

Application for Resource Consent: AEE

SOL Quarries Ltd

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Action	Name	Signed	Date
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Reviewed and Approved by	Simon Hedley		1 st March 2019
on behalf of	Lands and Survey (South) Ltd		

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APPLICATION FOR RESOURCE CONSENT
SECTION 88, RESOURCE MANAGEMENT ACT 1991

TO: Environment Canterbury Regional Council
PO Box 345
Christchurch

SOL Quarries Ltd, 137 Aikmans Road, Merivale, Christchurch (PO Box 36343, Merivale, Christchurch 8146)
 formally applies for resource consents in accordance with Section 88 of the Resource Management Act 1991:

**To establish, commission and operate a gravel Quarry, with associated activities, as
 an extension of an existing Quarry, at 93-133 Conservators Road, Yaldhurst.**

Full details are contained in the "*Assessment Effects on the Environment*" and appendices attached to and forming part of this Resource Consent Application, which corresponds with the scale and significance of the effects that the proposed activity may have on the environment.

The names and addresses of the owner and occupier (other than the applicant) of the land to which the application relates are as follows:

The Applicant

The location of the proposed activity is as follows:

Conservators Road, Yaldhurst, Christchurch

Additional resource consents are needed for the proposed activity.

Christchurch City Council

- **Quarry activity in a Rural Zone – Discretionary Activity**
- **Earthworks – exceeding the 'permitted activity' standard – Restricted Discretionary Activity**
- **Transport – exceeding the 'permitted activity' standard – truck movements – Restricted Discretionary Activity**
- **Noise – exceeding the 'permitted activity' standard – Restricted Discretionary Activity**



.....
 Signature of Applicant (or person authorised to sign on behalf of Applicant).

27th February 2019

Address for service of Applicant:

SOL Quarries Ltd
 c/- Lands & Survey (South) Ltd
 Level 2, 177 Victoria Street
 Christchurch
 Mobile: 021 434 005
 Email: simon@landsandsurvey.co.nz
 Contact person: Simon Hedley

1 Introduction

1.1 Purpose of this Document

The purpose of this document is to provide an assessment of the potential environmental effects of quarrying and related activities on land situated at 93 Conservators Road, adjacent to an existing quarry operated by SOL Quarries Ltd, to the north west of Christchurch.

An Assessment of Environmental Effects (AEE) is required to accompany an application for resource consent under Section 88 of the Resource Management Act 1991 (RMA). This document has been prepared in accordance with the Fourth Schedule of the RMA. It is intended that this assessment covers those matters of relevance to the resource consents pursuant to Section 9, 14 and 15 of the RMA, and managed by the Canterbury Land & Water Regional Plan (CLWRP) and the Canterbury Air Regional Plan (CARP).

1.2 Summary of the Proposal

The proposal involves the extraction of aggregate material from land over an unconfined aquifer and associated air discharges from dust associated with the extraction, aggregate processing, truck movements and site rehabilitation. The proposal includes “enabling works”, including realignment of a stockwater race and the construction of a 3-metre high vegetated bund on the north-eastern boundary. The site rehabilitation involves the use of cleanfill as a fill material to enable the site to be recontoured, with a layer (approx. 400mm) of clean soil overlaid the cleanfill material. The site will have a maximum of 9-hectares of exposed land at any time, excluding the heavy vehicle and light vehicle roads.

1.3 Summary of Consent Requirements

The following consents are required under the:

Canterbury Air Regional Plan

- **Rule 7.63** – The discharge of contaminants into air that is from an industrial or trade premise and is not managed by Rules 7.47-7.62 and is not a prohibited activity – **Discretionary**

Canterbury Land and Water Regional Plan

- **Rule 5.100** – The discharge of contaminants (cleanfill) to ground that is not permitted by Rule 5.98 – **Discretionary**
- **Rule 5.126** – The non-consumptive taking and use of water from ... artificial watercourse and discharge of the same water to the same ... artificial watercourse – **Restricted Discretionary**
- **Rule 5.176** – The use of land to excavated material over an unconfined or semi-confined aquifer – **Restricted Discretionary**
- **Rule 5.177** – Deposition of material into excavated land over an unconfined or semi-confined aquifer – **Controlled**

1.4 Other Permitted Activities and Requirements

Permitted activities and other Council's requirements are addressed in further detail in Section 4.4 – 4.6 of this report.

1.5 Background

The SOL Group of Companies comprises SOL Aggregates Ltd, SOL Gravel Ltd, SOL Quarries Ltd, SOL Screening & Crushing Ltd, SOL Shingle Ltd and South Canterbury Screening and Crushing Ltd.

In June 2016 SOL Quarries Ltd commissioned a quarry in Yaldhurst, having obtained resource consents from Environment Canterbury Regional Council (ECan) and Christchurch City Council (CCC). The consents were granted in January 2016 and the company undertook 3-months of enabling works. The enabling works included:

- widening 3-kilometres of Christchurch City roads, specifically Savills Road, Guys Road and Ryans Road;
- the construction and vegetation of 3-metre high bunds surrounding approximately two-thirds of the property;
- the removal of contaminated waste dumped by the previous owner (a Site Validation Report was prepared and submitted to ECan Compliance Manager prior to operation of the Quarry in June 2016);
- the submission and certification of a Quarry Management Plan to both Councils;
- the construction of a controlled entry/exit on Guys Road, in accordance with Christchurch City Council approved engineering design plans; and
- the installation of requisite signage.

SOL Quarries Ltd directors and shareholders are Simon Apperley, Ben Dormer, Richie McCaw and Michael Watt. The Company directors and shareholders are committed to exceeding the compliance requirements associated with all Conditions of Consents authorising the Quarry operations, and ensuring a state-of-the-art quarry operation, which avoids, mitigates or eliminates all adverse effects on the environment.

The SOL Group of companies are committed to sustainable and environmentally responsible operational practices, while producing quality aggregate that meets the requisite standards, and ensuring that all staff and visitors to the Quarry are safe, at all times.

2 Existing Environment

2.1 Site Description

The proposed Quarry extension (the Site) is located immediately adjacent to the existing SOL Quarry at 93-133 Conservators Road, comprising approximately 28 hectares in total size. It is situated approximately 3-kilometres to the north-west of Christchurch International Airport, as illustrated by Figure 1. Figure 2 illustrates the location of the proposed quarry extension in relation to the existing SOL Quarry.



Figure 1: Location Plan

The Site comprises two land parcels immediately adjacent to the existing Quarry located at 81-83 Conservators Road, in Yaldhurst, Christchurch. The southern Lot is the result of a recent subdivision which amalgamated 20-hectares of a property immediately east of the existing Quarry with the existing SOL Quarry property. The northern Lot is currently subject to an application for a boundary adjustment subdivision, proposing to amalgamate a little over 8-hectares of the property, which is also located immediately east of the existing Quarry (Figure 2). Updated Certificates of Title will be provided to Council as soon as they are available.



Figure 2: Proposed quarry site – Proposed stages (red), southern lot (blue), northern lot (black).

A stockwater race, of approximately 1.0m in width and 1.0m in depth, runs through the property from the existing Quarry to Conservators Road (Figure 2). The stockwater race forms part of the stockwater race network (Paparua Water Race Scheme) owned and managed by the Selwyn District Council. The stockwater race is deemed to be an artificial waterbody and is classified as a ‘surface waterbody’ under the CLWRP.

The SOL Quarry has three existing monitoring wells, which provide site-specific water levels. The depth of these wells has been recorded over the past 3-years (Well Data & Bore Logs – Appendix F). There is also a deeper well used as a potable water supply and a source of water for dust suppression. A new well was installed on the Higgs property in December 2018 to provide a water supply for dust suppression. The site-specific data from the existing wells has identified the highest recorded ground water depth at more than 12.00 metres below natural ground level. The new bore has confirmed that the groundwater level below the proposed Quarry extension is consistent with this data. The location of the wells is shown in Figure 3 below.



Figure 3: Wells (ECan GIS)

A proportion (20 ha) of the Site is currently used for the cultivation and harvesting of grass for a ready-lawn business. The remainder of the Site (8.335 ha) is current low-density grazing pasture. The Site does not have any known outstanding or significant landscape values. The property to the immediate west of the subject site is owned by SOL Quarries Ltd. SOL Quarries Ltd operates a gravel quarry on this site along with gravel processing activities.

The property to the immediate north of the site is owned by Christchurch City Council and is grazed. There are no dwellings or sensitive land uses located on this property. To the south and west of the site are properties that are owned by Environment Canterbury, which are also grazed. As with the land to the north, there are no sensitive land uses located on these properties.

To the south of the existing light vehicle access to the SOL Quarry at 93 Conservators Road (and to be used by the extended quarry site) is a property (21 Conservators Road), owned by Harewood Gravels Limited. This property was the subject of an application to ECan and CCC to establish a Quarry in 2014. The applications were the subject of an Environment Court decision to decline the consents. The Environment Court decision was recently upheld by a High Court decision.

The remainder of the properties in the immediate vicinity of the subject site, including those immediately opposite the subject site on Conservators Road and Savills Road, are rural. It is noted that residential properties on Conservators Road are screened by mature vegetation in the form of shelter belts which stretch continuously for approximately 450m along the eastern side of Conservators Road.

2.2 Existing Quarry

As identified in Figure 2, there is an existing operational Quarry owned by SOL Quarries Ltd at 81-83 Conservators Road (Lot 2 DP 82891). SOL Quarries Ltd holds the following consents from CCC and ECan for the establishment and operation of this Quarry:

- CRC184072 – Discharge contaminants to air
- CRC184073 – Land use consent to excavate and deposit material over an unconfined or semi-confined aquifer
- CRC155102 – Water permit to divert water (relocation of the stockwater race)
- RMA2018/505 – Land use consent for gravel extraction and processing operation

Consents CRC184072, CRC184073 and RMA2018/505 are a result of the approval of a Variation to the original Quarry consents in April 2018, which amended conditions of consent which unintentionally prevented full operation of the Quarry. The Variations were processed and approved on a non-notified basis.

These consents provide a 15-year duration for operation of the existing Quarry, which will expire on 22nd February 2031.

In addition to these Resource Consents, SOL Quarries Ltd also holds the following Certificates of Compliance (CoC) from ECan in relation to the existing Quarry operation:

- CRC162398 – To take and use groundwater
- CRC162397 – To use land for the above ground storage of hazardous substances

2.3 Climate

Wind direction and velocity data determined from a windrose associated with meteorological readings at the Christchurch Aero Club was examined during the collection of evidence associated with consenting the existing SOL Quarry on the adjacent site. The data period was December 1959 to January 2015. This data has been re-examined and updated by NZ Air Ltd in the Technical Report relating to air quality, appended to and supporting this Application (Appendix B).

The windrose demonstrates that the most frequent wind direction expected in the vicinity of the nearby Aero Club site is from the north-east. Given the proximity of this location to the Site it is considered that the wind direction at the Site would be broadly similar. There are no landforms in between the two locations that would significantly impact on wind direction or speed.

The windrose indicates that wind patterns are dominated by winds from the north-eastern and south-western quadrants. Generally stronger wind speeds (greater than 10m/s) are recorded as coming from the south, southwest, northeast, and northwest.

In respect of ambient dust, due to the rural zoning of the area, there is likely to be dust arising from normal farming activities in the general area, such as tilling fields, unsealed road/farm track use, crop dusting, etc.

2.4 Ecology

There are no known ecological areas of significance or ecological values on the Site. The surrounding area comprises predominantly farmed grassland (pasture) interspersed with exotic plant species for shelter and amenity purposes. There are no noted areas of indigenous vegetation.

There are no ecological values associated with the stock water race.

2.5 Stockwater Race

As shown on the Quarry Site Plan (Appendix G), a stockwater race (previously realigned by SOL Quarries Ltd a part of the “enabling works” for the existing Quarry), runs through the middle of the proposed Quarry extension. SOL Quarries Ltd is in the process of applying to Selwyn District Council for an authority to relocate the stockwater race to inside the northern boundary of the proposed Site. Formal approval of the Application will be submitted to ECan upon receipt. The Canterbury Land and Water Regional Plan (CLWRP) defines an artificial waterway, including a stockwater race, as a surface water body.

While relocation of the stockwater race will trigger the CLWRP Rules regarding the non-consumptive taking and use of water from an artificial waterbody and CLWRP Rules relating to earthworks above an unconfined aquifer due to volume of material excavated during the relocation. In consultation with ECan Planning Staff the earthworks associated with realignment of the stockwater race are considered as part of the earthworks related to the wider Quarry establishment and operation.

2.6 Network Utilities

A transmission line runs across the property, east to west. This transmission line forms part of the National Grid, and is known as the Islington-Kikiwa B (ISL-KIK A) 66 kV transmission line. A supporting tower structure are located within the property boundary. The location of the transmission line is shown on the Site Plan contained in Appendix B. SOL Quarries Ltd is currently consulting with Transpower Ltd and will propose Consent Conditions which ensure matters relating to the integrity and safety of the ISL-KIK A line is maintained at all times.

2.7 Cultural and Archaeological Environment

The New Zealand Archaeological Authority archaeological site recording scheme database does not identify any known archaeological sites within the proposed Quarry area. There are no items of historic significance within the project site according to Christchurch District Plan Maps.

There are no records of cultural sites within the proposed Quarry area. However, SOL Quarries Ltd will observe the standard Council “accidental discovery” protocols.

