

**SOL**  
**QUARRIES LTD**

**SCREENING & CRUSHING**

**SOL Quarries Limited**

81 Conservators Road  
Quarry Management Plan

February 2019  
Version 9.0



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# Appendices

Appendix A – Consent Conditions

Appendix B – Plans

## Notes on this Document:

This document has been prepared as a requirement of the consent conditions for the establishment of a Quarry at 81 Conservators Road. It is provided in accordance with resource consents granted by Environment Canterbury Regional Council (ECan) and the Christchurch City Council (CCC). The relevant resource consents are as follows:

### **Environment Canterbury Regional Council**

**CRC184072** – to discharge contaminants to air

**CRC184073** – to excavate and deposit material over an unconfined or semi-confined aquifer

**CRC155102** – to divert a water race

### **Christchurch City Council**

**RMA/2018/505** – land use

This document is subject to change. The SOL Managing Director or the Consent Authority should be contacted to ensure the latest version is being viewed.

## Document status:

Revision No.	Date	Author	Description
1.0	29 April 2016	A Jepsen (GHD) S Hedley (SOL Quarry)	First Issue QMP
2.0	9 May 2016	S Hedley (SOL Quarry)	Revision to incorporate CCC comments.
3.0	10 May 2016	S Hedley (SOL Quarry)	Confirmation of Liability Insurance.
4.0	13 May 2016	S Hedley (SOL Quarry)	Confirm Duration of Rehabilitation of Quarrying Stages.
5.0	19 May 2016	S Hedley (SOL Quarry)	Incorporate comment – Transpower NZ.
6.0	1 March 2017	S Hedley (SOL Quarry)	Correct error – p 22  Include Earthquake Procedures
7.0	1 March 2017	S Hedley (SOL Quarry)	Amend Section 7.2 (p 37) – Complaint Register available to ECan & CCC on request
8.0	6 August 2018	S Hedley (Lands & Survey)	Amendment to incorporate revised Conditions of Consent
9.0	29 November 2018	S Hedley (Lands & Survey)	Update Quarry Manager contact details (Section 4.1; p 7)



# 1. Introduction

## 1.1 Purpose of this document

This document is a Management Plan for the Quarry at 81 Conservators Road, which is owned and operated by SOL Quarries Limited (SOL). This document is a live document and it is expected that it will be updated throughout the life of the Quarry. Each Management Plan update or amendment will be managed through applying quality management principles to ensure all parties are referencing the current version of the Management Plan.

### *Disclaimer*

A person using SOL Quarries Limited documents and/or data accepts the risk of:

- a) Using the documents and/or data in electronic form without requesting and checking them for accuracy against the original hard copy version.
- b) Using the documents and/or data for any purpose not agreed to in writing by SOL Quarries Limited.

The Quarry Management Plan is required to be implemented and maintained in accordance with resource consents detailed in Table 1-1.

**Table 1-1 Resource Consents**

Consent Authority	Consent Number	Relevant Condition	Name of document referred to in the condition
Canterbury Regional Council	CRC184072	Condition 15	Operation Management Plan
	CRC184073	Condition 38	Quarry Environmental Site Management Plan
	CRC155102	Condition 5	Construction Management Plan
Christchurch City Council	RMA/2018/505	Condition 16	Quarry Environmental Site Management Plan

This Quarry Management Plan:

- Outlines the nature and staging of quarry activities, and Site rehabilitation;
- Describes the operation of the Site in relation to its impact on the environment;
- Defines the actions to be taken to ensure compliance with all conditions of consent, including monitoring;
- Defines the actions to be taken in response to any incident that may impact adversely on the environment; and
- Identifies the roles and responsibilities of people involved in implementing actions.

It contains details on the requirements for:

- Maintenance of the bunds;
- Operation of equipment to avoid excessive noise;
- Dust control, including the frequency and triggers for dust mitigation measures such as the water cart operation;

- Collection and response to complaints;
- The control of heavy and light vehicle movements;
- Protection of Transpower transmission lines and towers; and
- The management of birds and lighting effects in relation to Christchurch International Airport operations.

A copy of this document shall be kept in the Site Office at all times for referral and will be maintained and complied with throughout the life of the Quarry operations.

## **1.2 Objective**

The objective of this Management Plan is to integrate conditions imposed under the resource consents for the Site (refer Appendix A) to ensure that the Quarry is operated in accordance with stipulated management practices, and in a safe and efficient manner. During the quarrying operations the Quarry pit will be progressively backfilled, using materials approved as Cleanfill. The Site will be progressively top-soiled and grassed, and may be returned to low intensity pastoral use.

## **1.3 Consent Conditions**

This Management Plan must be read in conjunction with the consent conditions, as contained in Appendix A.

## **1.4 Other Associated Plans**

The following Management Plans are required for the Site. They are incorporated in this Quarry Management Plan.

### **1.4.1 Quarry Rehabilitation Plan**

*Condition reference: CRC184073 [19]*

The Quarry Rehabilitation Plan sets out the requirement to:

- Backfill quarry areas with cleanfill to a minimum of two metres above the deepest excavation level;
- Place top-soil and sow grass as soon as practicable once an area has been filled;
- Stabilise quarry faces to a slope of no more than 1:3 (vertical: horizontal); and
- Remove all mobile and fixed machinery once rehabilitation is complete.

These actions are required prior to the operation of the Quarry.

### **1.4.2 Cleanfill Management Plan**

*Condition reference: RMA/2018/505 [66], CRC184073 [37]*

The Cleanfill Management Plan outlines procedures to ensure that all cleanfilling at the Site is completed and restored correctly and in accordance with the Ministry for the Environment "A Guide to the Management of Cleanfills" document (2002) (e.g. inspection, verification, recording and monitoring of materials being deposited).

The Cleanfill Management Plan must be submitted to Christchurch City Council and Environment Canterbury Regional Council prior to any backfilling occurring on Site.



### **1.4.3 Remedial Action Plan**

*Condition reference: CRC184073 [12]*

The Remedial Action Plan outlines:

- a. Procedures for managing any accidental discovery of contaminated soil;
- b. Methodology for soil removal and how soil will be prevented from being discharged to air and entrained in surface water run-off;
- c. Where the contaminated soil will be disposed of; and
- d. Validation sampling that will be undertaken to ensure all contaminated soil is removed.

The Remedial Action Plan must be submitted to Environment Canterbury prior to commencement of works to remediate the contaminated land on Site.

## **1.5 Other Associated Consents**

The following consents also apply to the Site:

### **1.5.1 CRC162398 – to take and use groundwater**

This is a Certificate of Compliance which enables the taking and use of groundwater, so long as it is (per day):

- Less than 5 L/s; and
- More than 10 m<sup>3</sup> but less than 100 m<sup>3</sup>; and
- The bore is located more than 20 m from the property boundary or any surface waterbody.

Refer to Appendix A for a copy of the consent document, including the relevant conditions.

### **1.5.2 CRC162397 – to use land for the above ground storage of hazardous substances**

This is a Certificate of Compliance which provides for the storage of hazardous substances on Site, subject to conditions.

Refer to Appendix A for a copy of the consent document, including the relevant conditions.

## 2. Overview of Quarry Management Plan

The following section provides an overview of the principle components of the management plan, including references to plans and technical requirements.

### 2.1 Plans

Reference should be made to the following plans, contained in Appendix B:

- Location Plan
- CRC184072A-D
- CRC184073A-C
- CRC155102
- “Sequencing Plan – Guys Road Concept Plan”
- Selwyn District Council Race Liner WR 8.0

### 2.2 Description

This Management Plan covers the following activities:

- The extraction of aggregate within the property located at Lot 2 DP 82891, 81 – 83 Conservators Road, Yaldhurst, Christchurch; and
- The excavation of land to facilitate the relocation of a water race to the northern and eastern Site boundaries; and
- The construction of 3-metre high bunds within the Site boundary (along the northern, eastern and part of the southern boundaries); and
- Maintenance (and repair) of the bunds.

The extraction of aggregate will occur in stages progressing from west of the property to the east. A maximum of 9 Ha (excluding the Heavy Vehicle Access and Light Vehicle Access Roads) will be exposed and actively quarried at any one time.

