

Wednesday, 12th June 2019

Senior Resource Management Planner
Environment Canterbury Regional Council
PO Box 345
Christchurch 8140
Attention: Nick Reuther / Rubie McLintock

**APPLICATION FOR RESOURCE CONSENT CRC193563; CRC193564; CRC193772; CRC192773
RESPONSE TO SECTION 92 (RMA) REQUEST FOR FURTHER INFORMATION**

Dear Nick and Rubie

On behalf of SOL Quarries Ltd, we have considered the matters raised in the Section 92 (RMA) Request for Further Information (S92 RFI), dated 28th March 2019, relating to the Application for Resource Consent associated with the proposed extension of the SOL Quarry at Conservators Road, Yaldhurst (CRC193563; CRC193564; CRC193772; CRC192773).

We have sought expert consultant advice, in the form of specialist assessments and reports, in addressed the matters raised in the S92 RFI. Accordingly, we have summarised the expert consultant advice in this letter utilising the numbering contained in the S92 RFI, and we have appended the full assessments and reports.

1. Potential Soil Contamination.

A comprehensive assessment of historical and contemporary aerial imagery combined with a comprehensive review of the agrichemicals used on the Ready Lawn area of the Site over the past 5-years has confirmed that the proposed Quarry extension is not deemed a “contaminated site”. Prior to late 2014 the Site was used for grazing, primarily sheep. The full assessment and Material Safety Data Sheets (MSDS) for all agrichemicals used on the proposed Quarry extension site is appended to this response.

2. Potential Effect on Surface Water Quality and Aquatic Ecosystems.

A specialist aquatic ecological consultant, Aquatic Ecology Ltd, was engaged to conduct an ecological survey, aimed at identifying the ecological values associated with the Paparua Stockwater Race, and the potential impacts of the proposed diversion on these values and surface water quality.

The ecological survey comprised three components: faunal habitat quality, macroinvertebrate community, and fish community. The survey of habitat quality for both fish and macroinvertebrates involved the evaluation of both instream and riparian attributes, using an established habitat assessment protocol.

The results of the ecological survey indicated that the Paparua Stockwater Race had low ecological value. Only a single fish species—upland bully (*Gobiomorphus breviceps*)—was found, a species with no conservation status, but was present in moderate numbers. The presence of just one non-migratory fish species was attributed to potential upstream barriers to migratory fish, paucity of habitat variation, and lack of instream fish cover (e.g. boulders, overhanging vegetation, root mats, woody debris, and undercut banks). However, the uniform channel is consistent with its principal role as a water race designed for the efficient conveyance of irrigation and stockwater. The macroinvertebrate community was also of low diversity, consisting of a relatively small number of insensitive species. The calculated macroinvertebrate stream health metrics indicated that the waterway had low stream health. This was similarly attributed to a lack of instream habitat diversity and large amounts of deposited sediment—a natural feature of the waterway.

The ecological assessment concluded that the proposed diversion will have minimal impact on the stockwater race, with regards to its water quality and ecological values, as it will remain limited by the habitat features. The most prominent risk was considered to be to the local ecological values associated with the construction and implementation of the diversion channel, specifically related to the input of sediment into the downstream ecosystem. However, the specialist consultants considered that these risks can be minimised to a negligible level with appropriate sediment control measures. If the recommendations contained in the Aquatic Ecological Assessment are followed, the new channel is likely to hold equal ecological value to the decommissioned channel, without jeopardising the values of the downstream ecosystem. The full Aquatic Ecological Assessment is appended to this response.

3. Potential Effect on Groundwater Users.

We have identified ten (10) groundwater bores used for domestic (potable) water supply within 1,000-metres of the proposed SOL Quarry extension. The groundwater bore depths range from 16.70 metres to 30.00 metres below natural ground level (refer Table 1).

In considering the potential effects of the SOL Quarry operation, including the proposed cleanfill operation, we have considered:

- the depth and horizontal separation of the ten (10) groundwater bores from the Quarry;
- the groundwater quality data, derived from groundwater sample analysis (Hills Laboratory), which has not identified any adverse effects on groundwater quality associated with the existing SOL Quarry operations;
- the proposed restriction regarding excavation depth (a maximum of 10.00 metres below natural ground level);
- the proposed separation between the maximum excavation depth and the highest recorded groundwater depth (12.12 metres below natural ground level);
- the proposed Conditions of Consent;
- the proposed implementation of a Cleanfill Management Plan;
- the intention to implement the current robust cleanfill management, administration and operational practices;
- the compliance record of SOL Quarry regarding the cleanfill operation;
- the compliance with the annual Cleanfill Licence criteria (CCC Cleanfill Licence); and
- the restrictions relating to the materials which may be accepted as cleanfill, as specified in *A Guide to the Management of Cleanfills; Ministry for the Environment; January 2002.*

We have considered the potential vulnerability of groundwater beneath the Quarry extension related to contamination from land uses post-quarrying. We consider that any potential vulnerability will be mitigated by diligent adherence to the protocols and procedures specified in the Quarry Cleanfill Management Plan, ensuring only inert cleanfill materials are disposed of and used as infill, and by reinstating between 300mm – 400mm of clean topsoil and grassing the rehabilitated Quarry,

in accordance with the Quarry Rehabilitation Plan. Accordingly, we have concluded that any adverse effects on groundwater quality will be less than minor.