2.8 Contaminated Land

The Site is not listed ECan’s Listed Land Use Register (LLUR) – Appendix H. Furthermore, there does not appear to be a history of land use activities that may give rise to land or water contamination. Accordingly, it is not considered to be a contaminated site.

3 Proposed Activity

3.1 Introduction

The proposed Quarry operations on the Site will utilise the same methods current employed on the SOL Quarry at 81-83 Conservators Road, Yaldhurst. It is proposed to continue the pattern of sequential vegetation clearance, excavation and processing, cleanfill disposal and compaction, and Site rehabilitation.

Accordingly, once the “enabling works” have been completed to the satisfaction of both Councils (ECan and CCC) and Selwyn District Council, the Quarry operation will be staged, moving from west to east. The process is described in further detail in the following sections and will be detailed in the Quarry Management Plan. A copy of the current Quarry Management Plan – V9 is appended (Appendix I).

3.2 Quarry Extraction Methodology

The quarry will generally be developed from west to east as a continuation of the existing SOL Quarry. As illustrated in the Quarry Site Plan (Appendix G) the Quarry activity will occur in three key stages with a maximum of 9-hectares being exposed and quarried at any one time. Excavation is generally expected to be linear; however, it is noted that the stages may overlap. Processing and rehabilitation may occur within an immediately adjacent western Stage while the vegetation clearance and excavation of raw material occurs on the next (eastern) Stage. However, SOL Quarry will ensure a maximum of 9-hectares of unconsolidated / exposed land is not exceeded, regardless of any overlap between the stages. This is proposed as a Condition of Consent.

3.2.1 Enabling Works

The “enabling works” will consist of:

- Updating all documentation, including the Quarry Management Plan (QMP);
- Scraping the vegetation and overburden to create a bund which will extend down the northern-eastern boundary of the Site;
- Vegetating the bund; and
- Re-alignment of the stockwater race.

The bund will be located on the internal side (the Quarry side) of the stockwater race along the north-eastern boundary, and will comprise an engineered structure approximately 3m high and 15m wide at its base. It will be vegetated to assist with dust mitigation and improve its visual amenity (refer Appendix E). The bund (as storage of overburden) forms part of the Quarry activity. This is proposed as a Condition of Consent.

3.2.2 Excavation

Once the “enabling works” have been completed, the excavation of Stage 1 of the Quarry extension may commence, although processing the raw gravel will occur on the existing Quarry Site. It is proposed to excavate to a depth of 10 metres as groundwater on the Site is recorded at a minimum depth of 12.00 metres (refer Groundwater Well Data – Appendix F). This has the effect of providing a minimum 2-metres of undisturbed material between the highest expected groundwater level and the excavation. Accordingly, SOL

Quarries Ltd proposes a Condition of Consent limiting the excavation of gravel to a maximum of 10-metres below natural ground level OR 1-metre above the highest expected groundwater level – whichever is the highest.

All areas that are not being actively quarried will be maintained in vegetation, while SOL Quarries Ltd will utilise water as a dust suppressant on all unconsolidated surfaces. This is proposed as a Condition of Consent.

3.3 Aggregate Processing

SOL Quarries Ltd will continue the current aggregate processing methodology and operation on the Quarry extension. On the combined Quarry Site, comprising both the existing Quarry and the proposed Quarry extension, SOL Quarries Ltd will operate a maximum of two crushing plants at any one time. The crushing plant comprises a Jaw Crusher, a Cone Crusher and a Powerscreen. The configuration of the plant components will be determined by the raw material size and the aggregate product specifications.

The crushing plant will be located within the Quarry Pit and all aggregate processing and the stockpile of aggregate will occur between 7.00 and 10.00 metres below natural ground level.

The raw gravel is extracted using either an excavator or a loader, depending upon the compaction of the raw gravel and stored in a 'surge pile'. The raw gravel is fed into the crushing plants using a loader. The aggregate product is stockpiled according to product type. The stockpiles will not exceed 7.00 metres in height. The processed aggregate is loaded from the stockpiles into Client trucks for transport to a range of work sites.

Specification sheets for examples of the crushing plant are included in Appendix J.

This methodology is proposed as a Condition of Consent.

3.4 Quarry Management

SOL Quarries Ltd currently operates in accordance with a comprehensive Quarry Management Plan (QMP), a copy of which is appended (Appendix I). The QMP is a living document, and which is updated as required. The Quarry Management Plan (QMP) will be updated to provide for the Quarry extension and incorporate any changes in the Consent Conditions. The QMP will be submitted to both Councils (ECan and CCC) for certification prior to commencement of the "enabling works". The QMP includes the following:

- Quarry management and key contacts
- Extraction guidelines
- Staging the Quarry operations
- Inspection procedures for the diesel storage tank and refuelling process
- Management of dust
- Monitoring and maintenance of equipment
- Cleanfill management including inspection, verification, recording and monitoring
- Site security
- Groundwater monitoring and mitigation measures

- Storage of hazardous substances, including spill response and mitigations
- Rehabilitation guidelines
- Requirements to address Transpower Ltd and Christchurch International Airport Ltd requirements
- Complaints procedure

3.4.1 Refuelling

The existing Quarry operation utilises a 10,000-litre double-skin diesel tank on-site which is used for the refuelling of machinery. The tank is located on a hardstand within the existing Quarry. The crushing plant will be refuelled using a portable 1,300 litre tow-tank, ensuring appropriate spill prevention measures are adopted, at all times. However, the loaders will be refuelled directly from the 10,000-litre double-skin diesel tank. A copy of the diesel tank specifications is included in Appendix K.

3.4.2 The Use of Land for the Storage and Use of a Hazardous Substances

All hazardous substances used on site will be stored in an appropriate facility to contain any leaks or spills, and this facility will be monitored regularly and in accordance with the requirements of the Quarry Management Plan. This will comply with the permitted activity criteria set out in Rule 5.181 of the Canterbury Land and Water Regional Plan.

3.4.3 Hours of Operation

It is proposed to operate the Quarry between the hours of 7:00am and 6:00pm Monday to Friday and 7am to 12pm on Saturdays. There will be no Quarry operations on Sundays or Public Holidays.

3.5 Dust

Dust management is considered a critical operational requirement for the Quarry. Dust is generated through internal traffic movements, and through the extraction and processing of aggregate material.

SOL Quarries intend to use a combination of the following dust management measures on site:

- Trickle feed water from the potable bores to water storage tanks. The trickle feed system ensures the volume of water allowed by the 'permitted activity' Certificate of Compliance is not exceeded. This water is used in 2 ways:
 - The water trucks will draw water from the storage tanks, dampening all unconsolidated surfaces, including the Quarry roads and stockpiles of aggregate, when atmospheric conditions require.
 - The water tanks are connected to a 50mm main line, which has a series of hydrants and 100-metre laterals with sprinkler pods along the heavy vehicle road. Individual 100-metre laterals can be turned on/off as required, depending on atmospheric conditions.
- Maintain a meteorologic weather station, which provides real-time recordings of wind speed. The application of water as a dust suppressant is used during operating hours when the wind speed exceeds 5 ms⁻¹. When wind speed exceeds at 10 ms⁻¹ potentially dusty activities (as listed in the Technical Report – Appendix B) will cease.

- The heavy vehicle entrance has been sealed for the first 250-metres from the Guys Road entrance/exit.
- Raw gravel will be extracted in a damp state and stockpiled for use as soon as possible. SOL Quarry will minimise the 'surge' piles of raw material excavated for processing.
- Maintaining vegetation cover on the bunds and those areas not being actively quarried.

3.6 Traffic

The Christchurch City Council consent application addresses the issues associated with access and traffic, although it is necessary to address internal site traffic as a component of this air discharge application.

The proposed quarry expansion will not result in any change to the existing consented vehicle movements. The existing consent provides for a maximum of 300 heavy vehicle and 30 light vehicle movements per day. Accordingly, there is no proposed change to the scale or intensity of the dust effects associated with truck movements. The proposed mitigation measures will, the Technical Report – Air Quality has concluded, be less than minor.

3.7 Stockwater Race

As outlined in Section 2.2.4 above, an existing stockwater race runs along the middle of the proposed Quarry extension from west to east. This stockwater race owned and operated by the Selwyn District Council. It comprises a 'main line' and a 'lateral' within the *Paparua Water Race Scheme* (Figure 4: below).

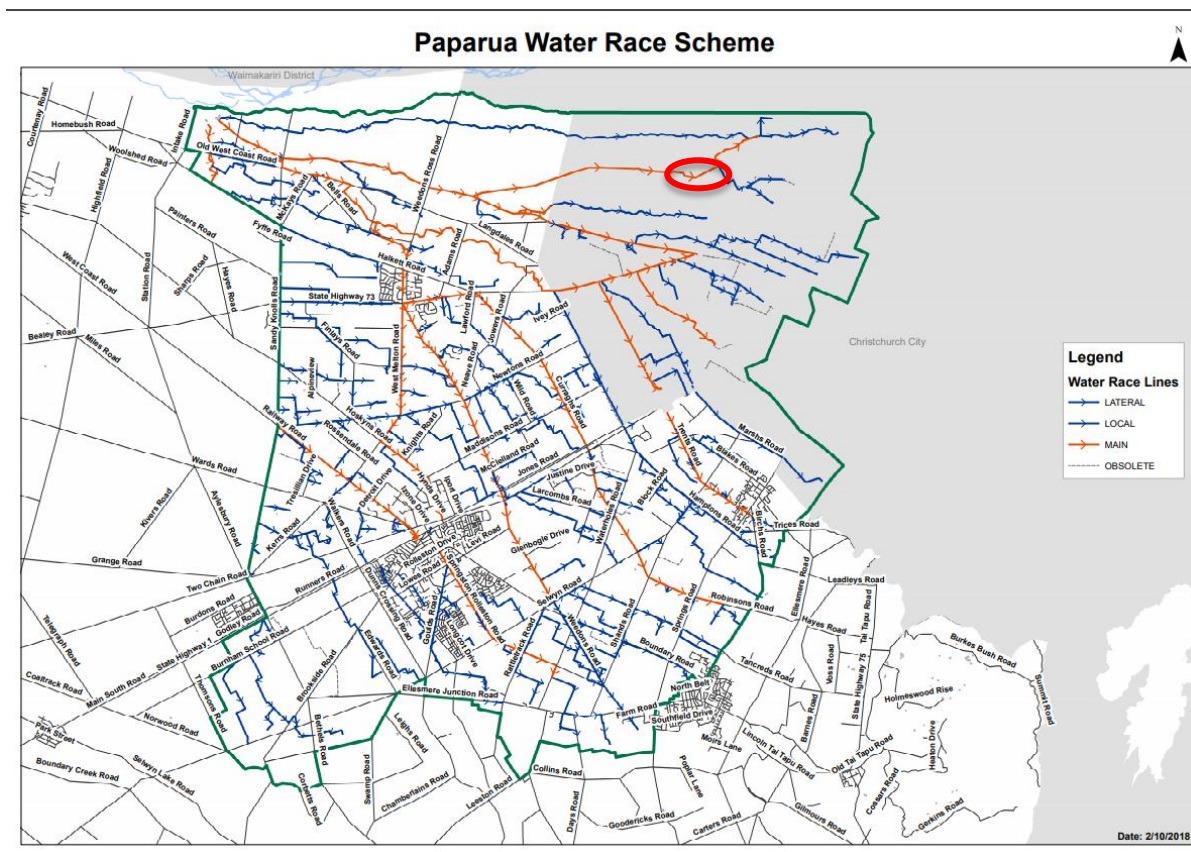


Figure 4: Paparua Water Race Scheme (Portion that traverses the Site identified – red circle)