The following associated activities will also occur:

- Establishment of the Site;
- Processing of aggregate on-Site;
- Water take for dust suppression;
- Diesel storage;
- Removal of contaminated material (managed in accordance with the Remedial Action Plan & a Site Validation Report);
- Heavy vehicle movements from an access at Guys Road;
- Light vehicle movements from Conservators Road;
- Cleanfilling (managed in accordance with the Cleanfill Management Plan); and
- Site rehabilitation (managed in accordance with the Quarry Rehabilitation Plan).

# 3. Site and Environment

## 3.1 Location plan

Reference should be made to the Location Plan, contained in Appendix B.

Also refer Figure 3-1.

## 3.2 Site description

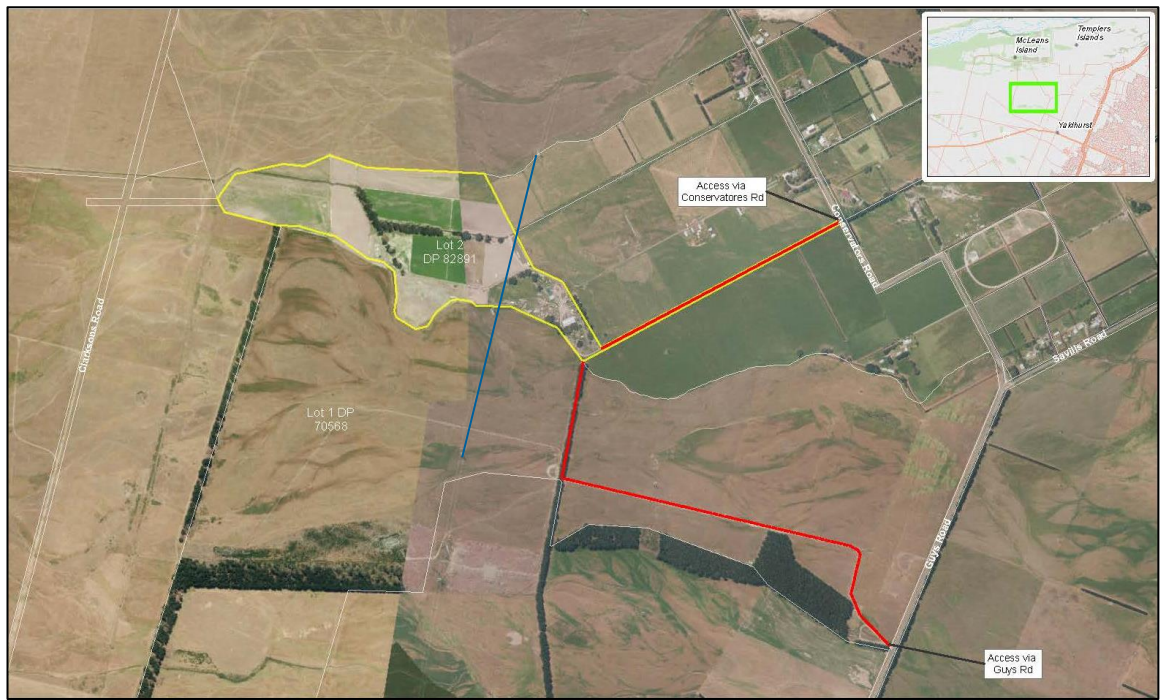
The Site is located at 81 Conservators Road in Yaldhurst, Christchurch. The Site is approximately 25 hectares and is located roughly 3 km to the north west of Christchurch International Airport. It is irregular in shape and bound by Canterbury Regional Council properties to the south and west and Christchurch City Council property to the north utilised for grazing. Notably:

- The Site is zoned Rural 5 (Airport Influences) and the surrounding area is predominantly zoned Rural 6.
- The property has previously been used for stock grazing. There is a dwelling and several out sheds present on the eastern portion of the property.
- The Site does not have any known outstanding or significant landscape values. Soil across the property is mapped as Selwyn stony sand and shallow sand. These soils are highly permeable.
- An access road of approximately 745 metres joins the Site to Conservators Road in the north-east (Light Vehicle Access Road).
- A Heavy Vehicle Access Road connects the Quarry to Guys Road.
- The wider area includes rural residential properties along Conservators Road and Savills Road.
- Rural residential roading continues with Guys Road extending in a south westerly direction towards Yaldhurst.
- A SDC Stockwater Race enters the property on the west and exits on the east. This race was realigned as part of the pre-establishment works.
- The western section of the property is traversed by the Transpower NZ ISL-KIK B transmission line.

## 3.3 Legal description

The Site(s) to which this Quarry Management Plan relates is legally described as follows:

Site / land area	Legal description
81 Conservators Road (the Quarry Site)	Lot 2 DP 82891
Heavy vehicle access (from Guys Road)	Lot 1 DP 70568



**Figure 3-1 Location Plan**

Transpower NZ ISL-KIK B transmission line —————

# 4. Quarry Management

## 4.1 Roles and responsibilities

The roles and responsibilities in relation to this Quarry Management Plan are summarised in the table below:

Job function	Contact details	Responsibilities
Quarry Operator	SOL Quarries Ltd Simon Apperley 021 755 410 simon@solgroup.co.nz	Holder of the consent for the Conservators Road Quarry and has the ultimate responsibility to ensure that all statutory requirements and conditions of consent are complied with and that all quarry activities are carried out in accordance with the QMP.
Quarry Manager	Simon Apperley Managing Director SOL Quarries Ltd 021 755 410 simon@solgroup.co.nz	<p>Review QMP.</p> <p>Ensure that their activities comply with the requirements of the QMP.</p> <p>Overall responsibility at the Site for ensuring that mitigation measures and procedures outlined in the QMP are implemented effectively.</p> <p>Responsibility for ensuring corrective actions relating to any non-conformance are implemented. Specifics of the corrective actions will relate to the nature of the non-conformance.</p> <p>Responsibility to ensure that the monitoring programme is carried out as required.</p> <p>Responsibility to ensure that complaints are received and investigated as outlined in the QMP.</p> <p>Responsibility to ensure the QMP is current and reviewed once every 5-years (or as required) for the duration of the consent.</p> <p>Operational Management of the Quarry, in accordance with the provisions of the QMP, and all relevant statutory requirements.</p>

## 4.2 Prior to commencement of quarry activities

The resource consents for the Site require that certain works are undertaken prior to commencement of the quarrying operation. Table 4.2 provides a summary of what needs to be done and when, with reference to details contained in the conditions.

In some cases there is a requirement to provide evidence or a report to Environment Canterbury Regional Council and Christchurch City Council, to show that the necessary actions have been completed. Notification and reporting requirements are noted below, but are set out in detail in Section 8 of this QMP.

**Table 4.2 Operational requirements – prior to commencement of quarry activities**

Activity	Summary of requirement	Programme limitations	Relevant design or other specifications	Condition reference (Appendix A)	Plan reference (Appendix B)	Other QMP reference	Mark as complete
Road widening	Widening of: <ul style="list-style-type: none"> <li>Savills Road/ Guys Road (localised);</li> <li>Ryans Road between the Guys/Ryans intersection and the Ryans/Pound intersection;</li> <li>Guys Road between the Guys/Ryans intersection and the Site accessway;</li> <li>Guys Road between the Guys/Savills intersection and the Site accessway;</li> <li>Savills Road between the Guys/Savills intersection and the Savills/Pound intersection.</li> </ul>	Must be completed prior to Site enabling works (refer below).	Width of seal to be provided as per consent conditions.  Design to be in accordance with Council's infrastructure design standards.  Defects period – 1 year.	RMA/2018/505 [37-41]	-	-	Complete  1 year (12 month) defects period completed  CCC maintenance responsibility