DOMESTIC AND STOCKWATER BORES

Bores/Wells	Depth	Date Drilled	Location
M35/7067	23.00m	29.4.1994	15598.93.49, 5184885.97
M35/2824	23.00m	1.7.1977	1559499.59, 5185022.95
M35/8784	24.00m	25.7.2000	1559323.69, 5185085.93
M35/0956	21.00m	No date	1559263.71, 5185243.85
M35/7673	No depth	No date	1559273.69, 5185275.99
M35/2804	18.90m	No date	1559393.64, 5185285.88
M35/2821	23.00m	1.7.1976	1559703.53, 5185325.95
M35/6840	22.50m	5.4.1993	1560003.46, 5184586.07
M35/2815	16.70m	1.7.1963	1560203.36, 5184786.04
BX23/0454	30.00m	13.3.2015	1559656.59, 5184592.05

Note: In addition, there are 5 bores either unused or used for irrigation with depths of 20.40m / 22.30m / 13.40m / 23.00m / 18.30m.

Table 1: Domestic & Stockwater Bores (ECan GIS Database; May 2019).

4. Groundwater Level and Quality Monitoring.

SOL Quarries Ltd proposes to implement a groundwater monitoring programme similar to the programme which is currently in operation on the existing SOL Quarry. We have revised the proposed groundwater monitoring and propose monitoring groundwater depth and groundwater quality using three (3) bores.

Groundwater Monitoring Bores

It is proposed to monitor groundwater depth and groundwater quality from a total of three (3) bores, including one (1) of the groundwater bores on the existing SOL Quarry – Bore BX23/0520 – and two (2) bores on the proposed Quarry extension. The proposed monitoring bores on the Quarry extension are an existing bore – BX23/0871 (installed 20th November 2018) and a new bore to be installed on the south-eastern boundary of the Quarry extension, specifically designated for monitoring groundwater depth and quality. The new bore will measure groundwater data down-gradient of the Quarry.

The approximate location of the new monitoring bore is shown on Map 1. The approximate coordinates of the new monitoring bore are:

621007.37 mE
5183848.00 mS



Map 1: Proposed Location of Monitoring Bore.

Installation of the new bore has been considered with respect to the Rules contained in the Canterbury Land and Water Regional Plan (CLWRP). The install of the new bore will comply with the Conditions of Rule 1.103 of the CLWRP, as detailed in Table 2, below. As such, the install of the proposed new monitoring bore is deemed a “permitted activity”.

CLWRP – Rule 5.103.

The use of land, including the bed of a lake or river, for the installation, maintenance and use of a water infiltration gallery (other than a water infiltration gallery used for emergency firefighting purposes), or a bore, other than a bore for hydrological or geotechnical investigation or monitoring, is a permitted activity, provided the following conditions are met:

Condition	Comment
1. The bore or gallery is installed by a bore driller or bore drilling company that holds a current accreditation under the CRC bore Installers Programme; and	The bore will be installed by an accredited installer.
2. The screening of any bore or gallery may only be into a single aquifer or water-permeable zone. During bore installation reasonable and practicable methods shall be used to minimise the risk of interconnection or movement of groundwater between aquifers or water-permeable zones; and	Confirmed. The bore installer will be instructed accordingly.
3. Any bore constructed to abstract groundwater is screened to below any minimum water level for the groundwater zone as set out in Section 6 to 15 of this Plan; and	The bore will only be used to extract groundwater for quality testing by an approved laboratory.
4. Contaminants or water are prevented from entering the top of the bore or gallery or underlying groundwater by: <ul style="list-style-type: none"> a. covering or capping the bore or the above ground portion of the gallery pipe, when not in use; and b. sealing the exterior of the bore (the annulus) with bentonite or concrete grout from ground level to above the screen or 1 m below ground level, whichever is the lesser; and 	Confirmed. The bore installer will be instructed accordingly.

c. sealing the bore-head or above ground portion of the gallery pipe at ground or pumphouse floor level with a concrete pad of at least 0.3 m radius and 0.1 m thickness which is contoured to slope away from the bore or pipe; and	
5. Information on bore or gallery location, bore installation (including bore logs and intended uses), and other relevant information is submitted to the CRC within 20 working days of drilling the bore; and	Confirmed. The relevant information will be provided to ECan within 20 working days of the install of the bore.
6. The bore or gallery is not installed on contaminated or potentially contaminated land.	The land is not deemed to be contaminated or potentially contaminated.