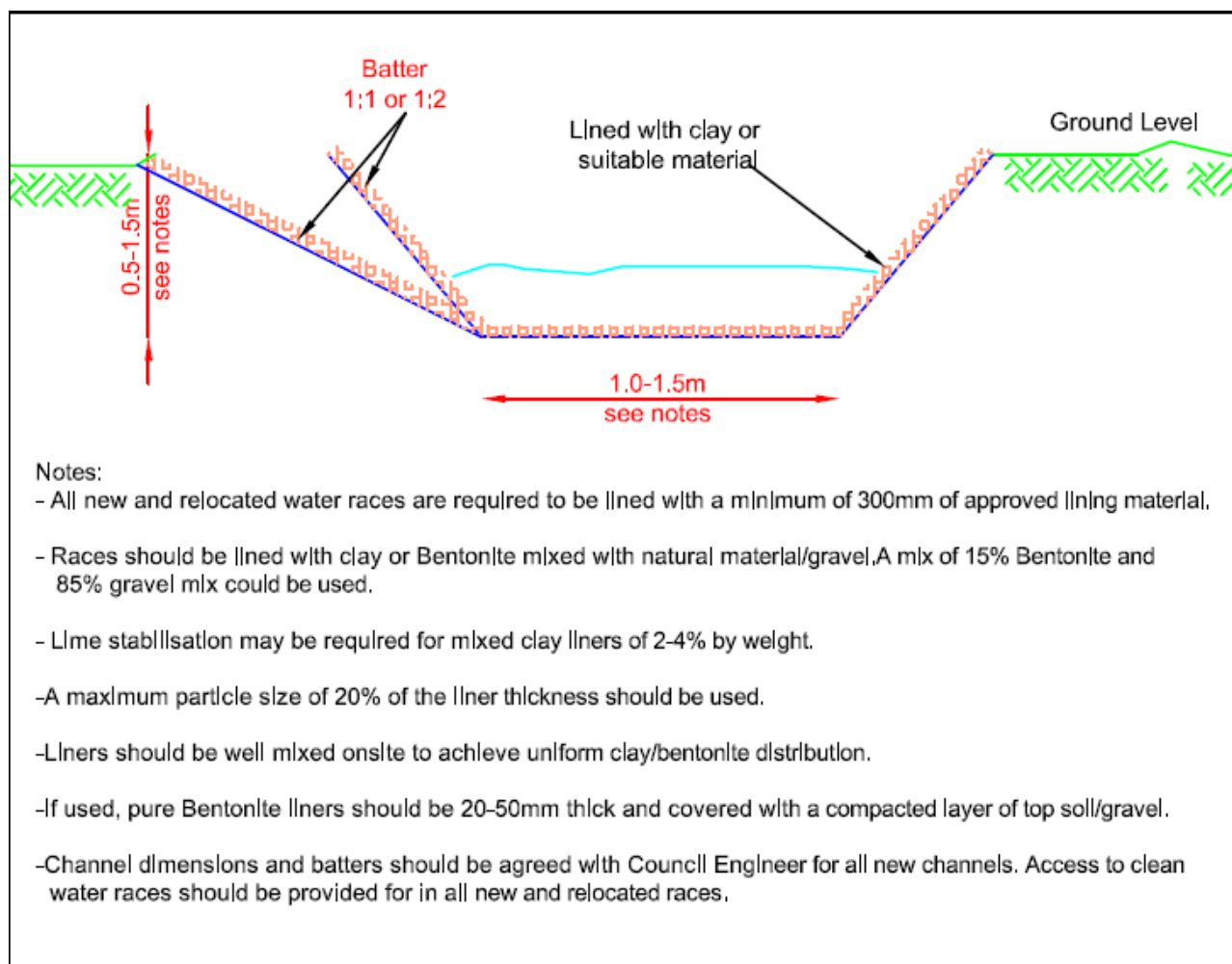
It is proposed to be relocate the stockwater race to the northern and eastern Site boundaries. A minimum 5-metre buffer will be provided between the stockwater race and the Quarry Pit on the northern side and a 20-metre buffer (including the bund) on the eastern side.

SOL Quarries Ltd has submitted an Application to the Selwyn District Council for the authority to relocate the stockwater race to inside the northern boundary of the proposed Site (Figure 2). The stockwater race is the eastern-most 'main line' and 'lateral' in the Paparua Water Race Scheme. The stockwater race is subject to the flow limits set in the Selwyn District Council Bylaw W101:1.

A Construction Plan and a Safe Work Method Statement will be prepared and submitted to the Selwyn DC Engineering Manager for certification prior to the commencement of works associated with realignment of the stockwater race. However, the works will be based on the following Methodology:

- The location of the new channel will be surveyed & the position confirmed with Selwyn DC Engineering Manager.
- The new channel will be excavated using an excavator and grader, with surplus soil graded to ground-level on the Quarry side of the new channel.
- Excavation shall proceed upgradient, commencing adjacent to the eastern end of the stockwater race.
- The height of the excavated new channel will be checked for location, depth and elevation, ensuring the same fall as the existing stockwater race.
- The stockwater race will be lined in accordance with the Selwyn DC Engineering Standards.
- The Selwyn DC Engineering Manager, or delegated appointee, will inspect the new channel prior to breaching the tail and head of the channel and prior to allowing water to flow in the new channel.
- Once the new channel has been completed the tail of the new channel will be breached, followed by the head of the new channel, allowing water to flow.

The new channel will be formed in dry conditions prior to the water being diverted directly into it. The design and construction of the stockwater race will comply with the Selwyn District Council Engineering Standards (Appendix L). The location of the realigned stockwater race is identified in the Quarry Site Plan (Appendix G).



The Selwyn District Council Bylaw (W106) states that the relocation of the water race shall be permitted subject to:

- i. *Relocation of the race shall not have a detrimental effect on any other water race users or the water race system operation.*
- ii. *Application for relocation shall be made in writing to the Asset Delivery Manager and shall include:*
 - a. *Map showing existing and proposed works.*
 - b. *Specifications for construction of work.*
 - c. *Non-refundable payment of the application fee as per the Annual Report.*
- iii. *No works can proceed until engineering approval of the works has been obtained from the Asset Delivery Manager.*
- iv. *All costs associated, including any supervision, with the relocation shall be at the applicant's expense.*
- v. *If any leakage occurs from the relocated race, including anytime in the future, the applicant shall undertake all necessary repairs as directed by the Asset Delivery Manager.*

- vi. *A water loss test must be carried out in consultation with the Council representative prior to the water being fully diverted. If this is not undertaken the Council reserves the right to do this at the applicant's cost and all repairs that may be required are at the applicant's expense.*
- vii. *Where a water race relocation application is an enhancement to the scheme, then a cost sharing arrangement may be entered into between the Council and the applicant at the Council's discretion.*

SOL Quarries Ltd recognises that relocation of the stockwater race involves works proximate to a Transpower Ltd pylon located on an adjacent property owned by CCC. SOL Quarries Ltd, in consultation with Transpower Ltd, will ensure a minimum separation distance of 20-metres between the outside edge of the foundations of the Transpower pylon and any works associated with relocation of the stockwater race.

It is noted that no water from the stockwater race will be abstracted for the Quarry activities.

3.8 Cleanfilling and Rehabilitation

The proposal includes the disposal of cleanfill, which will assist in forming a base for recontouring the land prior to rehabilitation. The deposition of cleanfill and site rehabilitation will progressively move through the Site as the Quarry works progress. At no time will there be more than 9-hectares of unconsolidated surface, excluding the Quarry roading network. Therefore, site rehabilitation works will occur concurrently with the Quarry extraction and processing operations as works progress through the site from west to east.

SOL Quarries Ltd holds a Cleanfill Licence, which is renewed annually, from Christchurch City Council. The Cleanfill Licence authorises, in conjunction with the relevant resource consents, the acceptance of cleanfill in compliance with 'A Guide to the Management of Cleanfills' published by the Ministry for Environment in January 2002. The Guide defines 'cleanfill' and 'cleanfill material' as:

"Material that when buried will have no adverse effect on people or the environment. Cleanfill material includes virgin natural materials such as clay, soil and rock, and other inert materials such as concrete or brick that are free of:

- *Combustible, putrescible, degradable or leachable components*
- *Hazardous substances*
- *Products or materials derived from hazardous waste treatment, hazardous waste stabilisation or hazardous waste disposal practices*
- *Materials that may present a risk to human or animal health such as medical and veterinary waste, asbestos or radioactive substances*
- *Liquid waste.*

*A cleanfill is any landfill that accepts **only** cleanfill material as defined above." (emphasis added)*

Only inert solid material will be accepted for disposal on the Site. Any material that is not inert (that does not meet the acceptance criteria of this operation and the guide) will be rejected. However, SOL Quarries Ltd recognises that 'cleanfill' has been defined as a contaminant. Accordingly, the Rules in the CLWRP apply, in particular Rules 5.98 and 5.100.

The current process for the determination of acceptable cleanfill material, as approved and audited annually by Christchurch City Council and ECan, will be followed (SOL Quarries Ltd – Cleanfill Acceptance Criteria – Appendix M). The methodology for cleanfill acceptance involves a documented assessment of the material to determine if it meets the cleanfill criteria, the Conditions of the Consents and the Conditions of the Cleanfill Licence. Unless a Quarry Client can demonstrate the material proposed to be disposed of at the Quarry as cleanfill meets the acceptable criteria it will be rejected.

Prior to the first load from a Client's site being accepted as cleanfill, the Client is required to complete and sign a *Cleanfill Declaration*. The Declaration includes the following details:

- Date of waste acceptance;
- Contractors name;
- Description of the type of waste;
- Verification of the waste type complies with the cleanfill acceptance criteria;
- The source of waste (physical address);
- Approximate quantity of waste;
- Any noticeable characteristics of the waste;
- Details of the specific waste disposal agreements;
- Signature of the contractor and
- Check by the operator – all details, including the signature, are complete; then check the physical address against ECan's LLUR.

In addition, SOL Quarry staff inspect the loads and reject any loads that do not comply with the material description.

The remediation of the Site will be undertaken over the life of the Quarry in accordance with a formal Remediation Plan, which is included in the Quarry Management Plan (Appendix I). The staging will allow for the most practicable operation and remediation of the Site while minimised the exposed fill surfaces and maintaining sufficient room for vehicles to unload safely. Where possible, areas that have been infilled with cleanfill will be covered with topsoil and vegetated, without delay.

3.8.1 Cleanfill Management and Monitoring

A Cleanfill Management Plan is incorporated in the Quarry Management Plan (QMP). It has been prepared in accordance with the Ministry for the Environment guide – *A Guide to the Management of Cleanfills* (Ministry for Environment: 2002). The current QMP – V9 is appended to this AEE (Appendix I).

The QMP is a living document. It will, therefore, be updated upon the grant of resource consent associated with the Quarry extension and will be submitted to both Councils (ECan and CCC) for certification prior to the exercise of the resource consent. The Cleanfill Management Plan section of the QMP will incorporate environmental management requirements and specific all the operational and management aspects of the cleanfill including:

- Resource consent requirements;

- Site management;
- Cleanfill design;
- Waste acceptance criteria;
- Waste acceptance controls and procedures;
- Training procedures;
- Daily operating procedures;
- Environmental controls and monitoring;
- Emergency procedures;
- Monitoring regime; and
- Reporting requirements.

The waste generator (Quarry Client) must provide the above information and sign a Declaration that the load to be disposed of at the Quarry meets the waste acceptance criteria. In addition, SOL Quarry administration staff confirm the source of the cleanfill is not a contaminated site (check ECan's LLUR and contact ECan Compliance staff if appropriate). Quarry staff inspect the loads and reject any loads that do not match the material description.

The remediation and filling of the site will be undertaken over the life of the Quarry in line with the proposed staging. The staging will allow for the most practicable operation and filling of the Site while minimising the exposed fill surfaces and maintaining sufficient room for vehicles to unload safely. Where possible, exposed surfaces will be top-soiled and grassed once the area has been filled.

Operational site records will be maintaining, including load inspections, load weights, a copy of the Cleanfill Declaration, and any discharge monitoring required to meet the Consents and the Cleanfill Licence. These records are provided to both Councils (ECan and CCC) upon request. This Methodology is offered as a Consent Condition.

3.8.2 Rehabilitation

Once quarrying has ceased in a particular location, the area will be backfilled with cleanfill as outlined below. The Quarry will be rehabilitated with a cover of clean soil (300 – 400mm) and grassed, in accordance with the CCC Quarry Rehabilitation Guidelines: August 2018. Once quarrying has ceased on the site, the bunds will be deconstructed into the excavated area and the ground re-contoured. This will occur, and the Site rehabilitated, before the expiry of the Consent term.

3.9 Water Take and Use

The proposed groundwater abstraction for use on the site for dust suppressant purposes will be at a rate not exceeding 5 l/s, and a volume between 10m³ and 100m³ per day. The site area is 28-hectares. The point of abstraction will be the existing bores on site, which are at least 20 metres from the boundary. Therefore, this will meet the permitted activity rule in 5.114 of the CLWRP.

The relocation of the stockwater race involves the non-consumptive take and use of water from an artificial watercourse and discharge of the same water to the same artificial watercourse. Accordingly, the relocation of the stockwater race requires resource consent in accordance with either Rule 5.126 or Rule 5.127 of the CLWRP.

We have concluded that relocation of the stockwater race meets the **Restricted Activity** Conditions in Rule 5.126 of the CLWRP. While the works involve the permanent relocation of a section of the stockwater race (approximately 720-metres), the works will:

- not increase the length of the stockwater race,
- not result in any loss of flow in the stockwater race,
- not affect any other users of the stockwater race,
- be located a minimum of 20-metres from the Transpower Ltd power pylon located on the adjacent CCC land,
- be confined to an artificial surface waterbody owned and operated by the Selwyn District Council,
- be undertaken in accordance with an authorisation from the Selwyn District Council,
- be undertaken in a manner which complies with the Selwyn District Council Engineering Standards.

Please note that SOL Quarries Ltd has submitted a formal application to Selwyn DC to relocate the section of the stockwater race.

Accordingly, we consider the effects of relocation of the stockwater race are less than minor.

3.10 Transmission Line Management

As noted above, transmission lines run across the property with one pylon being on new Quarry property. The New Zealand Electrical Code of Practice for Safe Electrical Distances NZECP 34:2001 sets out the minimum safe distances for activities to occur in proximity to the transmission lines. Consultation with Transpower Ltd has confirmed that the minimum distance for earthworks from the pylons is 20-metres as measured from the outside edge of the foundations. The applicant will comply with this setback and it will be incorporated into the Quarry Management Plan.