Activity	Summary of requirement	Programme limitations	Relevant design or other specifications	Condition reference (Appendix A)	Plan reference (Appendix B)	Other QMP reference	Mark as complete
Site enabling works – bund construction	3-metre high continuous bund to be established along northern, eastern and part of the southern Site perimeter.  Bund must be located on the internal side of the water race.	Bund must be constructed and planted at least two weeks before the water race is diverted.	Requirements for slope angles – as per consent conditions.	CRC184072 [6]  CRC184073 [20]  RMA/2018/505[4]	CRC184073A CRC184072B	Section 5	Complete
	Notify Christchurch City Council that works are about to commence.	48 hours prior to commencement.	Refer Section 8 of this QMP.	-	-	Section 8	Complete
Site enabling works – relocation of water race	New channel to be constructed on the northern and eastern boundary of the Site.  Water from the Waimakariri Water Race to be diverted to the new channel.	Must not commence until bunds are constructed  Must be undertaken over a maximum period of 8 weeks.	Requirements for channel capacity, fish passage, stabilisation, operation of machinery.  Selwyn District Council 'Race Liner WR 8.0' standard.  There needs to be cleaning strip on the non-fenced side of the water race, to enable adequate space for cleaning and on-going maintenance.  Must not generate more than 24 vehicle movements per day.	CRC155102 [1-9]	Plan CRC155102  Selwyn District Council 'Race Liner WR 8.0' standard	Section 5	Complete

Activity	Summary of requirement	Programme limitations	Relevant design or other specifications	Condition reference (Appendix A)	Plan reference (Appendix B)	Other QMP reference	Mark as complete
	Undertake a flow test on the Waimakariri Water Race.	Prior to the water race relocation	-	-	-	-	Complete
		After the water race relocation	-	-	-	-	Complete
	Make contact with Selwyn District Council: Waimakariri Water Race Operator Ross Cleland 027 229 4416	Prior to the water race relocation	To discuss the procedure to divert/shut off the water race and organise for water to be pumped over to the new channel, if required.	-	-	-	
	Make contact with Selwyn District Council: Waimakariri Water Race Operator Ross Cleland 027 229 4416; Surface Water Operation Engineer Shaun Monaghan 027 807 7890.	During the water race relocation works	To arrange a Site visit to sign off the work.	-	-	-	Complete
Bund maintenance	Bunds to be grassed or planted as soon as practical after construction.	Within the first grass growing season after construction (late summer March/April or spring September/October).	Grass must be of a local and bird resistant variety.	CRC184072[6]  RMA/2018/505[4]	-	Section 5	Complete



Activity	Summary of requirement	Programme limitations	Relevant design or other specifications	Condition reference (Appendix A)	Plan reference (Appendix B)	Other QMP reference	Mark as complete
		Vegetative cover must be achieved within 60 days of planting.					
	Watering – to establish vegetation cover	Regularly	-	CRC184072[6] RMA/2018/505[4]	-	Section 5	Complete
	Replanting	If any areas die-off or are destroyed	-	CRC184072[6] RMA/2018/505[4]	-	Section 5	On-going
Bund deconstruction	Bunds to be deconstructed into the excavated area and the ground re-contoured.	<b>Once quarrying has ceased on the Site.</b>	Bunds are to be maintained for the duration of the Quarry.	CRC184072[6]	-	Section 5	<b>Once quarrying has ceased on the Site.</b>
Site enabling works – Contaminated Site Remediation	Excavation and disposal to be undertaken in accordance with the Remediation Action Plan dated January 2015 (or the latest version, if updated).	Remedial Action Plan (RAP) must be submitted to Canterbury Regional Council prior to commencing remediation works.	Independent contaminated soil specialist to provide Validation Report & submit to ECan.	CRC184073 [12-13, 21-23] CRC184072[9] RMA/2018/505 [13-14]	CRC194072C	Section 5	Complete
	Notify Canterbury Regional Council (ECan) that remediation works are about to commence.	48 hours prior to commencement of remediation.	Refer Section 8 of this QMP.	CRC184073[14]	-	Section 8	Complete

Activity	Summary of requirement	Programme limitations	Relevant design or other specifications	Condition reference (Appendix A)	Plan reference (Appendix B)	Other QMP reference	Mark as complete
	Complete a Site Validation Report (SVR) – historical contaminated areas.	No more than two months after completion of remediation	Refer Remedial Action Plan.	RMA/2018/505[9]	-	Section 5	Complete and approved by ECan
Installation of monitoring equipment	Install wind speed monitoring equipment (anemometer).	Prior to exercise of consent	Required to be installed at a height of 10m above ground level.	CRC184072[7]	-	Section 5.2.3	Complete – continual monitoring
	If wind speeds in excess of 5 ms <sup>-1</sup> (1 hour average) are forecast outside the working hours, a dust suppressant must be applied (e.g. water).	If wind speeds in excess of 5 ms <sup>-1</sup> (1 hour average) are forecast outside the working hours.	Required in all areas with potential to discharge windblown dust.  Applied prior to the Quarry closing time.	CRC184072[8(b)]	-	Section 5.2	On-going

## 4.3 Quarry activities

### 4.3.1 Hours of operation

The hours of operation of the Quarry are:

Monday to Friday	0630 to 1800
Saturday	0630 to 1200
Sundays or public holidays	No activities shall take place, other than dust mitigation actions

#### Further to this:

- a. No aggregate processing, including loading, crushing and screening, will occur on-site prior to 0700; and
- b. No heavy vehicles will access the Site prior to 0700 hours. The access gate on Guys Road will be locked prior to this time.
- c. No heavy vehicles will be permitted to turn right on egress from the Site onto Guys Road between the hours of 0700 and 0900, and 1600 and 1800 on working days. A swing arm locked steel barrier gate will prevent such traffic movements. The restriction on heavy vehicle movements will be advised during the mandatory Site Inductions for all drivers and by way of signage at the weighbridge and Site gate on Guys Road.

### 4.3.2 Operational requirements

The resource consents for the Site require that quarrying activities are undertaken in a certain way. Table 4.3 provides a summary of what needs to be done, how and when, with reference to details contained in the conditions.

In some cases there is a requirement to provide evidence or a report to Environment Canterbury Regional Council and Christchurch City Council, to show that the necessary actions have been completed. Notification and reporting requirements are noted below, but are set out in detail in Section 8 of this QMP.

### 4.3.3 Liability Insurance

SOL Quarries Ltd confirms that the Company holds Public Liability Insurance in the sum of \$10,000,000.00.

### 4.3.4 Archaeological Discovery Protocol

In the event of any discovery of archaeological material, the following protocol will be adopted:

- a. Cease earthmoving operations in the affected area;
- b. Shut down all construction equipment and activity and advise the Site Manager and the SOL Operations Manager;
- c. The Site Manager must take immediate steps to mark off the affected area to ensure the archaeological matter remains undisturbed and the area is safe in terms of health and safety requirements. Work may continue outside of the affected area;
- d. Appoint an archaeologist to establish whether the material is archaeological, as defined in the Heritage Zealand Pouhere Taonga Act;
- e. Advise Environment Canterbury Regional Council of the disturbance;

- f. Advise Heritage New Zealand of the disturbance; and
- g. In the event that the material is confirmed as being archaeological, an archaeological assessment must be carried out by the archaeologist, and if appropriate, an archaeological authority obtained from Heritage New Zealand before work resumes.

### ***Koiwi tangata***

If the archaeological material is determined to be koiwi tangata (human bones) or taonga (treasured artefacts) by Heritage New Zealand, immediate notification will be given to:

- The office of the appropriate rūnanga (office contact information can be obtained from the Environment Canterbury Regional Council) of the discovery; and
- The New Zealand Police.

Work may only recommence when Heritage New Zealand (following consultation with rūnanga if the Site is of Maori origin) provides a statement in writing that appropriate action has been undertaken.

