>Employees aware of hazard and trained in action of discovery.</li> <li>Unexploded Ordnance Management Plan (MP.8)</li> <li>Fire management equipment will be maintained on site.</li> </ul>	1	E	L	Maintenance of equipment will be ongoing throughout operations.
Natural Hazard	Bushfire	Damage to Quarry Equipment and Infrastructure	<ul style="list-style-type: none"> <li>Employees aware of hazard and trained in action of discovery.</li> <li>Fire management equipment will be maintained on site.</li> <li>Regular maintenance and inspections will be undertaken of all equipment in operation to avoid inadvertent sparks/combustion.</li> </ul>	3	C	M	<p>Maintenance of equipment will be ongoing throughout operations.</p> <p>Appropriate training of employees will be ongoing throughout operations.</p>

Notes: C = Consequence, L = Likelihood, R = Risk.