Table 2: Canterbury Land & Water Plan; Rule 5.103; Conditions.

Groundwater Monitoring Programme

Groundwater Level (Depth)

SOL Quarries Ltd will measure and record groundwater levels at least once every 14 days over the winter months (June to September) and monthly for the remainder of the year. SOL Quarries Ltd will measure water levels within bore BX23/0520 (located on the existing SOL Quarry), bore BX23/0871 (located on the proposed Quarry extension) and within the proposed new bore to be installed on the south-eastern boundary of the Quarry extension (refer Map 1).

Groundwater Quality

SOL Quarries Ltd will collect groundwater samples from bore BX23/0520 (located on the existing SOL Quarry), bore BX23/0871 (located on the proposed Quarry extension) and within the proposed new bore to be installed on the south-eastern boundary of the Quarry extension (refer Map 1). The groundwater samples shall be collected and analysed once per month for the contaminants in Table 3, below.

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

Table 3: Contaminants and trigger concentrations for screening test

5. Potential Effect on Air Quality.

Please refer to the Air Quality Assessment and Report (Pattle Delamore Partners), dated 12th June 2019.

6. Water for Dust Control

Please refer to the Air Quality Assessment and Report (Pattle Delamore Partners), dated 12th June 2019.

7. Proposed Air Quality Monitoring.

Please refer to the Air Quality Assessment and Report (Pattle Delamore Partners), dated 12th June 2019.

8. Complaints Assessment.

Please refer to the Air Quality Assessment and Report (Pattle Delamore Partners), dated 12th June 2019.

9. Potential Effect on Tangata Whenua Values.

Table 4, below, provides an assessment of the potential effects associated with the proposed Quarry extension as they relate to Tangata Whenua values. The assessment refers to the relevant sections of the *Mahaanui Iwi Management Plan*.

Policy	Comment
Ranginui	
R1.1 To protect the mauri of air from adverse effects associated with discharge to air activities.	The expert evidence has concluded that discharges to air will be contained within the boundary of the Quarry Site. Given the location of the proposal and the surrounding land use, which are primarily agricultural in nature, the activity will not result in adverse effects on the mauri of the air. The mitigation measures proposed, including the construction of a bund, the use of water as a dust suppressant and the implementation of a Dust Management Plan will appropriately provide for any effects.
R1.2 To require that the regional council recognise and provide for the relationship of Ngāi Tahu with air, and the specific cultural considerations for air quality, including the effects of discharge to air activities on sites and resources of significance to tāngata whenua and the protection of cultural amenity values.	There are no known sites of cultural significance on the proposed area.
R1.4 To support the use of indigenous plantings and restoration projects as a means to offset and mitigate industrial, agricultural and residential discharges to air.	The proposal includes Site rehabilitation, ensuring the Quarry is infilled and grassed, in order to be returned to productive agricultural pasture land. SOL Quarries Ltd will mitigate fugitive dust through maintaining vegetation cover on the bunds and unconsolidated areas that are not being quarried.

Wai Māori	
<p>WM6.17 To require the development of stringent and enforceable controls on the following activities given the risk to water quality:</p> <ul style="list-style-type: none"> (a) .. (d) Activities in the bed and margins of waterways, including gravel extraction; and (e) .. 	<p>Although there are no known wāhi tapu or wāhi taonga in the area, SOL Quarries Ltd will have an accidental discovery protocol in place. The stockwater race which is proposed to be realigned as part of the ‘enabling works’ is an artificial waterbody. While it is recognised that the stockwater race will form a habitat for aquatic life, the realignment methodology will minimise any potential adverse effects.</p>
<p>P11.1 To assess proposals for earthworks with particular regard to:</p> <ul style="list-style-type: none"> (a) Potential effects on wāhi tapu and wāhi taonga, known and unknown; (b) Potential effects on waterways, wetlands and waipuna; (c) Potential effects on indigenous biodiversity; (d) Potential effects on natural landforms and features, including ridge lines; (e) Proposed erosion and sediment control measures; and (f) Rehabilitation and remediation plans following earthworks. 	
<p>P11.9 To require stringent and enforceable controls on land use and earthworks activities as part of the resource consent process, to protect waterways and waterbodies from sedimentation, including but not limited to:</p> <ul style="list-style-type: none"> (a) The use of buffer zones; (b) Minimising the extent of land cleared and left bare at any given time; and (c) Capture of run-off, and sediment control. 	<p>The re-alignment of the stock water race will be in accordance with the Selwyn District Council Engineering Standard WR8.0, and agreed Conditions of Consents. The methodology proposed to realign the stockwater race, combined with the engineering and environmental controls will ensure any potential adverse effects are mitigated.</p>
<p>CL1.3 To work with local authorities to increase awareness and knowledge of the use of cultural landscapes as a tāngata whenua planning tool.</p>	<p>The proposed area is not within a mapped cultural landscape or silent file area.</p>

Table 4: Tangata Whenua Values – Mahaanui Iwi Management Plan.