**CRC184073 [47]**

**RMA/2018/505 [15]**

**Table 4.3 Operational Requirements – during quarrying activities**

Activity	Summary of requirements	Programme limitations	Relevant design or other specifications	Condition reference (Appendix A)	Plan reference (Appendix B)	Other relevant QMP reference	Mark as complete
Staging	Excavation to occur in stages progressing from west of the property to the east.	No excavation may occur until Site enabling works are completed.	<p>Max. 9.00 ha (excluding the Quarry Haul Access and Light Vehicle Access Roads) may be exposed and actively quarried at any one time.</p> <p>Completed areas must be nearing remediation before any new areas are commenced.</p> <p><b>Staging:</b></p> <ul style="list-style-type: none"> <li>• Enabling Works</li> <li>• Quarry 1/3<sup>rd</sup> / 1/3<sup>rd</sup> / 1/3<sup>rd</sup></li> <li>• Infill with cleanfill materials</li> </ul>	<p>CRC184073[2]</p> <p>CRC184072[11]</p> <p>RMA/2018/505[28]</p>	CRC184073B CRC184072D	Section 5	
Excavation depth	<p>Excavation must not occur below a certain elevation above mean sea level (amsl).</p> <p>The maximum depth of excavation shall be no deeper than 10 metres below natural ground level <b>and</b> at least 1 metre of separation shall be maintained above groundwater level.</p>	-	<p>Maximum depth varies linearly across the Site from 45 metres amsl along the western boundary, to 40 metres amsl along the eastern boundary – or 1 metre above seasonal high groundwater level (whichever is higher).</p> <p>Excavation will not occur within standing water.</p>	<p>CRC184073 [3-4]</p> <p>RMA/2018/505[31]</p>	CRC184073C shows the depth of groundwater amsl at the property		

Activity	Summary of requirements	Programme limitations	Relevant design or other specifications	Condition reference (Appendix A)	Plan reference (Appendix B)	Other relevant QMP reference	Mark as complete
	Undertake a survey to determine Site elevations relative to the amsl, incl the depth of excavation.	Survey to be completed annually.	Survey results must be to an accuracy of +/- 50 millimetres vertically.	CRC184073[5]	-	-	Complete 2016 2017
	Results of the Site elevation survey to be provided to the Environment Canterbury Regional Council.	In February of each year or on request.	Refer Section 8 of this QMP	CRC184073[5]	-	Section 8	Submitted to ECan 2016 2017
Excavation setbacks	Excavation must be set back from the Site boundaries, and from the edge of the foundations of any Transpower transmission line tower or pylon.	-	Setback must be atleast 20 metres.	CRC184073[6-7] RMA/2018/505[33]	-	Section 4.6	Compliant
Stockpiles – construction	Stockpiles are to be limited in height and volume.	-	As per consent conditions. Height: 5m Volume: 15,000 cubic metres (per pile) at any one time  After the initial Site preparation, must be located atleast 3m below natural ground level.	CRC184072[12]	-	Section 5.2	

Activity	Summary of requirements	Programme limitations	Relevant design or other specifications	Condition reference (Appendix A)	Plan reference (Appendix B)	Other relevant QMP reference	Mark as complete
Stockpiles – maintenance	Stockpiles are to be maintained throughout the works.	-	Oversowing with grass seed (in the event the stockpile will be undisturbed for an extended period), spraying with water and/or dust suppressant – as per consent conditions.	CRC184072[12]	-	Section 5.2	
Access points: Existing access from Conservators Road; and  New access from Guys Road.	Guys Road access must be sealed into the Site for a minimum distance of 100 metres and must be a minimum width of 6m.  Guys Road and Conservators Road access must be secured by fencing and lockable gates, set back from the edge of the road.	Seal and fencing must be in place prior to first use of access roads.	<ul style="list-style-type: none"> <li>Access via Conservators Road is for light vehicles (staff vehicles) only.</li> <li>There is to be no sales access to the Site from Conservators Road.</li> <li>All drivers accessing Site will be required to complete an Induction, including details of the requirements related to on-Site traffic flows, Site speed limits, access and egress limitations. The SOL Quarry Manager is authorised to restrict access in respect of any driver identified as not complying with the Site traffic controls.</li> </ul>	RMA/2018/505 [43-45]  CRC184072[10]  CRC184073[8]	RMA/2015/505 “Sequencing Plan – Guys Road Concept Plan”	-	Complete  Compliant  Compliant On-going

Activity	Summary of requirements	Programme limitations	Relevant design or other specifications	Condition reference (Appendix A)	Plan reference (Appendix B)	Other relevant QMP reference	Mark as complete
			<ul style="list-style-type: none"> <li>The Guys Road entry/egress will be controlled by a primary gate, which will be locked from 1800 hours until 0700 hours Monday through Saturday and 1200 Saturday until 0700 Monday.</li> <li>In addition, a directional control gate will be locked from 1600 hours until 0900 hours daily. The directional control gate, in conjunction with traffic islands, will prevent heavy vehicle traffic turning right onto Guys Road between the hours of 0700 and 0900, and 1600 and 1800 daily.</li> </ul>				<p>Compliant On-going</p> <p>Compliant On-going</p>
Signage	Site notices must be erected at all entrances to the Quarry Site (Conservators Road and Guys Road).	Signs must be in place prior to commencement of quarrying activities.	Notices must be able to be read from a distance of 5m and must include content as per consent conditions.	CRC184073[15] CRC184072[8]	-	-	<p>Complete</p> <p>Checked Weekly</p>



Activity	Summary of requirements	Programme limitations	Relevant design or other specifications	Condition reference (Appendix A)	Plan reference (Appendix B)	Other relevant QMP reference	Mark as complete
	A 15km/hr speed restriction sign must be erected at each entrance to the quarry Site.	Signs must be in place prior to first use of access roads.	-	CRC184072[13] RMA/2018/505[28]	-	-	Complete
	Signage must be erected at the weighbridge and at the Guys Road entry/exit stating the requirement to turn left onto Guys Road between the hours of 7:00am until 9:00am and 4:00pm until 6:00pm.	-	Signage must be in accordance with the Christchurch City Plan rules for signage, or a separate resource consent for the signage must be obtained.	RMA/2018/505[35]	-	Section 5.1	Complete
Waste management – storage	Solid waste must be stored in wheelie bins or similar appropriate containers.	-	-	RMA/2018/505[56]	-	-	Compliant
	Hazardous substances must be stored on a sealed pad with drip trays/bunds or other measures to contain any spills.	-	No storage of fuel or lubricants within the excavated pit. Spill response.	RMA/2018/505 [47-52] CRC184072[44]		Sections 5.4 and 5.5	Compliant
Waste management – disposal	Solid waste must be disposed of at an approved solid waste facility.	-	-	RMA/2018/505[56]	-	-	Compliant
	Contaminated material must be disposed of at Burwood Recovery Park or Kate Valley Landfill.	-	Refer Remedial Action Plan	CRC184073[23]	-	-	Complete SVR submitted

Activity	Summary of requirements	Programme limitations	Relevant design or other specifications	Condition reference (Appendix A)	Plan reference (Appendix B)	Other relevant QMP reference	Mark as complete
Refuelling	Refuelling procedure to be documented and provided to Christchurch City Council for certification.	Prior to activities commencing on the Site.	-	RMA/2018/505 [47-52]  CRC184073[45]	-	Section 5.5	Complete
Archaeological discovery	In the event of any discovery of archaeological material, the archaeological discovery protocol in Section 4.3.3 must be followed.	-	Refer Section 4.3.3	CRC184073[47]  RMA/2018/505[15]	-	Section 4.3.3	

## 4.4 At completion of quarry activities

### 4.4.1 Rehabilitation

The resource consents for the Site require that the entire Site is rehabilitated at the completion of quarrying activities. Table 4.4 provides a summary of what needs to be done, how and when, with reference to details contained in the conditions.

Reference should also be made to the Quarry Rehabilitation Plan and the Cleanfill Management Plan, required by consent CRC184073 (refer Section 1.3).