In consultation for the existing SOL Quarry consents Transpower Ltd requested the following conditions be incorporated into the application:

1. *Prior to the commencement of any activity authorised by the consent, the consent holder must submit a Quarry Management Plan to Environment Canterbury Regional Council (ECan) and Christchurch City Council (CCC). In particular, the Quarry Management Plan will include the construction drawings and procedures, methods and measures to be applied to address the following:*
 - a. *Dust control, including specific reference to the protection of the Transpower transmission lines and towers;*
 - b. *Earthworks, including the construction of bunds, in proximity to the Transpower transmission lines and towers;*

- c. *Maintenance at all times of adequate electrical safety clearances as required by NZECP34 between buildings, structures, mobile plant and personnel working near the Transpower transmission lines and towers;*
 - d. *Maintenance of existing access arrangements to the Transpower transmission lines and towers;*
 - e. *For the avoidance of doubt, no blasting is authorised by this consent.*
2. *Without limiting the generality of Condition 1, SOL Quarries Ltd must:*
- a. *Manage the consented activities so the discharge of dust and/or particulate matter does not create any dust hazard or nuisance to the Transpower transmission lines and towers which are within or close to the application Site;*
 - b. *Not deposit any excavated or other material under any or near any Transpower transmission line (including during the construction of the proposed bunds) where the distance from the ground to the conductors would be reduced to less than the minimum required by NZECP34 subsection 4.3.*
 - c. *Not undertake any excavation within a horizontal distance of 20 metres of the outside edge of the foundations of any transmissions line tower (Note: the 20-metre restricted area is to be measured at existing ground level);*
 - d. *Undertaken excavations so there is a batter slope no steeper than 1(v):3(h) between the setback described in Condition 2(c) and the nearest excavation pit.*
3. *The Quarry Management Plan must specify the name, experience and qualifications of a person nominated by the owner to supervise the implementation of, and adherence to, the Plan.*
4. *The Quarry Management Plan must include confirmation of SOL Quarries Ltd's liability insurance.*
5. *The Quarry Management Plan shall include evidence that it has been developed in consultation with Transpower. A copy of any comments and recommendations made by Transpower shall be included before being submitted to CCC. All activities are to be undertaken in accordance with the Quarry Environmental Site Management Plan.*
6. *Before the bunds located on the boundary of the Site closest to the Transpower transmission lines are constructed, the consent holder must confirm that the proposed bunds will maintain minimum safe ground to conductor clearance distances. If necessary, the consent holder shall commission an electrical engineer, who is experienced with high voltage transmission lines, to undertake an assessment of the expected clearance between the ground and the conductors upon completion of the proposed bunds.*
7. *Where landscaping is to be undertaken, all vegetation (exceeding a maximum height of two metres at full maturity) must:*
- a. *Be set back by a horizontal distance of at least 12-metres either side (total of 24-metres) from the centre line of all Transpower transmission lines; and*
 - b. *When fully-grown, not be able to fall within 5-metres of the Transpower transmission lines*

Note: for the purposes of the conditions above NZECP34 is the New Zealand Electrical Code of Practice for Electrical Safe Distances 2001.

While consultation is on-going with Transpower Ltd, the Applicant agrees with the Conditions above, such that they now form part of this Application.

SOL Quarries Ltd recognises that relocation of the stockwater race involves works proximate to a Transpower Ltd pylon located on an adjacent property owned by CCC. SOL Quarries Ltd, in consultation with Transpower Ltd, will ensure a minimum separation distance of 20-metres between the outside edge of the foundations of the Transpower pylon and any works associated with relocation of the stockwater race.

3.11 Duration

SOL Quarries Ltd seeks a consent duration of 20 years with a lapse period of 8 years.

At the current rate of quarrying it is anticipated that the existing operation will encroach into the extension within 8 years. The extended lapse period is considered appropriate due to the following reasons:

- Progress has been made by continuing the existing quarry operation towards the area of extension;
- There is a continued demand for gravel and processed aggregate; however, the existing Quarry will satisfy that demand for a further 6 – 7 years;
- There are no parties affected by the increase in lapse period;
- The ECan Plans are new and are unlikely to change substantially in the next 8 years; and
- It would be inefficient use of resources to re-seek consent or utilise Section 125 after 5 years.
- The proposed Quarry lapse period and duration of Consent is not inconsistent with Policy 4.11 of the CLWRP, as the proposal does not affect water quality and quantity limits.

The existing 28-hectare Quarry is consented for a duration of 15-years and is anticipated to be exhausted within 6 – 8 years, meaning quarrying on the site will have been sustained for a total of approximately 11-years.

Given the rate of quarrying on the existing Site, it is anticipated that quarrying an additional land within the proposed Quarry extension will be sustained for 10-years from the date of commencement (approximately 6 – 7 years from the date of the grant of Consent).

When assessing the suitability of the proposed 20-year duration the following matters of been considered:

- **Known effects:** There is a high level of certainty regarding the effects of the proposed activity given the existing Quarry has been in operation for 3 years. As the scale, intensity and nature of the activity is not proposed to change, the effects can be largely foreseen and are considered to be less than minor. This conclusion is supported by the expert Technical Reports;
- **Consistency of effects:** The nature of the Quarry activities is that material is steadily and consistently extracted and processed. As such the effects will remain consistent as the operation remains constant and will not change in nature over time. The only change being limited to the proximity of the Quarry Pit to Conservators Road;

- **Human interference:** It is acknowledged that the proposed Quarry will require a high level of human management in order to operate within the conditions of consent. SOL Quarries Ltd have demonstrated a history of compliance and co-operation with the regulatory agencies (ECan, CCC & WorkSafe NZ) with respect to the existing Quarry. The Quarry operations are regularly audited and monitored by ECan, CCC and WorkSafe NZ.
- **Likelihood of significant alteration to standards:** Plan updates and reviews are considered to be a normal part of the SOL Quarry planning system and therefore do not constitute a 'significant change'. No further changes that may affect the operation of Quarry are anticipated.
- **Recognition of the efficient use and development of natural and physical resources** (Section 7(b) of the Resource Management Act 1991).

As such, it is considered that a 20-year consent duration is reasonable and appropriate for the proposed activity.

4 Planning Provisions

4.1 Overview

The following statutory documents are relevant to the proposed quarrying activity:

- The Resource Management (National Environmental Standards relating to Certain Air Pollutants, Dioxins and Other Toxics) Regulations 2004 ('NES-Air') is a mandatory technical regulation. It was implemented in October 2004 and was amended in December 2004, July 2005, November 2008 and June 2011. The NES-Air introduced 14 standards including activity standards, ambient air quality standards and design standards.
- The Canterbury Regional Policy Statement (CRPS) is the overarching planning policy document for the Canterbury region. It became operative in 31 August 2017, and was placed online as an *eplan* on 5 February 2019.
- The operative regional plan for earthworks, water quality and water abstraction is the Canterbury Land and Water Regional Plan (CLWRP) which became operative on 1 February 2019, and was placed online as an *eplan* on 5 February 2019.
- The operative regional plan for air quality is the Canterbury Air Regional Plan (CARP) which became operative on 31 October 2017, and was placed online as an *eplan* on 5 February 2019.

4.2 Canterbury Land and Water Regional Plan

4.2.1 Relevant Rules

An assessment of the relevant rules of the CLWRP is provided in

Table 1 below:

Table 1: Relevant provisions of the CLWRP

Activity	Ref	Rule/Standard	Activity Status	Comment
Discharge of Stormwater	5.96	<p>The discharge of stormwater, other than into or from a reticulated stormwater system, onto or into land where contaminants may enter groundwater is a permitted activity, provided the following conditions are met:</p> <ol style="list-style-type: none"> 1. The discharge is not from, into or onto contaminated or potentially contaminated land; and 2. The discharge: 	Permitted	<p>While it may be argued that there is no increase in hardstand area, buildings or site coverage, for completeness, and in recognition of the cleanfill activities, we have assessed the proposed Quarry extension against the CLWRP provisions associated with stormwater discharge.</p> <p>We have concluded that the Quarry extension meets the Permitted Activity Conditions relating to stormwater discharge.</p> <p>Any discharge of stormwater is:</p>

		<ol style="list-style-type: none"> a. does not cause stormwater from up to and including a 24-hour duration 10% Annual Exceedance Probability rainfall event to enter any other property; and b. does not result in the ponding of stormwater on the ground for more than 48 hours, unless the pond is part of the stormwater treatment system; and c. is located at least 1 m above the seasonal high-water table that can be reasonably inferred for the site at the time the discharge system is constructed; and d. is only from land used for residential, educational or rural activities; and e. does not occur where there is an available reticulated stormwater system, except where incidental to a discharge to that system; and f. is not from a system that collects and discharges stormwater from more than five sites. 		<ol style="list-style-type: none"> 1. not from, into or on contaminated or potentially contaminated land; 2. will not cause stormwater, in any rainfall event, to enter any other property; 3. will not result in stormwater ponding for more than 48-hours; 4. is located at least 1-metre above the seasonal high-water table; 5. is from rural land and from an activity recognised as a productive rural land use (CDP); 6. does not occur where there is an available reticulated stormwater system; 7. is not from a system that collects and discharges stormwater from more than 5 Sites.
Discharge of Contaminants to Land	5.98	<p>Any discharge of water or contaminants onto or into land in circumstances where a contaminant may enter groundwater that is not classified by any of the above rules, is a permitted activity, provided the following conditions are met:</p> <ol style="list-style-type: none"> 1. The volume of the discharge does not exceed 10 m³ per day and the application rate does not exceed 10 mm per day; and 	<p>Permitted</p> <p>Does not comply with the Conditions</p>	<p>Cleanfill proposed to be deposited into the Quarry Pit for infill and Site rehabilitation is defined as a contaminant.</p> <p>The discharge associated with the deposition of 'cleanfill' may enter groundwater.</p> <p>The discharge (deposition) will exceed 10 m³ per day.</p> <p>Accordingly, the discharge (deposition) will not comply with</p>

		<ol style="list-style-type: none"> 2. The discharge is not directly into groundwater; and 3. The discharge does not result in any overflow or runoff into any surface water body or onto neighbouring site; and 4. The discharge does not, in groundwater, render fresh water unsuitable or unpalatable for consumption by animals or humans; and 5. The discharge does not contain any hazardous substance, hazardous waste or added radioactive isotope; and 6. The discharge does not occur when the soil moisture exceeds field capacity; and 7. The discharge is not from or into contaminated or potentially contaminated land; and 8. The discharge is not within <ol style="list-style-type: none"> a. 50 m of a bore used for water abstraction; or b. within a Community Drinking-water Protection Zone as set out in Schedule 1; and <p>Where the discharge is from the use of live ammunition associated with military training under the Defence Act 1990, conditions 1 to 8 do not apply.</p>		Condition 1 of Rule 5.98, and is not a Permitted activity.
	5.100	Any discharge that is not permitted by either Rule 5.98 or 5.99 and is not classified by any other rule in this Plan is a discretionary activity.	Discretionary	<p>As the discharge (deposition) of 'cleanfill' will not comply with Condition 1 of Rule 5.98, the discharge (deposition) falls to be considered as a Discretionary activity in accordance with Rule 5.100 of the CLWRP.</p> <p>SOL Quarries Ltd operates a comprehensive cleanfill assessment procedure, as detailed in this AEE.</p>

				<p>SOL Quarries Ltd holds a Cleanfill Licence, which is renewed annually, from Christchurch City Council. The Cleanfill Licence authorises, in conjunction with the relevant resource consents, the acceptance of cleanfill in compliance with '<i>A Guide to the Management of Cleanfills</i>' (MfE: 2002).</p> <p>Only inert solid material will be accepted for disposal on the Site. Any material that is not inert (that does not meet the acceptance criteria of this operation and the Guide) will be rejected.</p> <p>The current process for the determination of acceptable cleanfill material, as approved and audited annually by Christchurch City Council and ECan, will be followed (SOL Quarries Ltd – Cleanfill Acceptance Criteria – Appendix M).</p> <p>The methodology for cleanfill acceptance involves a documented assessment of the material to determine if it meets the cleanfill criteria, the Conditions of the Consents and the Conditions of the Cleanfill Licence.</p> <p>Unless a Quarry Client can demonstrate the material proposed to be disposed of at the Quarry as cleanfill meets the acceptable criteria it will be rejected.</p> <p>Prior to the first load from a Client's site being accepted as cleanfill, the Client is required to complete and sign a <i>Cleanfill Declaration</i>. The Declaration includes the following details:</p> <ul style="list-style-type: none"> • Date of waste acceptance; • Contractors name; • Description of the type of waste; • Verification of the waste type complies with the cleanfill acceptance criteria; • The source of waste (physical address); • Approximate quantity of waste;
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				<ul style="list-style-type: none"> • Any noticeable characteristics of the waste; • Details of the specific waste disposal agreements; • Signature of the contractor and • Confirmation of a check by the Quarry administrator – all details, including the signature, are complete; then the physical address is checked against ECan's LLUR. <p>In addition, SOL Quarry staff inspect the loads and reject any loads that do not comply with the material description.</p> <p>The remediation of the Site will be undertaken over the life of the Quarry in accordance with a formal Remediation Plan, which is included in the Quarry Management Plan (Appendix I). The staging will allow for the most practicable operation and remediation of the Site while minimised the exposed fill surfaces and maintaining sufficient room for vehicles to unload safely. Where possible, areas that have been infilled with cleanfill will be covered with topsoil and vegetated, without delay.</p> <p>SOL Quarries Ltd also monitors groundwater quality in three (3) ECan monitoring bores (BX23/0035; BX23/0036; BX23/0037). The groundwater samples are tested by an independent laboratory (Hills Laboratory) with respect to a comprehensive range of potential contaminants. The groundwater test results are submitted to ECan monthly. SOL Quarries Ltd proposes to undertake additional groundwater quality testing from the new bore located on the proposed Quarry extension site (BX23/0871). The monthly monitoring of groundwater quality will identify any adverse effects associated with leachate from the discharge (deposition) of cleanfill and is offered as a Consent Condition.</p>
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Groundwater Take and Use	5.114	<p>The taking and using of less than 5 l/s and more than 10 m³ but less than 100 m³ per property per day of groundwater on a property more than 20ha in area is a permitted activity, provided the following conditions are complied with:</p> <ol style="list-style-type: none"> The bore is located more than 20 m from the property boundary or any surface waterbody. 	Permitted	<p>The proposed point of take is more than 20-metres from the boundary, the site is larger than 20 ha and the proposed rates and volumes will comply with this permitted activity rule.</p> <p>Permitted Activity</p>
Non-consumptive taking and use of water	5.126	<p>The non-consumptive taking and use of water from a lake, river or artificial watercourse and discharge of the same water to the same lake, river or artificial watercourse is a restricted discretionary activity, provided the following conditions are met:</p> <ol style="list-style-type: none"> Limits have been set for that surface waterbody in Sections 6 to 15 or the lake or river is subject to a Water Conservation Order; and The taking of water and subsequent discharge does not result in any exceedance of any limit set for that waterbody in Sections 6 to 15 or flow and allocation regime set out in the Water Conservation Order; and Other than for the replacement of existing consents for activities provided for under Policy 4.51, the maximum distance from the point of take to the point of discharge is not more than 250 m; and Other than for the replacement of existing consents for activities provided for under Policy 4.51, the take is not from a wetland, 	Restricted Discretionary	<p>The proposed realignment of the stockwater race complies with the Conditions of Rule 5.126, and is deemed a Restricted Discretionary activity. Specifically, the realignment of the stockwater race complies as follows:</p> <ol style="list-style-type: none"> Limits have been set for the stockwater race in the Selwyn District Council Bylaws W101:1 The taking and discharge of the water associated with the relocation does not exceed the limits set for the race. The relocation involves a replace of an existing consented section of the stockwater race – no additional length is required. The water take is not from a wetland, Hapua or a high naturalness lake/river. <p>The effects of relocation of the stockwater race are less than minor. While the works involve the permanent relocation of a section of the stockwater race (approximately 720-metres), the works will:</p> <ul style="list-style-type: none"> not increase the length of the stockwater race, not result in any loss of flow in the stockwater race, not affect any other users of the stockwater race, be located a minimum of 20-metres from the Transpower Ltd power pylon located on the adjacent CCC land,