10. Future Land-Uses.

SOL Quarries Ltd proposes infilling the Quarry excavation with cleanfill, contouring the cleanfill, reinstating 300mm – 400mm of topsoil as cover over the cleanfill, vegetating with exotic grasses. As the cleanfill used to infill the Quarry will not be engineered fill (compacted to engineering specifications), we consider the optimal future land-use would be non-intensive agriculture.

11. Points of Clarification.

a. Existing and proposed shelterbelts.

There is a partial shelter-belt, comprising an aged collection of old-man pine trees, immediately adjacent to the current bund which separates the existing Quarry from the south-eastern area of the proposed Quarry extension. In conjunction with construction of the proposed new bund, realignment of the stockwater race and the deconstruction of the bund during the “enabling works”, the partial shelter-belt will be removed.

While SOL Quarries Ltd understands that Mr and Mrs Higgs propose planting a shelter-belt along the boundary of their property and the proposed Quarry extension, SOL Quarries Ltd does not propose planting any shelter-belts. Rather, the Draft Quarry Rehabilitation Plan provides an outline of the future landscape and land-uses.

b. Mitigation measures should overburden removal and bund formation need to occur outside the winter months.

SOL Quarries Ltd will maintain the existing dust mitigation measures, which have been demonstrated to successfully mitigate fugitive dust associated with the removal of overburden, the construction of bund structure, and other potential dust generating activities. The mitigation measures include:

- Using a water truck and a sprinkler system, to dampen unconsolidated and unvegetated surfaces.
- The install and maintenance of equipment onsite that accurately monitors and records wind speed and direction. SOL Quarries Ltd will keep accurate records of wind speed and direction throughout the period when quarry activities occur at the site.
- An anemometer will be installed at a height of 10-metres above ground level in accordance with the guidance for siting weather stations in AS 3580.14.
- When wind speeds measured by the on-site anemometer exceed 5 m/s (1-hour average), SOL Quarries Ltd will begin watering down all unconsolidated surfaces hourly.
- Installing and maintaining equipment onsite that accurately monitors and records modular air quality for the measurement of quarry related dust and particulate matter. The equipment will provide real-time particulate measurement of PM₁₀ with a measurement range of 0-60,000 µg/m³.
- Applying water, as a dust suppressant, immediately prior to the end of the working day if wind speeds in excess of 5 m/s (1-hour average) are forecast outside of the working hours.
- Limiting the height of stockpiles to no more than seven metres with no more than 15,000 cubic metres in any one stockpile at any one time.
- Oversowing with grass seed of any long-term overburden stockpiles (defined as the stockpile not being moved for at least two months).
- Spraying stockpiles with water as a dust suppressant, as required.
- Minimising the areas of exposed ground.
- Regrassing or revegetating bare areas such as bunds, overburden stockpiles, and rehabilitated areas as soon as practicable.
- Carrying out land stripping and land restoration during favourable weather conditions and at times of least vulnerability to neighbouring properties, as determined by the SOL Quarry Manager.

- Taking wind conditions into account in planning and carrying out work to minimise dust dispersion.
- Using water as a dust suppressant on all disturbed surfaces including extraction areas, roads and stockpiles, when required.
- Applying a speed restriction on all internal and access roads of 15 kilometres per hour at all times.
- Minimising the drop heights and not overloading when transporting material.
- Maintaining internal roads on a regular basis so that they are free of pot holes and have a surface cover of clean chip containing minimal fine material.
- Operating no more than two processing crushing and screening plants located on the site.
- Using industry standard water or mist sprayers fixed on the crushing and screening plants when the processing of aggregate products generates fugitive dust, subject to the appropriateness of applying water or mist spray to the specific aggregate product. In circumstances where fugitive dust is generated and the use of water or mist sprayers is not appropriate for a specific aggregate product, production shall cease.

c. *Confirmation – total aggregate processing is 600 tonnes per hour.*

SOL Quarries Ltd has confirmed that the total aggregate processing will not exceed 600-tonnes per hour.

12. Draft Conditions of Consent.

A set of Draft Conditions of Consent is appended to this Section 92 response.

On behalf of SOL Quarries Ltd, I trust these responses address the matters raised in your Section 92 (Resource Management Act 1991) request for further information, dated 28th March 2019.

However, please do not hesitate to contact me should you require further information or clarification of any matter(s).

Sincere regards,

LANDS AND SURVEY (SOUTH) LTD



Simon Hedley B P&R Mgmt | M Appl Sc (Hons)
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