**Table 4.4 Operational requirements – at completion of quarrying activities**

Activity	Programme	Other specifications	Condition reference	Other relevant QMP reference	Mark as complete
Rehabilitation of Stages of Quarry	Rehabilitation of the quarried areas will occur within 6-months of the completion of a Stage.	Rehabilitation of each Stage involves infilling areas with cleanfill material, to a depth of 600mm below natural ground level.  All exposed surfaces will be grassed and water until the seed germinates and takes.	RMA/2018/505 [63]	Section 1.4.1.	On-going
			CRC184073 [30-31]	A Quarry Rehabilitation Plan will be submitted to ECan prior to operation of the Quarry.	Complete
Rehabilitation of the entire Site to be completed	Within 1 year of completion of excavation of the overall Site	Requirements for fill depths, slope gradients, topsoil coverage and drainage – as per consent conditions.	RMA/2018/505 [63]  CRC184073 [30-31]	Section 5	
Complete grass cover across the Site to be achieved	No later than 5 months after completion of all excavation and cleanfilling activities	Final Site rehabilitation will involve ensuring the grass applied in the staged rehabilitation is watered and has germinated.	RMA/2018/505 [63]  CRC184073 [30-31]	Section 5	

## 4.5 Airport Operations

### 4.5.1 Emergency contacts

The emergency contact person, who CIAL can contact regarding any issues needing urgent action to prevent conflict with airport operations is:

Simon Apperley  
SOL Managing Director  
021 755 410  
[simon@solgroup.co.nz](mailto:simon@solgroup.co.nz)

The reciprocal contact at CIAL is:

Brodie Akacich  
Environment Manager  
CIAL  
027 357 9737  
[Brodie.Akacich@cial.co.nz](mailto:Brodie.Akacich@cial.co.nz)

### 4.5.2 Management measures

The following measures are in place to manage birds and lighting effects, in order to minimise any potential impact of quarrying activities on airport operations:

Potential impact	Summary of requirement	When	Condition reference (Appendix A)	Mark as complete
Bird strike	Limit bird strike risk by implementing measures to avoid attracting birds. Use low seed-producing grass Do not feed or encourage birds to the quarry pit floor Any surface ponding must be able to drain freely; and all finished surfaces must be free draining. Manage refuse/solid waste on-site	Throughout quarrying activities	RMA/2018/505 [54-56]  CRC184073[9]	Complete  On-going
Lighting	Proposed Lighting Plan to be submitted to Christchurch International Airport Limited for approval.	Prior to any fixed lighting being installed on Site.	RMA/2018/505[58]	Lighting Plan to be submitted if required

### 4.5.3 Visits

As per RMA/2018/505 Condition 59, and subject to prior contact with the Quarry Managing Director, Simon Apperley, CIAL's planning staff and/or Wildlife Management Officer may arrange visits to the Site by Ornithological or Pest Management Consultants and their staff for the purposes of pest bird monitoring or management and to check compliance with conditions that relate to bird strike risk.

## 4.6 Works Around Transpower Transmission Lines

### 4.6.1 Contacts

The contact person, who Transpower can contact regarding any issues relating to Transpower operations is:

Simon Apperley  
 SOL Managing Director  
 021 755 410  
[simon@solgroup.co.nz](mailto:simon@solgroup.co.nz)

The reciprocal contact at Transpower is:

Jonathan Tester  
 Senior Environmental Advisor  
 03 590 7703 / 027 545 6440  
[Jonathan.Tester@Transpower.co.nz](mailto:Jonathan.Tester@Transpower.co.nz)

### 4.6.2 Management measures

Potential impact	Summary of requirement	When	Condition reference (Appendix A)	Mark as complete
Dust	<p>Must not create any dust hazard or nuisance to the Transpower transmission lines and towers.</p> <p>SOL Quarries Ltd will ensure there are NO works undertaken within 20 metres of the NZ ISL-KIK B transmission line, thereby ensuring that the dust and diesel particulate emissions are outside the attractive range of the transmission lines.</p> <p>Refer Section 5.2 of this QMP.</p>	Throughout quarrying activities, including the Enabling Works	RMA/2018/505[60]	
Excavation and deposition activities	<p>Limitations apply to the location of excavation and deposition activities, in relation to Transpower transmissions lines and towers – refer consent conditions. Specifically, NO works will be undertaken within 20 metres of the NZ ISL-KIK B transmission line or the Tower bases.</p>	Throughout quarrying activities, including the Enabling Works	RMA/2018/505[60]	

Construction of bunds that are located on the boundary closest to the Transpower transmission lines	<p>Confirm to Transpower that the proposed bunds will maintain minimum safe ground-to-conductor clearance distances.</p> <p>The bund in the vicinity of the Transpower transmission lines will be constructed in a manner that the bund is non-traversable.</p> <p>The bunds will also be constructed at the design specifications (1(v):3(h).</p>	Before bunds are constructed	RMA/2018/505 [61]	
	<p>Commission an electrical engineer to undertake an assessment of the expected clearances between the ground and the conductors upon completion of the proposed bunds.</p>	Before bunds are constructed, in the vicinity of the transmission lines.	RMA/2018/505 [61]	Complete Submitted to CCC
Landscaping	Planting height and setback limitations – refer consent conditions.	At completion of bund construction.	RMA/2018/505 [62]	
Transpower NZ access	<p>SOL Quarries Ltd will ensure existing access arrangements are maintained.</p> <p>However, due to the legal requirements of the health &amp; Safety at Work Act 2015, all Transpower staff and contractors attending the SOL Quarry will be required to undertake a formal Induction.</p>	At all times.		

**NB: There are no Transpower Towers on the SOL Quarries Ltd property; rather the property is traversed by a transmission line.**

# 5. General Site Management

The resource consents for the Site require that the potential environmental effects of quarrying activities are managed appropriately. The following section details what needs to be managed and how. Reference should also be made to the details as contained in the conditions (Appendix A).

## 5.1 Traffic

### 5.1.1 Traffic volume

There will be a maximum of 300 heavy vehicle movements per day and 30 light vehicle movements per day.

### 5.1.2 Heavy vehicle movements

Heavy vehicular Site access will be via the proposed new access from Guys Road only (not from Conservators Road).

**All heavy vehicles exiting the Site between 0700-0900 and 1600-1800 will only be allowed to turn left to exit from the Site onto Guys Road. To enforce this:**

- a) **A control gate will be operated between these periods to ensure vehicles turn left exiting the Site, in the form of a directional control gate which will be locked from 1600 hours until 0900 hours daily. The directional control gate, in conjunction with traffic islands, will prevent heavy vehicle traffic turning right onto Guys Road between the hours of 0700 and 0900, and 1600 and 1800 daily; and**
- b) **Signage will be erected at the weighbridge and the Heavy Vehicle exit reinforcing the left turn onto Guys Road during these hours.**

In addition, 'Toolbox Talks' will be used to explain Site access requirements and preferred transport routes e.g. deter drivers from using the Guys Road/School Road route at all times. All drivers accessing Site will be required to undertake a Site induction, which will include details of Site traffic controls, Site speed limits and the restrictions on egress onto Guys Road and specified in the Conditions of Consent.

Records will be kept including a Log Book or Electronic Database file of all vehicles exiting the Site and weighbridge records. These records shall be provided to Councils Compliance and Investigations Team on a bi-monthly basis for the first 6 months and on request thereafter.

## 5.2 Dust

### 5.2.1 General

A combination of the following dust management measures will be implemented on Site:

- a. Minimising the areas of exposed ground to 9.00ha. The overburden of the next stage will only be removed once quarrying of the current stage is nearing completion.
- b. Bare areas such as bunds, overburden stockpiles and rehabilitated areas will be re-grassed as soon as practicable and in accordance with the following consent conditions:

Bare area (type)	Relevant consent condition
Bunds	RMA/2018/505 [4, 28] CRC184072 [6, 13] CRC184073 [20]
Stockpiles	CRC184072 [12, 13]

Rehabilitated areas	RMA/2018/505 [28, 54, 63] CRC184072 [13] CRC184073 [19, 30-31]
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- c. the drop heights and not overloading when transporting material.

### 5.2.2 Dust on access roads

In addition to the above 'general' measures, the following measures will be implemented on access roads:

- a. A speed restriction of 15km/hr will apply on all internal roads including the heavy vehicle access road. A 15km/hr sign will be erected at each entrance to the Quarry Site.
- b. The 100m long section of sealed access route from Guys Road will be washed and swept each day to ensure the accumulation of dust is kept to a minimum.
- c. A rumble strip (judder bars) will be installed on the 100m sealed access route from Guys Road.
- d. Internal roads will be maintained on a regular basis so that they are free of pot holes and have a surface cover of clean chip containing minimal fine material.