		Hapūa or a high naturalness lake or river that is listed in Sections 6 to 15.		<ul style="list-style-type: none"> be confined to an artificial surface waterbody owned and operated by the Selwyn District Council (SOL Quarries Ltd has submitted a formal Application to Relocate the section of the stockwater race) <p>Restricted Discretionary Activity</p>
Earthworks over aquifers	5.175(2)	The use of land to excavate material is a permitted activity, provided the following conditions are met.	<p>Permitted</p> <p>Does not comply with the Conditions</p>	The proposed earthworks will be greater than 100m ³ over an unconfined aquifer. There will be a minimum of 1-metre of undisturbed material between the base of the quarry and the highest groundwater level. However, the site is within 50-metres of an artificial waterway. The CLWRP defines the stockwater race, an artificial waterbody, as a surface water body. Therefore, the use of land to excavate material is not permitted by this rule.
	5.176	The use of land to excavate material that does not comply with one or more of the conditions of Rule 5.175 is a restricted discretionary activity.	Restricted Discretionary	<p>The nearby surface water body is an artificial waterway, which will be moved to the northern and eastern boundaries of the Site to allow for extraction works to occur. The artificial waterway will be engineered appropriately to provide certainty that it will not be affected by the proposed extraction works. The artificial waterway will be located outside the proposed bund on the eastern boundary and there will be a 3-metre buffer between the artificial waterway and the bund.</p> <p>Restricted Discretionary Activity</p>
	5.177	The use of land for the deposition of more than 50m ³ of material in any consecutive 12 month period onto land which is excavated to a depth in excess of 5m below the natural land surface and is located over an unconfined or semi-confined aquifer, where the seasonal high water table is	Controlled	The deposition of cleanfill is a controlled activity. The proposed fill material will meet the definition of cleanfill in the CLWRP. No material will be deposited into groundwater. All material will be deposited at least 1-metre above highest groundwater level which has been determined by on-site piezometric wells. The land is not listed as an archaeological site

		less than 5m below the deepest point in the excavation is a controlled activity, provided the following conditions are met.		and a Management Plan will provide guidance for the cleanfill operations. Controlled Activity
Hazardous substances	5.181	The use of land for the storage, other than in a portable container, and use of a hazardous substance listed in Part A of Schedule 4 is a permitted activity, provided the following conditions are met.	Permitted	All hazardous substances on a site are stored under cover in a facility which is designed, constructed and managed to contain a leak or spill. This facility is regularly monitored in accordance with the Quarry Management Plan and regular stocktake is undertaken. The proposal will comply with this rule. Permitted Activity

4.3 Canterbury Air Regional Plan

4.3.1 Relevant Rules

An assessment of the relevant rules of the CARP is provided in Table 2 below:

Table 2: Relevant provisions of the CARP

Activity	Ref	Rule/Standard	Activity Status	Comment
Dust	7.3	The discharge of odour, dust or smoke into air that is not managed by any other rule in this Plan is a permitted activity provided the following conditions are met.	Permitted – Complies with this Rule.	The proposal will not result in adverse effects beyond the boundary, as all the parties within the 250m buffer have provided unconditional written approval to the application so any effects on these parties have been discounted. The proposal will not result in adverse effects beyond the 250-metre buffer as identified in the supporting Technical Report by NZ Air Ltd (Appendix B). The discharge will not cause an offensive or objectionable effect in accordance with schedule 2 as assessed in the supporting Technical Report by NZ Air Ltd (Appendix B).
	7.35	The discharge of contaminants into air from the handling of bulk solid materials is a permitted activity provided the following conditions are met.	Does not comply with this Rule.	The proposal will not meet the relevant Conditions in this Rule as the volume proposed will be up to 300 t/hr and will occur on more than 21 days in a calendar year. All other criteria will be met.

	7.36	The discharge of contaminants into air from the outdoor storage of bulk solid materials is a permitted activity provided the following conditions are met.	Does not comply with this Rule.	The proposal will not meet the relevant Conditions in this Rule as the volume of material stored on-site will exceed 1,000 tonnes. All other criteria will be met.
	7.49	The discharge of contaminants into air from the disposal of cleanfill is a permitted activity provided the following conditions are met.	Permitted – Complies with this Rule.	The dust generated from the discharge of cleanfill to land will not be offensive or objectionable beyond the boundary when assessed in accordance with Schedule 2. Therefore, this will meet the criteria and is permitted under Rule 7.49.
	7.63	The discharge of contaminants into air that is from an industrial or trade premise and is not managed by Rules 7.47-7.62 and is not a prohibited activity, is a discretionary activity.	Discretionary	This is the relevant catch-all rule for a trade and industrial activity. As the application cannot meet the permitted activity criteria in 7.35 or 7.36 and is not managed by the Rules 7.47 – 7.62, the proposal is caught by this Rule and is considered a Discretionary Activity.

4.4 Relevant Permitted Activities

Canterbury Air Regional Plan

- **Rule 7.3** – The discharge of odour, dust or smoke into air that is not managed by any other rule in this Plan.
- **Rule 7.49** - The discharge of contaminants into air from the disposal of cleanfill.

Canterbury Land and Water Regional Plan

- **Rule 5.114** - The taking and using of less than 5 l/s and more than 10 m³ but less than 100 m³ per property per day of groundwater on a property more than 20ha in area.
- **Rule 5.181** - The use of land for the storage and use of a hazardous substance.

4.5 Additional Consents

SOL Quarries Ltd has submitted an Application for Resource Consent and an AEE, with supporting Technical Reports, to Christchurch City Council for the following activities:

Christchurch District Plan

- Rule 17.6.1.4 – Quarrying activity, within the Rural Waimakariri Zone, located 250m or more from a residential zone or Specific purpose (School) Zone boundary – **Discretionary**
- Rule 8.9.2.3 RD1 – Earthworks – **Restricted Discretionary**

- Rule 7.4.2.3 RD1 – Transport – **Restricted Discretionary**
- Rule 6.1.5.1.3 RD1 – Noise – **Restricted Discretionary**

4.6 Selwyn District Council

SOL Quarries Ltd has prepared and submitted an Application for Relocation of the Stockwater Race to the Selwyn District Council.

4.7 Bundled activity status

Therefore, overall the Application is considered a **Discretionary** activity.

5 Assessment of Environmental Effects

5.1 Summary of Potential Effects

The primary concern for this Application is adverse effects on groundwater quality in the unconfined / semi-confined aquifer below the proposed Quarry operation, and adverse effects of dust on air quality.

5.2 Permitted Baseline

The permitted baseline has been considered with respect to the proposed Quarry and associated works.

Canterbury Land and Water Regional Plan (CLWRP)

The proposed extraction of aggregate meets the conditions of the permitted activity in Rule 5.175 with the exception of the proximity to the surface water body, which is an artificial waterway. The artificial waterway has been engineered appropriately to limit the interaction between surface water and groundwater. The bund on the eastern boundary of the site will be set back at least 3-metres from the artificial waterway so there will be no effects on the structure of the artificial waterway associated with the quarrying activity. Consequently, the breach of this permitted activity rule will not result in any adverse effects beyond what is anticipated by the planning provisions.

The CLWRP states that the unless the diversion of a surface waterbody is the result of a lawful permanent re-alignment of the bed of a surface water body, then the taking of water from the bed of any watercourse, even if only for a short distance before it is returned, is considered a take and discharge. The realignment of the stockwater race is a “lawful permanent re-alignment”, authorised by the Selwyn District Council. Accordingly, the re-alignment of the stockwater race is not deemed to be a diversion. However, for completeness, SOL Quarries Ltd considers the re-alignment / relocation of the stockwater race is deemed to be a **Restricted Discretionary** activity, in accordance with Rule 5.126 of the CLWRP.

Canterbury Air Quality Plan

Rule 7.3 in the Air Plan also provides a permitted activity level for dust from the operation, and the effects of dust beyond the proposed 250 m buffer will not be greater than those permitted by Rule 7.3.

5.3 Positive Effects

It is important to consider the positive effects with respect to the proposed activity. There is an ongoing demand for processed aggregate, of varying specifications, to cater for the completion of the NZTA “Roads of National Significance” works, to cater for the “anchor projects” described as essential for the Canterbury/Christchurch earthquake rebuild, to cater for private sector commercial construction, to cater for local authority roading and horizontal infrastructure works, and to cater for continued residential housing developments. It has been recognised that there will be a continued demand for processed aggregate in close proximity to Christchurch City for the next 2 – 3 decades, at least.

In recent evidence to Council hearings, it has been agreed that, for the period 2014 to 2041, greater Christchurch is forecast to have total aggregate demand of 180 million tonnes, an aggregate supply from existing land-based quarries and river supply of 140 million tonnes. This will result in an aggregate shortfall of 40 million tonnes.

The proposed SOL Quarry is appropriately located to continue the supply of processed aggregate and redress this aggregate shortfall. Its proximity to Christchurch City and the separation distances between the proposed Quarry and adjacent rural residential dwellings make it an appropriate site for this type of quarry development.

The proposed Site also has Transpower infrastructure running across it, which limits the potential uses of the site. Subject to conditions specified by Transpower Ltd and agreed to by SOL Quarries Ltd, the proposed Quarry is a compatible land use with this infrastructure.

In addition, the proposed cleanfill activity will provide a disposal site for clean land development excavation, roading and demolition waste, avoiding disposal at the Kate Valley Landfill with the associated transport costs and the occupation of valuable landfill space with clean inert materials.

Overall, it is considered that the proposed activities will have a significant positive impact on the supply of aggregate which is essential for the diverse range of nationally, regionally, locally and community demands.

5.4 Water Quality

The subject is located within the Christchurch Groundwater Protection Zone. This zone recognises that the Christchurch Groundwater System is highly valued and also highly susceptible to contamination. Groundwater in Zone 1 is particularly vulnerable to adverse effects arising from contamination as a result of land use activities because it is relatively near the surface and the gravel is very permeable. Zone 1 comprises much of the recharge area for the Christchurch Groundwater System. Maintaining the quality of groundwater in this zone will ensure a continued supply of high-quality water to the aquifer system so that it remains suitable for a range of uses.

The proposed Quarry extension, stockwater race relocation and the cleanfill operations associated with Site rehabilitation have the potential to adversely affect groundwater through the storage of hazardous substances, the excavation works above an unconfined aquifer and the placement of cleanfill material on land above an unconfined aquifer. The effects of these activities are discussed below.

It should be noted that SOL Quarries Ltd undertakes water quality monitoring from three (3) ECan monitoring wells located on the Quarry. All water quality test results, to date, have met the requisite water quality standards.

5.4.1 Storage of Hazardous Substances

The effects associated with the storage of hazardous substances arise from the potential contamination of water from the uncontrolled release of hydrocarbons. The mitigations proposed by SOL Quarries Ltd include the design, construction and maintenance of an appropriate facility to contain any leaks or spills. This will reduce the risk of any uncontrolled discharge of hazardous substances to water. This facility will be regularly inspected and stocktakes undertaken to enable any accidental discharges to be identified and remediated as quickly as possible. This proposed activity is consistent with the *permitted activity* conditions contained in the Canterbury Land and Water Regional Plan. Therefore, the actual adverse effects on water quality will be less than minor.