### 5.2.3 Monitoring and recording wind speed

- a. Equipment will be installed and maintained to monitor and record wind speed and direction.
- b. Accurate records will be maintained of wind speed and direction throughout quarry activities on Site.
- c. Wind conditions will be taken into account in planning and carrying out of work to minimise dust dispersion.
- d. An anemometer will be installed at a height of 10m above ground in accordance with the guidance for siting weather stations in AS 3580.14 unless otherwise approved in writing by Canterbury Regional Council.
- e. When wind speeds measured by the on-Site anemometer exceed 5 m/s (1-hour average) all unconsolidated surfaces will be watered down on an hourly basis. Dust suppressant will also be applied, if required.
- f. The record of wind speed and direction shall be provided to the Canterbury Regional Council on request (refer Section 8).

**Note: Favourable wind conditions are when wind speeds are forecast to be less than 5m/s over the course of the proceeding 24-hour period.**

### 5.2.4 Cease activities – potentially dusty activities

Potentially dusty activities, except for dust mitigation activities, taking place on the site shall cease when average wind speed (ten-minute average), exceeds ten metres per second during two consecutive ten-minute periods during dry weather conditions such that dust is being lifted from the site.



Potentially dusty activities include, but are not limited to:

- a. Stripping of topsoil
- b. Formation of bunds
- c. Formation of soil stockpiles
- d. Spreading of topsoil
- e. Crushing and screening of aggregate in circumstances where fugitive dust is generated and no water or mist sprayers are used on the crushing and screening plants in accordance with Condition 13(l).

Work shall not recommence until three consecutive 10- minute averages have shown results below 8 metres per second (as measured at 10 metres above ground level, or the equivalent wind speed approved in writing by the Environment Canterbury Regional Council if measured at a lower height).

### 5.3 Noise

Noise from construction activities at the quarry will be managed to comply with *NZS 6803:1999- Acoustics: Construction Noise*. In this Quarry Management Plan **construction activities** are defined as any work required to prepare the Site for excavation and/or Site rehabilitation works. In particular, this includes activity associated with:

- the removal of trees;
- relocation of the water race;
- construction of earth mounds; and
- stripping/reinstatement of topsoil.

#### 5.3.1 Limits

The cumulative noise level from the quarry and associated activities (including vehicle movements on the quarry Site and accessway) shall not exceed the following levels (as measured from the notional boundary of any existing dwelling on a neighbouring Site):

Time	Limit
Daytime (0700-1800)	50 dB LAeq(1 hr)
Night-time (1800-0700)	40 dB LAeq (1 hr)

#### 5.3.2 Management of noise

The following management practices will be implemented to keep noise to an acceptable level:

- a. Managing the time and location of particularly noisy operations around the Site to ensure compliance with the performance standards.
- b. Machinery will be regularly maintained to ensure that noise produced from machinery is kept to a practicable minimum.
- c. Bunds are to be constructed where appropriate on quarry boundaries to reduce the effects of noise beyond the boundary.

## **5.4 Stormwater and sediment control**

### **5.4.1 General**

- a. Quarry activities are to be staged, as described in section 4.4.2 of this QMP.
- b. No more than 9 hectares of Quarry operating area, excluding the Haul Road and Light Vehicle Road, will be exposed at any one time.
- c. All areas that are not being actively quarried will be maintained in vegetation.
- d. The Site is to be progressively stabilised i.e. each active stage must be remediated prior to excavation commencing on the next stage.
- e. Excavation will not occur within standing water.
- f. Rumble strips and a wheel wash will be used for Site vehicles exiting the Site.
- g. Stabilised (sealed) Site entrances will be formed.
- h. Any stockpiles, noting that stockpiling of contaminated soils is to be avoided, will be covered (when they are not being worked) with impermeable material (tarpaulin or polythene sheet), or temporary grassing for stockpiles that will be kept on Site long term.

### **5.4.2 Water race and bunds**

- a. All surfaces of the new water race are to be progressively stabilised.
- b. The bund(s) are to be progressively stabilised, as they are completed. They are to be grassed within the first grass growing season after construction (late summer March/April or spring September/ October) to achieve 100% grass cover within 60 days of planting.

### **5.4.3 Contamination remediation**

- a. Stormwater will be diverted around the excavation (e.g. sandbags, bunding, or a clean water diversion channel) to minimise the volume of potentially contaminated stormwater generated and prevent erosion from taking place at the Site in the first instance.
- b. Any accumulated contaminated sediment will be collected and disposed of at an approved landfill facility.
- c. Where rainfall or runoff enters a trench or excavation a vacuum excavation truck will be used to remove the contaminated stormwater and transport it off-Site to an appropriate facility.
- d. A vacuum excavation truck will be available while works are underway to respond to any liquid phase substance removal requirements.
- e. Stockpiling of contaminated soils is to be avoided. Spoil is to be direct loaded into trucks and transported to a registered disposal facility such as Kate Valley Landfill.
- f. In the event that grossly contaminated soil is encountered, this should be loaded directly into a skip bin and covered with a tarpaulin to minimise runoff in the event of rainfall.

#### **5.4.4 Stormwater from areas where hazardous substances are used or stored**

- a. All roof stormwater is to be isolated from sources of contaminants and discharged to ground;
- b. Stormwater from the refuelling pad will be contained in a suitably sized sump and shall be disposed of by an approved licensed hazardous wastes contractor; and
- c. All hazardous substances storage shall ensure that no stormwater infiltration occurs.

### **5.5 Hazardous substances**

#### **5.5.1 Storage**

The following limitations/requirements apply to the storage of any fuel or hazardous substances on Site:

- a. All areas of the Site where hazardous substances are to be stored will be sealed with impervious material that is resistant to chemical attack from the substance used or stored there.
- b. There will be no permanent storage of fuel or lubricants within the excavated pit.
- c. Where fixed plant occurs on-site all fuel will be stored in double skinned and/or fully contained tanks.
- d. Fuel shall be stored securely or removed from the Site overnight.

#### **5.5.2 Delivery and refuelling**

All diesel delivery tankers will park in a designated "Diesel Storage & Refuelling Area" when refilling the above ground diesel container.

All refuelling carried out away from the designated "Diesel Storage & Refuelling Area" will be undertaken by an approved refuelling operator.

The following limitations/requirements apply to all refuelling activities:

- a. There will be no refuelling within 20 metres of flowing water;
- b. There will be no refuelling within 20 metres of standing water or excavated land (in the event that there is standing water within the pit).
- c. Pumps will be attended at all times during refuelling;
- d. Refuelling will only be undertaken using:
  - A double skinned tank, up to 500 litres in capacity, with an electric pump contained inside the tank's outer skin;
  - A double skinned hose line with a transparent outer skin and an auto shut off nozzle; and
  - A "spill mat" capable of absorbing oil and petroleum products, and of a minimum size of 1.5 metres by 1.5 metres, shall be positioned under the fill point in order to intercept any spill from the nozzle. The "spill mat" will be replaced following the absorbance of spills with a cumulative volume of 10 litres or more or if otherwise damaged to such a state that it can no longer adequately intercept and absorb any spills.

### **5.5.3 Spill response**

A spill kit, that is capable of absorbing the quantity of hazardous substances, including oil and petroleum products, that may be spilt on Site at any one time, shall be kept on Site at all times.

Staff will be trained at regular intervals in spill response and reminded of the Site specific spill response plan (refer section 5.5.4).

In the event of a spill of fuel or any other contaminants, the spill must be cleaned up as soon as practicable and measures taken to prevent a recurrence.

Christchurch City Council's Team Leader Environmental Compliance must be informed within 24 hours of any spill event greater than 4 litres. The following information shall be provided:

- a. The date, time, location and estimated volume of the spill;
- b. The cause of the spill;
- c. The type of hazardous substances(s) spilled;
- d. Clean up procedures undertaken;
- e. Details of the steps taken to control and remediate the effects of the spill on the receiving environment; and
- f. An assessment of any potential effects of the spill and measures to be undertaken to prevent a recurrence.