5.4.2 Excavation over an Unconfined Aquifer

The effects associated with the excavation of material over an unconfined aquifer are the contamination of groundwater through the release of sediment or the mobilisation of contaminants. The mitigations employed by SOL Quarries Ltd include the retention of a minimum of 1-metre, at most times a minimum of 2-metres, of undisturbed soils between the excavation activity and the highest recorded groundwater level. The Site has three wells, which have been recorded for the past 3-years, and which provide accurate groundwater levels. This site-specific data enables Council and the quarry operator to have confidence with regards to groundwater levels at the site, and enables robust monitoring of the 1-metre of undisturbed material above the unconfined aquifer. There are no nearby waterways, which can provide a contamination pathway to groundwater. This proposed activity is consistent with the *permitted activity* rule in the Land and Water Plan. Therefore, the actual effects of the excavation of material over an unconfined aquifer are anticipated and provided for. This combined with the 1-metre excavation buffer above groundwater levels will result in less than minor effects on water in the aquifer.

5.4.3 Discharge of Cleanfill to Land over an Unconfined Aquifer

The potential effects associated with the disposal of cleanfill over an unconfined aquifer are the contamination of groundwater through the release of sediment or the mobilisation of contaminants. The mitigations employed by SOL Quarries Ltd include retaining at least 1-metre of undisturbed soils between the discharge and the highest recorded groundwater level. SOL Quarries Ltd also undertake regular monitoring and recording to enable confidence that the material accepted for discharge meets the definitions of cleanfill (see section 3.11 above). As all cleanfill is inert in nature, the risks regarding the mobilisation of contaminants are limited. However, SOL Quarries Ltd undertakes water quality monitoring from three (3) ECan monitoring wells located on the Quarry. All water quality test results, to date, have met the requisite water quality standards.

The cleanfill proposed to be deposited into the Quarry Pit for infill and Site rehabilitation is defined as a contaminant. SOL Quarries Ltd recognises that the discharge associated with the deposition of 'cleanfill' may enter groundwater. Furthermore, the discharge (deposition) will exceed 10 m³ per day. Accordingly, the discharge (deposition) will not comply with Condition 1 of Rule 5.98, and is not a Permitted activity.

As the discharge (deposition) of 'cleanfill' will not comply with Condition 1 of Rule 5.98, the discharge (deposition) falls to be considered as a Discretionary activity in accordance with Rule 5.100 of the CLWRP. SOL Quarries Ltd operates a comprehensive cleanfill assessment procedure, as detailed in this AEE.

SOL Quarries Ltd holds a Cleanfill Licence, which is renewed annually, from Christchurch City Council. The Cleanfill Licence authorises, in conjunction with the relevant resource consents, the acceptance of cleanfill in compliance with 'A Guide to the Management of Cleanfills' (MfE: 2002). Only inert solid material will be accepted for disposal on the Site. Any material that is not inert (that does not meet the acceptance criteria of this operation and the Guide) will be rejected.

The current process for the determination of acceptable cleanfill material, as approved and audited annually by Christchurch City Council and ECan, will be followed (SOL Quarries Ltd – Cleanfill Acceptance Criteria – Appendix M). The methodology for cleanfill acceptance involves a documented assessment of the material to determine if it meets the cleanfill criteria, the Conditions of the Consents and the Conditions of the Cleanfill Licence. Unless a Quarry Client can demonstrate the material proposed to be disposed of at the Quarry as cleanfill meets the acceptable criteria it will be rejected.

Prior to the first load from a Client's site being accepted as cleanfill, the Client is required to complete and sign a *Cleanfill Declaration*. The Declaration includes the following details:

- Date of waste acceptance;
- Contractors name;
- Description of the type of waste;
- Verification of the waste type complies with the cleanfill acceptance criteria;
- The source of waste (physical address);
- Approximate quantity of waste;
- Any noticeable characteristics of the waste;
- Details of the specific waste disposal agreements;
- Signature of the contractor and
- Confirmation of a check by the Quarry administrator – all details, including the signature, are complete; then the physical address is checked against ECan's LLUR.

In addition, SOL Quarry staff inspect the loads and reject any loads that do not comply with the material description.

The remediation of the Site will be undertaken over the life of the Quarry in accordance with a formal Remediation Plan, which is included in the Quarry Management Plan (Appendix I). The staging will allow for the most practicable operation and remediation of the Site while minimised the exposed fill surfaces and maintaining sufficient room for vehicles to unload safely. Where possible, areas that have been infilled with cleanfill will be covered with topsoil and vegetated, without delay.

SOL Quarries Ltd monitors groundwater quality in three (3) ECan monitoring bores (BX23/0035; BX23/0036; BX23/0037). The groundwater samples are tested by an independent laboratory (Hills Laboratory) with respect to a comprehensive range of potential contaminants. The groundwater test results are submitted to ECan monthly. SOL Quarries Ltd proposes to undertake additional groundwater quality testing from the new bore located on the proposed Quarry extension site (BX23/0871). The monthly monitoring of groundwater

quality will identify any adverse effects associated with leachate from the discharge (deposition) of cleanfill. The monthly monitoring of groundwater quality is offered as a Consent Condition.

The proposed infilling and Site remediation/rehabilitation using cleanfill meets the conditions of Rule 5.177, and is deemed to be a **Controlled Activity**. The cleanfill operation, which occurs in a progressive manner with the excavation of gravel, will exceed 50 m² in a 12-month period, occurs on land which is excavated to a depth of more than 5-metres below the natural land surface, and which is located over an unconfined/semi-confined aquifer. This will occur on a Site where the 'seasonal high-water table' is less than 5-metres below the deepest point of the excavation. As the cleanfill operation will comply with the conditions of Rule 5.177, at all times, will only involve the deposition of inert material, will be undertaken in accordance with a Cleanfill Management Plan prepared to meet the specified standard, we consider any adverse effects on the environment, including groundwater quality, will be less than minor.

5.4.4 Summary of Water Quality Effects

Overall, the effects on water quality from the storage of hazardous substances, the excavation of material, realignment of the stockwater race and the discharge of cleanfill material over an unconfined aquifer are less than minor. This has been confirmed by water quality monitoring from three (3) ECan monitoring wells located on the Quarry, undertaken by SOL Quarries Ltd over the past 3-years. All water quality test results, to date, have met the requisite water quality standards.

5.5 Dust

Dust mobilised during the Quarry operations is recognised as being one of the primary potential adverse effects associated with the Quarry activities. The Site has the potential to generate dust both from the actual processing of material and from vehicles/trucks/loaders moving around the Site on unconsolidated surfaces.

NZ Air Ltd has been commissioned to prepare a Technical Report, specifically related to the proposal. NZ Air Ltd has assessed the proposed Quarry operations and has concluded in Section 9.6 of the Technical Report.

"... each of the FIDOL factors presents the activity as a low risk activity post mitigation measures, with a low potential for off-site nuisance effects. Therefore, overall NZ Air considers the potential for nuisance dust effects beyond the boundary of the proposed SOL quarry is low. It is considered that the proposed operation of the SOL Stage 2 Quarry will not generate offensive or objectionable effects beyond the site boundary or at neighbouring properties."

NZ Air Ltd has advised that a 250-metre buffer around the proposed Quarry Site is appropriate for managing the effects on dust (as set out in Section 8.2 of the Technical Report). At this distance, Conservators Road becomes the natural boundary. All parties on the Quarry side of Conservators Road have provided unconditional written approval to this Application.

Based on the current Quarry operation and the Technical Report by NZ Air Ltd, the Applicant proposed a number of dust mitigation measures to ensure that there are no objectional or offensive air discharges beyond the Site boundary. These include:

- Trickle feed water from the potable bores to water storage tanks. The trickle feed system ensures the volume of water allowed by the 'permitted activity' Certificate of Compliance is not exceeded. This water is used in 2 ways:
 - The water trucks will draw water from the storage tanks, dampening all unconsolidated surfaces, including the Quarry roads and stockpiles of aggregate, when atmospheric conditions require.
 - The water tanks are connected to a 50mm main line, which has a series of hydrants and 100-metre laterals with sprinkler pods along the heavy vehicle road. Individual 100-metre laterals can be turned on/off as required, depending on atmospheric conditions.
- Maintain a meteorologic weather station, which provides real-time recordings of wind speed. The application of water as a dust suppressant is used during operating hours when the wind speed exceeds 5 ms⁻¹. When wind speed exceeds 10 ms⁻¹ potentially dusty activities (as listed in the Technical Report – Appendix B) will cease.
- The heavy vehicle entrance has been sealed for the first 250-metres from the Guys Road entrance/exit.
- Raw gravel will be extracted in a damp state and stockpiled for use as soon as possible. SOL Quarry will minimise the 'surge' piles of raw material excavated for processing.
- Maintaining vegetation cover on the bunds and those areas not being actively quarried.

Overall, it is considered that the implementation of these dust mitigation measures will limit any adverse effects associated with dust from the Site and consequently the effects will be less than minor.

5.6 Transpower Ltd – Infrastructure

As identified in Section 2.6 above, electricity transmission lines run through the property, including a transmission support tower. Consultation has been undertaken with Transpower regarding the proposed activity. Transpower Ltd has requested a number of consent conditions be incorporated into this application. These conditions are set out in Section 3.10 and form part of this application. On the basis of the correspondence with Transpower Ltd, it is considered that the Site can be safely operated in conjunction with the overhead line and tower, and that the required setback can be achieved.

5.7 Airport Hazard

It is understood that the primary concerns of Christchurch International Airport Ltd (CIAL) with respect to activities in this area, including Quarry activities, relate to potential dust nuisance and the potential for grasses used to rehabilitate areas and waterbodies to attract birds.

In a continuation to the measures undertaken with the existing Quarry operation, planting on-site will avoid plant species that may attract bird life (i.e. plant species whose seeds are attractive to birds), and will be designed to minimise the ponding of water in order to avoid attracting birds into the area.

Will the provision of the stated mitigation measures, it is considered that the potential adverse effect on airport hazards is less than minor.

5.8 Cumulative Effects

A 'cumulative effect' is an effect that arises over time in combination with other effects, such that a resulting adverse effect will occur. On-going and subsequent Quarrying operations can potentially result in cumulative adverse effects as the volume and nature of the activity exceeds the carrying capacity of the environment to absorb these effects.

The determination of cumulative effects requires the consideration of any adverse effects of the proposal when added to any adverse effect of an existing activity or activities that form part of the existing environment. As such, the assessment of cumulative effects should be undertaken with reference to the environment that presently exists.

In this instance, there are 5 operational quarries situated within a 1-kilometre radius.

The key matter to consider with regard to cumulative effects on the wider environment, is whether the proposed Quarry extension, in conjunction with the effects of Quarrying operations in the existing environment, will represent a 'tipping point' where the combined adverse effects of the Quarrying operations exceed the carrying capacity of the environment.

As has already been established, the proposed Quarry extension will **not** add to any of the adverse effects that form part of the existing environment. The 9-hectare unconsolidated surface area limit will not change, it will simply move further east than it is currently consented to. The effects of the location of the 9-hectare excavation limit are considered to be localised effects, potentially affecting those in the immediate vicinity of the Site, rather than effects resulting from an overall increase in scale and intensity of operation. As such, the noise, traffic, dust, landscape, amenity and visual effects are not considered to contribute to any cumulative effects on the wider environment.

The key question to consider is whether the extended duration of the Quarry operation will result in cumulative effects on the wider environment. In other words, do the effects currently consented for 15 years, become unacceptable over a longer duration? The evidence provided in support of this Application clearly demonstrates that there is no increase in adverse effect associated with an extension of the Quarry. It is concluded that the duration of the Quarry operations will not increase these effects. Furthermore, it is considered that Quarry operations in the Rural Waimakariri Zone are enabled by the CDP without a restriction on the duration of the operations. We have concluded, therefore, that there are no cumulative effects associated with the proposed Quarry extension.

5.9 Precedent Effects

It is acknowledged that a consent application was lodged in by Harewood Gravels (HG) for a new Quarry at 81-83 Conservators Road. It is understood that consent was initially granted for the activity by Independent Commissions appointed by ECan and CCC in 2016; however, this decision was over turned by the Environment Court on appeal by the local residents. The Environment Court decision was subsequently upheld by the High Court in a decision released in November 2018.

It is pertinent to note a number of distinguishing factors between the HG consent application for a new Quarry and the proposed Quarry extension by SOL Quarries Ltd. These include:

- The SOL Quarry operation is not new as the HG operation would have been; rather the proposal is the extension to an existing operation;
- The SOL Quarry will maintain minimum 250-metre buffer between the quarry operations and Conservators Road;

- All effects resulting from activity are contained within the existing environment and on-site;
- The proposal will not result in increased intensity or scale of activities, operations or effects.

As such, there are not considered to be any precedent effects associated with the Court decisions regarding the HG consent.

6 Consultation

SOL Quarries Ltd has identified, in pre-application discussions with both Councils (ECan and CCC) a number of potentially affected parties associated with the proposed Quarry extension.

On behalf of SOL Quarries Ltd, we have formulated and implemented a comprehensive consultation strategy, ensuring the potentially affected parties are provided with full details of the proposed Quarry extension, are provided with adequate time to consider the proposal, and are able to provide feedback. In all cases the feedback has informed the finalisation of the Applications for Resource Consents.

As such, consultation has included preparing and distributing a Pre-Application Consultation Brief, a face-to-face meeting with each potentially affected party. These parties identified in discussion with CCC as potentially affected are:

- DC & AJ Higgs
- MP & AJ Stocks
- Christchurch International Airport Limited (CIAL)
- Transpower Limited

An initial consultation meeting has occurred between Christchurch International Airport Ltd (CIAL) and representatives of SOL Quarries Ltd on Thursday, 10th January 2019. At this meeting, a Brief of the Application was circulated and discussed in general terms. Christchurch International Airport Ltd has been sent a copy of this full Application prior to lodgement, and consultation with them is on-going. The current feedback that we have received from them is that their concerns are likely to be similar to previous comments made on the original SOL Quarry Application in 2014; however, they have sought further time to review the full Application before providing detailed comments. We will provide these comments to Council when we have received them, and will offer appropriate Conditions of Consent.

The proposed extension site contains a Transpower pylon, carrying the Islington 66kVA powerlines. A site visit has been undertaken with a representative of Transpower on 11th February 2019 and we are waiting on the confirmation of Conditions associated with operating in proximity to the Transpower pylons and the 66kVA powerlines. We will provide these Conditions when we have received them, and offer them as Conditions of Consent.

Formal written approval has been obtained from DC & AJ Higgs and MP & AJ Stocks. On behalf of SOL Quarries Ltd, we have provided a copy of the final Application to both CIAL and Transpower Ltd. We are awaiting confirmation of formal written approvals. Any conditions sought by CIAL or Transpower Ltd will be considered and volunteered as Conditions of Consent.

Accordingly, finalisation of consultation with these parties is being run in parallel to the consenting process.

7 Statutory Assessment

7.1 Part 2 of the RMA

The purposes of the Resource Management Act 1991 (RMA) is to promote the sustainable management of natural and physical resources.

7.2 Section 5 – Purpose of the Act

The RMA defines sustainable management as meaning managing the use, development and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic and cultural wellbeing and for their health and safety while –

- (a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and
- (b) Safeguarding the life-supporting capacity of air, water, soil and ecosystems; and
- (c) Avoiding, remedying or mitigating any adverse effects of activities on the environment.

The Court of Appeal has recently released its decision in *R J Davidson Family Trust v Marlborough District Council* [2018] NZCA 316. It found that the High Court erred when it determined the Environment Court was “... not able or required to consider Part 2 of the Resource Management Act 1991” when undertaking its decision-making role in accordance with section 104 of the RMA. This decision has significant implications for resource consents. It restores the importance of the words “*subject to Part 2*” in section 104 of the RMA, the outcome being that consent authorities “... must have regard to the provisions of Part 2 when it is appropriate to do so”. As such, whether the purpose of the RMA is being achieved is now still a relevant consideration.

Whether the purpose of the RMA is being achieved involves “an overall broad judgement”. This assessment is informed by reference to the matters set out in sections 6, 7 and 8 of the Act and:

“... allows for comparison of conflicting and the scale or degree of them and their relative significance or proportion in the final outcome” (*Eden Park Trust Board and Eden Parks Neighbours Association v Auckland City Council*, A130/97).

7.3 Section 6 – Matters of National Importance

In achieving the purpose of the RMA it is necessary to recognise and provide for the following matters of national importance –

- (a) The preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use and development;
- (b) The protection of outstanding natural features, and landscapes from inappropriate subdivision, use and development;
- (c) The protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna;

- (d) The maintenance and enhancement of public access to and along the coastal marine area, lakes and rivers;
- (e) The relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga;
- (f) The protection of historic heritage from inappropriate subdivision, use and development;
- (g) The protection of protected customary rights.

Overall it is considered that there are no matters of national importance identified in the Act that require consideration in this instance.

7.4 Section 7 – Other Matters

In achieving the purpose of the AMA it is also necessary for all persons exercising functions and powers under it to have particular regard to –

- (a) Kaitiakitanga;
- (aa) The ethic of stewardship;
- (b) The efficient use and development of natural and physical resources;
- (ba) The efficiency of the end use of energy;
- (c) The maintenance and enhancement of amenity values;
- (d) Intrinsic values of ecosystems;
- (e) (repealed)
- (f) Maintenance and enhancement of the quality of the environment;
- (g) Any finite characteristics of natural and physical resources;
- (h) The protection of the habitat of trout and salmon;
- (i) The effects of climate change;
- (j) The benefits to be derived from the use and development of renewable energy.

The proposed activity is considered to represent an efficient use of the natural and physical resources of the area, given the high-quality gravels that exist in this area and its proximity to Christchurch City which is currently experiencing a high demand for this resource as part of the NZTA “Roads of National Significance” works and the wider Canterbury rebuild. Sourcing the aggregate from other locations would attract higher transportation costs and associated environmental effects. The proposed activity represents an efficient and effective use of this resource in a manner that maintains the quality of the environment.

Overall, it is considered that the applicant has had appropriate regard to those matters outlined in Part 7 of the RMA.

7.5 Section 8 – Treaty of Waitangi

Part 8 of the Act requires all persons exercising functions and powers under it in relation to managing the use, development and protection of natural and physical resources to take into account the principles of the Treaty of Waitangi.

In this instance, it is considered that the proposed activity is located on a site that is not identified as being of specific significance to local iwi and which contains no significant flora or fauna. The site will be managed in a manner that ensures the quality of the underlying water resource is not compromised and accidental discovery will be put in place to ensure that appropriate actions are undertaken in the unlikely event that any historic artefacts are encountered.

7.6 Section 105 Consideration

- (1) If an application is for a discharge permit or coastal permit to do something that would contravene section 15 or section 15B, the consent authority must, in addition to the matters in section 104(1), have regard to—
 - (a) the nature of the discharge and the sensitivity of the receiving environment to adverse effects; and
 - (b) the applicant's reasons for the proposed choice; and
 - (c) any possible alternative methods of discharge, including discharge into any other receiving environment

The nature of the discharge includes the discharge of cleanfill material to land and the discharge of dust to air. The location is not in close proximity to any river or sensitive receptors, with the exception of the three residential dwellings located within a proposed 250-metre buffer zone. All three parties have provided unconditional written approval to this activity. The aquifer beneath the proposed cleanfill discharge is unconfined but a minimum 1-metre (more likely a minimum 2-metre) buffer of undisturbed soil will be retained above the highest recorded groundwater level to minimise adverse effects on the aquifer.

The Site is deemed appropriate due to the proximity to Christchurch for the use of the excavated material, the rural zoning of the land, the neighbouring land use being largely grazing land on either side and the approval of the neighbours within the proposed 250-metre buffer distance.

Possible alternatives would be quarrying in another location, or not undertaking quarrying activities at all. As identified above, it is the view of the applicant that the location proposed is appropriate for quarrying activities and SOL Quarries Ltd has purchased this proposed land unconditionally. The excavated material is essential for the Christchurch rebuild activities and not undertaking this activity would increase the pressure faced by constructors to source available aggregate for building. Therefore, it is appropriate to discharge both the cleanfill and the dust to air in this location.

7.7 Other regulations

No other regulations are considered relevant.

7.8 National Environmental Standards

The National Environmental Standard for Air Quality was approved on 8 October 2004 and aim to set a guaranteed minimum level of health protection for all New Zealanders. The proposed discharge to air is consistent with this standard and this is supported by the Technical Report by NZ Air Ltd (Appendix B).

7.9 Regional Policy Statement

The Canterbury Regional Policy Statement (CRPS) is relevant to this Application.

Table 3 provides an assessment of the proposed activity against the relevant Objectives and Policies contained in the CRPS.

Reference	Objective/Policy	Comment
Chapter 5 – Land use and infrastructure		
Objectives 5.2.1 Location, design and function of development (Entire Region)	<p>Development is located and designed so that it functions in a way that:</p> <ol style="list-style-type: none"> 1. Achieves consolidated, well designed and sustainable growth in and around existing urban areas as the primary focus for accommodating the region's growth; and 2. Enables people and communities, including future generations, to provide for their social, economic and cultural well-being and health and safety' and which: <ol style="list-style-type: none"> a. Maintains, and where appropriate, enhances the overall quality of the natural environment of the Canterbury region, including its coastal environment, outstanding natural features and landscapes, and natural values; b. Provides sufficient housing choice to meet the region's housing needs; c. Encourages sustainable economic development by enabling business activities in appropriate locations; d. Minimises energy use and/or improves energy efficiency; e. Enables rural activities that support the rural environment including primary production' f. Is compatible with, and will result in the continued safe, efficient and effective use of regionally significant infrastructure g. Avoids adverse effects on significant natural and physical resources including regionally significant infrastructure, and where avoidance is impracticable, remedies or mitigates those effects on those resources and infrastructure; h. Facilitates the establishment of papakainga and marae; and i. Avoids conflicts between incompatible activities. 	The proposed Quarry is located appropriately to provide a connection to Christchurch City and the NZTA roading works, where the material is used to support the Christchurch rebuild efforts, but away from high residential development areas. The land is zoned rural and there is grazing land on either side of the proposed Quarry development. The proposed location does not have any incompatible land use activities.
Policies 5.3.1 Regional growth (Wider Region)	<p>To provide, as the primary focus for the meeting the wider region's growth needs, sustainable development patterns that:</p> <ol style="list-style-type: none"> 1. Ensure that any <ol style="list-style-type: none"> a. Urban growth and b. Limited rural residential <p>occur in a form that concentrates, or is attached to, existing urban areas and promotes a coordinated pattern of development.</p>	The proposed location is appropriate with regards to this direction provided by Policy 5.3.1 as the development is located away from an urban growth area.

CHAPTER 14 – AIR		
Objective 14.2.1 Maintain or improve ambient air quality	Maintain or improve ambient air quality so that it is not a danger to people's health and safety, and reduce the nuisance effects of low ambient air quality.	The Technical Report from NZ Air Ltd confirms that the ambient air quality will not be degraded as a result of the proposed quarrying activity outside the 250-metre buffer distance. Therefore, there is no danger to people's health and safety and the application is consistent with this Objective.
Objective 14.2.2 Localised adverse effects of discharges on air quality	Enable the discharges of contaminants into air provided there are no significant localised adverse effects on social, cultural and amenity values, flora and fauna, and other natural and physical resources.	The discharge of contaminants to air will not have adverse effects beyond the proposed 250-metre buffer distance. There are no localised adverse effects within the 250-metre buffer as unconditional written approval has been received by all relevant parties.
Policy 14.3.1 Maintain and improve ambient air quality	In relation to ambient air quality: <ol style="list-style-type: none"> 1. To set standards to maintain ambient air quality in Canterbury based on concentrations of contaminants that cause adverse health effects and nuisance effects. 2. Where existing ambient air quality is higher than required by the standards set, to only allow the discharge of contaminants into air where the adverse effects of the discharge on ambient air quality are minor. 3. To give priority to ensuring that PM10 ambient air quality improvements are achieved in Rangiora, Kaiapoi, Christchurch, Ashburton, Timaru, Geraldine and Waimate. 	The Quarry will not result in nuisance dust effects beyond the proposed 250-metre buffer distance. Therefore, the application is consistent with this policy.
Policy 14.3.3 Avoid, remedy or mitigate localised adverse effects on air quality	To set standards, conditions and terms for discharges of contaminants into the air to avoid, remedy or mitigate localised adverse effects on air quality.	The mitigations included in the application to minimise the adverse effects on air quality include the use of dust suppressant tanker, restrictions on the maximum exposed surface area, monitoring and restrictions on wind conditions, restrictions on vehicle speeds on site, restrictions on the number of crushing and screening machines operating and the sealing of a portion of the internal roading network near Guys Road. With these mitigations in place, the adverse effects on air quality will be less than

		minor and are consistent with this policy.
Policy 14.3.5 Relationship between discharges to air and sensitive land-uses	<p>In relation to proximity of discharges to air and sensitive land-uses:</p> <ol style="list-style-type: none"> 1. To avoid encroachment of new development on existing activities discharging to air where the new development is sensitive to those discharges, unless any reverse sensitivity effects of the new development can be avoided or mitigated. 2. Existing activities that require resource consents to discharge contaminants into air, particularly where reverse sensitivity is an issue, are to adopt the best practicable option to prevent or minimise any actual or likely adverse effect on the environment. 3. New activities which require resource consents to discharge contaminants into air are to locate away from sensitive land uses and receiving environment unless adverse effects of the discharge can be avoided or mitigated. 	The proposed location for the quarrying activity is in the rural zone, between two large grazing platforms. There are no sensitive receivers within the proposed 250-metre buffer distance, and the three residential dwellings inside this buffer distance have provided unconditional written approval. Therefore, the application is consistent with this policy.

7.10 Canterbury Land and Water Regional Plan (CLWRP)

For Rule 5.177, Councils control has been limited to:

- *the potential for adverse effects on the quality of water in aquifers, rivers, lakes, wetlands and mitigation measures; and*
- *the content and adequacy of the management plan prepared in accordance with Section 8.1 and Appendix B of “A Guide to the Management of Cleanfills”, Ministry for the Environment, January 2002. Therefore, the only policies assessed relate to these two matters of control.*

For Rule 5.176, Council’s discretionary has been restricted to:

- *The actual and potential adverse environmental effects on the quality of water in aquifers, rivers, lakes, wetlands; and*
- *Any need for remediation or long-term treatment of the excavation; and*
- *The protection of the confining layer and maintaining levels and groundwater pressures in any confined aquifer, including any alternative methods or locations for the excavation; and*
- *The management of any exposed groundwater.*

Table 4 provides an assessment of the proposed activity against the relevant Objectives and Policies contained in the CLWRP within the areas of control and discretion identified above.