### **5.5.4 Spill Response Plan**

If a spill or emergency situation was to occur, the following response plan will be implemented:

*(Source: ECan Pollution Prevention Guide)*

<b>Step</b>	<b>Action</b>
<i>Be safe</i>	<ul style="list-style-type: none"> <li>• What has been spilt? How much?</li> <li>• Do you need safety gear?</li> </ul>
<i>Stop the source (if safe to do so)</i>	<ul style="list-style-type: none"> <li>• Turn off, plug the leak or right the container – if it is safe to do so.</li> </ul>
<i>Protect stormwater</i>	<ul style="list-style-type: none"> <li>• Confine the spill with sandbags, booms or other suitable material.</li> <li>• Block off access to stormwater drains with drain covers.</li> </ul>
<i>Notify</i>	<ul style="list-style-type: none"> <li>• Tell Quarry Foreman: Matt Flintoff (<b>021 211 2245</b>) or Pat Towse (<b>021 417 641</b>)</li> <li>• Inform other agencies (as required) including:</li> <li>• Canterbury Regional Council Pollution Hotline on ph: (<b>03) 366 4663 or 0800 76 55 88.</b></li> <li>• A Spills Incident Report Form can be accessed at:</li> <li>• <a href="http://tools.ecan.govt.nz/eppg/Pdfs/Spills-Incident%20Report%20Form.pdf">http://tools.ecan.govt.nz/eppg/Pdfs/Spills-Incident%20Report%20Form.pdf</a></li> <li>• Fire, Police, Ambulance on ph: 111</li> <li>• National Poisons and Hazardous Chemicals Information Centre, Dunedin – Urgent Line on ph: 03 474 7000</li> </ul>
<i>Clean up</i>	<ul style="list-style-type: none"> <li>• Neutralise hazardous substances.</li> <li>• Pump or sweep into safe container.</li> <li>• Clean up within the contained area, without allowing wash or sweepings into stormwater.</li> </ul>
<i>Dispose responsibly</i>	<ul style="list-style-type: none"> <li>• Use a responsible waste disposal contractor to remove contaminated materials and clean up gear and clothing.</li> </ul>
<i>Restock and review</i>	<ul style="list-style-type: none"> <li>• Restock materials and equipment in spill kit.</li> <li>• Review the incident – what can be learnt and how can you stop it happening again?</li> </ul>

## EMERGENCY RESPONSE – EARTHQUAKE

**In the Event of an Earthquake Registering a Magnitude 4.5 – Richter Scale or 5.0 – Modified Mercalli (MM), this Emergency Response Procedure shall be Implemented without Delay at all SOL Group Sites.**

In the event of an earthquake which lasts for more than 30 seconds, is so violent you are unable to stand and/or is rolling:

- If you are in a loader, excavator, truck or ute – **STAY IN THE MACHINE OR VEHICLE** – until the earthquake event has stopped.
- If you are on or adjacent to a screening or crushing machine – **MOVE AWAY FROM THE MACHINE** – as quickly as possible. Move away from the machine to a distance twice the height of the machine.
- If you are in a loader, excavator, truck or ute, as soon as the earthquake event has stopped move to an open space (i.e. move out of the Quarry Pit or river bed).
- Use the RT and/or cellphone to contact the SOL Site Manager (SOL Quarry Foreman, SOL Mobile Operations Manager) or the SOL General Manager. Confirm you are safe.
- All staff and visitors, as soon it is safe to do so, assemble at the designated Assembly Point.
- Check the Civil Defence website (<http://www.cdemcanterbury.govt.nz>) and/or local radio stations for Emergency Status.
- SOL Site Manager confirms all person(s) on-site are safe and advised SOL General Manager.
- In the event of a Tsunami Alert or River Flood Alert move immediately to higher ground. **DO NOT ATTEMPT TO TAKE PLANT OR EQUIPMENT.**

- Prior to any person(s) resuming work, the SOL Site Manager and a senior SOL staff member will check the work area (buddy system). In particular, the Quarry face will be checked for slips, cracks and fissures, and River Sites will be checked for changes in the river level and/or flow pattern(s).
- It is important to note that Emergency Services may not be available to attend, and cell phone outages are possible.

**BE ALERT - AFTERSHOCKS WILL HAPPEN**

## 6. Monitoring

The resource consents for the Site require that certain activities or environmental factors are monitored in order to actively manage the effects of quarrying activities. The following table details what needs to be monitored, when and how, with reference to details contained in the conditions.

What is to be monitored	Summary of requirements	When for monitoring	Condition reference (Appendix A)	Plan reference (Appendix B)	Corrective action	When for corrective action
Traffic	Traffic monitoring must be undertaken: In 5 count locations as shown on "Sequencing Plan – Guys Road Concept Plan" on 7 consecutive days.	Annually	RMA/2018/505[46]	"Sequencing Plan – Guys Road Concept Plan"	-	
	Data to be provided to Council's Enforcement Team.	Within 4 weeks of completion.	RMA/2018/505[46]	-	n/a	n/a
Groundwater levels  Note: it is acceptable to use the same wells for water level and quality monitoring.	Groundwater levels are to be measured in bores BX23/0035, BX23/0036 and/or BX23/0037 (located within Lot 2 DP 82891).	Once every 14 days over winter months (June to September). Monthly for the remainder of the year.	CRC184073[24]	-	Where the water table has been measured within 1 metre of the base of the excavation, excavation will cease until further monitoring shows the separation from the base of the excavation and groundwater levels is more than 1 metre.	Immediately.

What is to be monitored	Summary of requirements	When for monitoring	Condition reference (Appendix A)	Plan reference (Appendix B)	Corrective action	When for corrective action
	Groundwater level information will be provided to the Canterbury Regional Council.	<p>Within 7 days of the measurement being taken, if the groundwater levels are measured above the historical high.</p> <p>Annually or on request, if the groundwater levels are not measured as being above a historical high.</p>	CRC184073[24]	-	-	-
Groundwater quality  Note: it is acceptable to use the same wells for water level and quality monitoring.	Samples to be collected from a minimum of one up-gradient and two down-gradient wells.	Once every month	CRC184073[25]	-	-	-
	Data to be provided to Council's enforcement team.	Once every month	CRC184073[25]	-	-	-



What is to be monitored	Summary of requirements	When for monitoring	Condition reference (Appendix A)	Plan reference (Appendix B)	Corrective action	When for corrective action
	Groundwater samples to be analysed for the contaminants as shown in Table 1 below.		CRC184073[26]	-	<p>If the results show any concentrations of contaminants exceeding those given in Table 1:</p> <p>A second round of samples will be obtained from the same bores;</p> <p>A sample will be obtained from another up-gradient bore (additional to the one sampled already); and</p> <p>These samples will be analysed, against the measures in Table 1.</p>	Within a period of not more than one month from the previous analysis.
			CRC184073[29]	-	<p>If the results of analysis of groundwater in down-gradient bores show any concentrations of contaminants exceeding those given in Table 2.</p> <p>Notify Canterbury Regional Council of the exceedance.</p>	<p>-</p> <p>Within 48 hours of receipt of the laboratory results.</p>

What is to be monitored	Summary of requirements	When for monitoring	Condition reference (Appendix A)	Plan reference (Appendix B)	Corrective action	When for corrective action
					Notify well owners (down-gradient) within 1 kilometre of the Site boundary of the exceedance.	As soon as practicable (but no later than 48 hours from receipt of the laboratory results).
					Undertake follow up sampling in on-site and neighbouring wells (if access is granted).	Within 14 days of the initial laboratory results.
					Undertake a quantitative risk assessment, looking into potential causes of the breach, and provide to Canterbury Regional Council.	Within 14 days of receipt of additional sampling.
					Reduce the concentration of the contaminant(s) in groundwater to within normal accepted levels (if, following the additional sampling and risk assessment, concentrations of contaminants still exceed the values in Tables 1 and 2).	As soon as practicable.

What is to be monitored	Summary of requirements	When for monitoring	Condition reference (Appendix A)	Plan reference (Appendix B)	Corrective action	When for corrective action
Removal of any material (or groundwater) as a consequence of groundwater quality monitoring.	To be disposed of at an appropriate facility.	As soon as practicable.	CRC184073[29]	-	-	-
	Notify Canterbury Regional Council.	Within 10 working days of the disposal.	CRC184073[29]	-	-	-
Wind monitoring	Monitor wind speed and direction	Throughout quarrying activities	CRC184072[7-8]	-	All unconsolidated surfaces must be watered down when wind speeds exceed 5 m/s (1 hr average).	Hourly, during the hours of operation.
					A dust suppressant, which may be water, must be applied if wind speeds are forecast to exceed 5 m/s (1 hr average) outside of quarry working hours, prior to closure of the Quarry.	Outside of quarry working hours.