Reference	Objective/Policy	Comment
3.1	Land and water are managed as integrated natural resources to recognise and enable Ngai Tahu culture, traditions, customary uses and relationships with land and water.	The proposed water quality in the underlying aquifer will be maintained by the mitigation measure to retain a minimum 1-metre buffer of undisturbed soil above the highest recorded groundwater level. This will protect the mauri of water and enable Ngai Tahu

		functions. The application is consistent with this policy.
3.2	Water management applies the ethic of ki uta ki tai – from the mountains to the sea – and land and water are managed as integrated natural resources recognising the connectivity between surface water and groundwater, and between fresh water, land and the coast.	The artificial waterway is isolated from the surrounding waterbodies and will be engineered appropriately and in accordance with Selwyn Council Engineering Standards. The aquifer below the proposed extraction site will be protected through the retention of a 1 m buffer with undisturbed soils. It is acknowledged that the groundwater is an essential natural resource and provides connection between fresh water, land and the coast. The water quality in the aquifer will be maintained. Therefore, the application is consistent with this policy.
3.3	Nationally and regionally significant infrastructure is enabled and is resilient and positively contributes to economic cultural and social wellbeing through its efficient and effective operation, on-going maintenance, repair, development and upgrading.	The excavation will allow for regional infrastructure to be developed as part of the on-going Christchurch Rebuild. It is important to have a nearby source of aggregate to allow for efficient and effective development to meet the economic, cultural and social wellbeing of the people of Christchurch. This activity is consistent with this policy.
3.5	Land uses continue to development and change in response to socio-economic and community demand.	There is demand for the excavated aggregate to support the Christchurch Rebuild. This proposed location for the excavation of land is appropriate for the scale and intensity of the proposed operation.
3.6	Water is recognised as essential to all life and is respected for its intrinsic values.	Water is essential, and groundwater quality will be maintained in the aquifer beneath the proposed excavation due to the 1 m buffer above highest recorded groundwater level. Therefore, the application is consistent with this policy.
3.13	Groundwater resources remain a sustainable source of high-quality water which is available for abstraction while supporting base flows or levels in surface water bodies, springs and wetlands and avoiding salt-water intrusion.	The proposed discharge will be at 1 m from the highest recorded groundwater level as determined by on-site piezometric wells. There will be no adverse effects on the water quantity or quality in the aquifer, and therefore, the application is consistent with this policy.
3.24	All activities operate at good environmental practice or better to optimise efficient resource use and protect the region's fresh water resources from quality and quantity degradation.	The cleanfill management plan will be prepared in accordance with recommended guidelines. The retention of at least 1-metre of undisturbed material above the unconfined aquifer provides for good environmental practice and the inert material of cleanfill will enable fresh water quality and quantity not to be degraded as a result of this activity. Therefore, the application is consistent with this policy.
4.11	The setting and attainment of catchment specific water quality and quantity outcomes and limits is enabled through: <ol style="list-style-type: none"> limiting the duration of any resource consent granted under the region-wide rules in this Plan to a period not exceeding five years past the expected notification date (as set out in the Council's Progressive Implementation 	The attainment of catchment specific water quality and quantity outcomes will not be limited by the grant of a consent for a proposed duration of 20-years; rather the proposed duration recognises the effective and efficient use of natural resources (gravel).

	<p>Programme) of any plan change that will introduce water quality or water quantity provisions into Sections 6 – 15 of this Plan; but</p> <p>b. allowing, where appropriate, a longer resource consent duration for discharge permits granted to irrigation schemes or principal water suppliers under the region-wide nutrient management rules in this Plan, provided those permits include conditions that restrict the nitrogen loss from the land and enable a review of the consent under section 128(1) of the RMA.</p>	
4.18	<p>The loss or discharge of sediment or sediment-laden water and other contaminants to surface water from earthworks, including roading, works in the bed of a river or lake, land development or construction, is avoided, and if this is not achievable, the best practicable option is used to minimise the loss or discharge to water.</p>	<p>The discharge of cleanfill to land will not result in a loss or discharge to water as the material is inert, and 1-metre of undisturbed material will be retained between the proposed discharge and the highest recorded groundwater level. Therefore, the application is consistent with this policy.</p>
4.19	<p>The discharge of contaminants to groundwater from earthworks, excavation, waste collection or disposal sites and contaminated land is avoided or minimised by ensuring that:</p> <p>a. Activities are sited, designed and managed to avoid the contamination of groundwater;</p> <p>b. Existing or closed landfills and contaminated land are managed and monitored where appropriate to minimise and contamination of groundwater; and</p> <p>c. There is sufficient thickness of undisturbed sediment in the confining layer over the Coastal Confined Aquifer System to prevent the entry of contaminants into the aquifer or an upward hydraulic gradient is present which would prevent aquifer contamination.</p>	<p>The discharge activity has been designed to avoid the contamination of groundwater through the discharge of only inert material, and regular monitoring of groundwater levels through piezometric wells to ensure that a sufficient thickness of undisturbed material remains above the unconfined aquifer. The planning provisions indicate that 1-metre is appropriate and SOL Quarries Ltd agree to this as a minimum level.</p>

Overall, the proposal is considered to be **consistent** with the objectives and policies of the CLWRP.

7.11 Canterbury Air Regional Plan (CARP)

Table 5 provides an assessment of the proposed activity against the relevant Objectives and Policies contained in the CARP.

Reference	Objective/Policy	Comment
5.1	Air quality protects the mauri and life supporting capacity of the environment.	The effects on air quality will be less than minor and this is supported by the technical report prepared by NZ Air Ltd (Appendix B). Therefore, the application is consistent with this policy.
5.2	Ambient air quality provides for the health and wellbeing of the people of Canterbury.	Ambient air quality beyond the proposed 250 m buffer will be retained and will not result in adverse effects on health and wellbeing of people. Therefore, the application is consistent with this policy.
5.3	Competing demands for the use of the air resource of Canterbury are accommodated while unacceptable degradation of ambient air quality is avoided.	The application will not result in the degradation of ambient air quality beyond the proposed 250 m buffer distance and this is supported by the technical report prepared by NZ Air Ltd (Appendix B). Therefore, the application is consistent with this policy.
5.4	Degraded ambient air quality is improved over time and where ambient air quality is acceptable it is maintained.	The application will not result in the degradation of ambient air quality beyond the proposed 250 m buffer distance and this is supported by the technical report prepared by NZ Air Ltd (Appendix B). Therefore, the application is consistent with this policy.
5.5	Air quality is managed in a way that provides for cultural values and traditions Ngai Tahu.	Air quality will not be degraded as a result of this application beyond the proposed 250 m buffer. Therefore, the proposal will not restrict Ngai Tahu from undertaking their cultural functions and traditions. There are no sites of significance to local iwi within the proposed 250-metre buffer distance.
5.6	Amenity values of the receiving environment are maintained.	Amenity values are maintained as the effects on air quality will be less than minor.
5.7	Discharges from new activities are appropriately located to take account of adjacent land uses and sensitive activities.	The location of the proposed discharge is appropriate. It is in a rural zone, between two large grazing platforms with no sensitive activities located within the proposed 250 m buffer distance.
5.8	Discharges from existing activities are managed in response to evolving characteristics of the receiving environment.	The proposed mitigations are appropriate for the scale and intensity of the activity. This has evolved and a good example of this was the increased area of sealed roads for the previous permit. Only 100m where required by consent conditions but to fully mitigate the activity, SOL Quarries Ltd sealed 250 m.
5.9	Offensive and objectionable effects and noxious or dangerous effects on the environment are generally avoided.	The proposed activity will not result in offensive and objectionable effects and this has been assessed in schedule 2 of the Air Plan and this assessment is included in the Technical Report prepared by NZ Air Ltd.
5.10	Developments and innovation in technology that have the potential to improve air quality are enabled.	Examples of the specifications for the plant and equipment have been provided (Appendix J); however,

		this will be updated as developments and innovations in technology arise.
6.1	<p>Discharge of contaminants into air, either individually or in combination with other discharges, do not cause:</p> <ul style="list-style-type: none"> a. Diverse effects on human health and wellbeing; or b. Adverse effects on the mauri and life supporting capacity of ecosystems, plants or animals; or c. Significantly diminished visibility; or d. Significant soiling or corrosion of structures or property. 	The discharge to air will not result in adverse effects beyond the proposed 250-metre buffer distance. Therefore, the application is consistent with this policy.
6.2	Recognise the value of air quality as a taonga to Tangata Whenua and manage adverse effects of discharges into air on wāhi taonga, and places of significance to Ngāi Tahu.	The discharge to air will not result in adverse effects beyond the proposed 250-metre buffer distance. Therefore, the application is consistent with this policy.
6.3	<p>Manage the effects of discharge into air on ambient air quality by:</p> <ul style="list-style-type: none"> a. The spatial division of the Canterbury Region into area inside and outside Clean Air Zones; b. Setting a 2ha property area threshold; and c. Setting thresholds for effects above which resource consents are required. 	The thresholds for effects have been managed through the mitigations identified in the NZ Air Technical Report which supports this application.
6.4	Reduce adverse effects of discharges on people where ambient air quality does not meet the value set in a national ambient air quality standard or guideline.	The discharge to air will not result in adverse effects beyond the proposed 250-metre buffer distance. Therefore, the application is consistent with this policy.
6.5	Minimise adverse effects on people where ambient air quality is degraded when assessed against a national ambient air quality standard or guideline.	The discharge to air will not result in adverse effects beyond the proposed 250-metre buffer distance. Therefore, the application is consistent with this policy.
6.6	Maintain ambient air quality in locations where the quality is acceptable when assessed against an ambient air quality standard set in a national ambient air quality standard or guideline.	The proposed mitigations will enable the maintenance of the ambient air quality at the proposed quarry location. Therefore, the application is consistent with this policy.
6.8	Offensive or objectional effects are unacceptable and actively managed by plan provisions and the implementation of management plans.	A Quarry Management Plan including a dust management plan and cleanfill management plan will be prepared based on the existing QMP. This will enable the active management of the air discharge activity.
6.9	Discharges into air from new activities are appropriately located and adequately separated from sensitive activities, taking into account land use anticipated by a	The location of the proposed discharge is appropriate. It is in a rural zone, between two large grazing platforms with no sensitive activities located within the proposed 250-metre buffer distance.

	proposed or operative district plan and the sensitivity of the receiving environment.	
6.10	If the sensitivity of the receiving environment is altered by authorised land use change so that an existing discharge result in significant adverse effects on the receiving environment, require the effects of that discharge to be reduced and provide a reasonable timeframe for achieving that reduction.	The sensitivity of the receiving environment will not be altered by the discharge to air and the effects will be less than minor due to the proposed mitigation measures as identified in the Technical Report by NZ Air Ltd.
6.11	When evaluating resource consent applications recognise locational constraints on activities, when imposing terms and conditions.	The site is appropriately located to provide gravel resources to the Canterbury region to support the rebuild. It is appropriate to grant a term of 20 years in this location to provide on-going certainty for the operation.
6.12	Where activities locate appropriately to mitigate adverse effects on air quality a longer consent duration may be available to provide on-going operational certainty.	It is appropriate to provide a longer consent duration as the effects of the proposed activity are known, there is consistency in the effects, there is a high level of management plans and monitoring and the planning provisions are recent.
6.13	Minimise the cumulative effects of discharges of contaminants into air by requiring: <ul style="list-style-type: none"> a. Permitted discharges to apply good environmental practices; and b. Discharges allowed by a resource consent to apply the best practicable option. 	There are no other air discharges within the proposed 205-metre buffer distance proposed. Outside of this distance, there are other quarries in operation although this proposal will replace the existing consented Quarry operation to SOL Quarries Ltd and will therefore, not add to cumulative effects.
6.14	Recognise the contribution of nationally and regionally significant infrastructure to people's social and economic wellbeing and provide for discharges with the development, operation, and maintenance of that infrastructure.	The purpose of the quarry extraction activity and subsequent discharge is to provide gravel resource to support the Christchurch rebuild. Therefore, this will contribute to the regions infrastructure and is consistent with this policy.
		Overall, the proposal is considered to be consistent with the objectives and policies of the CARP.

8 Conclusion

A comprehensive assessment of actual and potential effects on the environment that may be associated with the proposal has been provided throughout this report. This assessment has concluded that any actual or potential effects associated with the proposal will be less than minor, and that no other persons are considered to be affected as part of the proposed activity. The proposal is also considered to be consistent with the relevant objective and policies of the CLWRP and the CARP.

The proposal will provide for the sustainable management purpose of the Resource Management Act 1991, as it will enable the supply of a resource necessary for the continued rebuild and growth of the wider Christchurch area.

It is, therefore, considered that the Application can be approved in terms of Section 104 of the Resource Management Act 1991, subject to any conditions of consent that are considered appropriate to avoid, remedy or mitigate any potential for adverse effects on the surrounding environment.

Appendices

Appendix A	Certificates of Titles
Appendix B	Air Quality Technical Report
Appendix C	Noise Assessment & Technical Report
Appendix D	Traffic Assessment & Technical Report
Appendix E	Landscape Assessment & Technical Report
Appendix F	SOL Quarry Well Data & Bore Logs
Appendix G	Quarry Site Plan (Proposed)
Appendix H	ECan LLUR Reports
Appendix I	Quarry Management Plan – V9
Appendix J	Plant Specification Sheets (Examples)
Appendix K	Diesel Tank Specifications
Appendix L	Stockwater Race – Selwyn DC Engineering Standards
Appendix M	Cleanfill Acceptance Criteria
Appendix N	Formal Written Approvals – Potentially Affected Parties