**Table 1: Contaminants and trigger concentrations for screening test**

Contaminant or property	Trigger value
Alkalinity	100 mg/L as CaCO <sub>3</sub>
Ammonia	1.5 mg/L
<u>OR</u> Ammoniacal Nitrogen	1.2 mg/L
Conductivity	50 uS/M
Faecal coliform bacteria	1 per 100 millilitres
Hardness (= Calcium + Magnesium)	100 mg/L
pH	<6.5 or >8.5
Total petroleum hydrocarbons	Above laboratory screen levels

**Table 2: Contaminants and trigger concentrations for full test**

Contaminant	Concentration 50% MAV/AGV
Dissolved Aluminium	0.05 mg/L or greater than measured upstream levels, whichever is the highest
Dissolved Arsenic	0.005 mg/L
Dissolved Boron	0.7 mg/L
Dissolved Cadmium	0.002 mg/L
Chloride	125 mg/L or greater than measured upstream levels, whichever is the highest
Dissolved Chromium	0.025 mg/L
Dissolved Copper	0.5 mg/L
Dissolved Iron	0.1 mg/L or greater than measured upstream levels, whichever is the highest
Dissolved Lead	0.005 mg/L
Dissolved Manganese	0.02 mg/L or greater than measured upstream, whichever is the highest.
Dissolved Nickel	0.04 mg/L
Nitrate-Nitrogen	5.6 mg/L

# 7. Complaints Management

Complaints may be referred by one or more of the regulatory authorities, a member of the public, or a member of the quarry team.

It is the responsibility of the Quarry Foreman to respond to and follow up all complaints.

The Quarry Foreman is responsible for ensuring suitably qualified personnel are available to respond to complaints at all times.

Upon receipt of a complaint, the complaint will be investigated and corrective action taken as soon as possible, where this is warranted.

## 7.1 Complaints register

A record of any complaints relating to suspended or deposited particulate matter discharged from the quarry will be maintained. For each complaint, the record will include:

- a. The location where the particulates were detected by the complainant;
- b. The date and time when the particulates were detected;
- c. A description of the wind speed and wind direction when particulates were detected;
- d. The most likely cause of the particulates detected; and
- e. Any action taken by the consent holder.

The record will be provided to the Environment Canterbury Regional Council and/or the Christchurch City Council on request.

## 7.2 Follow up actions

The Quarry Foreman will communicate to staff and contactors that a complaint has been received, what the findings of the investigation were, and the remedial actions taken. The Quarry Foreman will implement corrective actions to remediate any non-conformance. The non-conformance and the remedial action will be provided to Environment Canterbury Regional Council and Christchurch City Council on request.

## 8. Notifications, Records & Reporting

### 8.1 Notifications

The following table provides a summary of all notifications required by this Quarry Management Plan.

Notification	Who to notify	When	Method	Mark complete
Start of Site preparation/enabling works	Christchurch City Council Resource Consent Monitoring Team	No less than 48 hours prior to commencement of Site preparation works.	Writing (email)	Complete
Contact details of the Quarry Foreman (Manager)	Christchurch City Council Resource Consent Monitoring Team	No less than 48 hours prior to commencement of Site preparation works.	Writing (email)	Complete – update
Start date of the works	Canterbury Regional Council Attention: RMA Monitoring and Compliance Manager	At least 72 hours before the commencement of works.	Writing (email)	Complete
Provide a copy of the resource consent(s) and explain how to comply with the consent conditions	All persons undertaking activities authorised by the consent(s)	Prior to work commencing.	Copies of documents to be distributed On-Site meeting	Complete On-going
Start of the land remediation works	Canterbury Regional Council Attention: RMA Monitoring and Compliance Manager	No less than 48 hours prior to commencement of the land remediation works.	Writing (email)	Complete
Submit a Remedial Action Plan (RAP)	Canterbury Regional Council Attention: RMA Monitoring and Compliance Manager	Prior to the commencement of works to remediate the contaminated land.	Electronic Report	Complete
Notification of start of water race relocation works	Selwyn District Council Waimakariri Water Race Operator: Ross Cleland	Prior to the water race relocation	Phone: 027 229 4416	Complete
Notification near completion of water race relocation works	Selwyn District Council Waimakariri Water Race Operator: Ross Cleland Surface Water Operation Engineer: Shaun Monaghan	During the water race relocation works	Phone: Ross 027 229 4416 Shaun 027 807 7890.	Complete

Submit this Quarry Management Plan	Canterbury Regional Council Attention: RMA Monitoring and Compliance Manager	Prior to quarrying activities.	Electronic Report	Complete
Submit updated versions of this Quarry Management Plan	Canterbury Regional Council Attention: RMA Monitoring and Compliance Manager	Within 30 days of the review.	Electronic Report	Submit Version 8
Submit a refuelling procedure	Christchurch City Council Team Leader Environmental Compliance	Prior to quarrying activities commencing on the Site	Writing (email)	Complete QMP V8
Hazardous spill event greater than 4 litres	Christchurch City Council Team Leader Environmental Compliance	Within 24 hours of spill occurring.	Telephone	Complete QMP V8
Ground elevation survey (annual survey results)	Canterbury Regional Council Attention: RMA Monitoring and Compliance Manager	February of each year, or on request.	Writing/report	Complete  2016 2017
Log book of all vehicles exiting the Site Weighbridge records	Christchurch City Council Team Leader Environmental Compliance	Bi-monthly for the first 6 months and on request thereafter.	Writing/logbook	Complete  Record on-site
Annual traffic monitoring data	Christchurch City Council Team Leader Environmental Compliance	Within 4 weeks of completion.	Writing/report	Complete  2017
Groundwater level and groundwater quality information	Canterbury Regional Council Attention: RMA Monitoring and Compliance Manager	Within 7 days of the measurement being taken – if the groundwater levels are measured above the historical high. Annually or on request – if the groundwater levels are not measured as being above a historical high.	Writing/report	
Complaints register	Canterbury Regional Council and/or Christchurch City Council	On request	Writing	
Record of wind speed and direction	Canterbury Regional Council	On request	Writing	

## 8.2 Records

A database will be kept to record:

- a. Times when operations occur on Site;
- b. The type of operations undertaken; and
- c. The daily number and type (class) of heavy truck movements to and from the Site, including weighbridge records.

These records will be provided to Environment Canterbury Regional Council and/or Christchurch City Council on request.

In addition, records of the following will be maintained:

- a. Wind speed and direction – refer section 5.2.3
- b. Groundwater levels, groundwater quality – refer section 6.
- c. Complaints – refer section 7.1

## 8.3 Reporting

The following reports are required:

Report type:	Submitted to:	When:
Site Validation Report	Christchurch City Council <a href="mailto:envresourcemonitoring@ccc.govt.nz">envresourcemonitoring@ccc.govt.nz</a>	No more than two months after completion of remediation.  Complete
Progress Report for Site Rehabilitation	Environment Canterbury Regional Council	By September each year.



## **9. Plan Review**

This Quarry Management Plan will be reviewed and updated at least once every five years for the duration of the consent, to incorporate changes to the operation of the Quarry and to record relevant data relating to the monitoring of quarry activities and its environmental effects.

The Plan may be amended during the period of these Consents as appropriate to improve management and contingency procedures. The Plan and any revisions will include the best practicable options for achieving compliance with the conditions of these Consents.

# Appendices

# **Appendix A – Consent Conditions**

## **Canterbury Regional Council**

CRC184072 – to discharge contaminants to air

CRC184073 – to excavate and deposit material over an unconfined or semi-confined aquifer

CRC155102 – to divert water

## **Christchurch City Council**

RMA/2018/505 – land use consent

## **Other related consents**

### **Canterbury Regional Council**

CRC162398 – to take and use groundwater

CRC162397 – to use land for the above ground storage of hazardous substances



# **Appendix B – Plans**

Location Plan

CRC184072A-D

CRC184073-C

CRC155102

“Sequencing Plan – Guys Road Concept Plan”

Selwyn District Council Race Liner WR 8.0 Description