

**IN THE MATTER OF**

The Resource Management Act 1991

**AND**

**IN THE MATTER OF**

Applications by Cromwell Certified Concrete Limited to the Otago Regional Council and Central Otago District Council for discharge permits, a water permit and land use consents relating to expansion of an existing quarry at 1248 Luggate-Cromwell Road.

**BETWEEN**

**CROMWELL CERTIFIED CONCRETE LIMITED**

**Applicant**

**AND**

**OTAGO REGIONAL COUNCIL and  
CENTRAL OTAGO DISTRICT COUNCIL  
Consent Authorities**

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**REPORT AND DECISION OF HEARING COMMISSIONER**

**John Iseli**

**5<sup>th</sup> May 2022**

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Heard on 15-17<sup>th</sup> December 2021 at Cromwell and subsequently online on 8<sup>th</sup> April 2022.

## **Representations and Appearances**

### **Applicant:**

**Ms Monique Thomas**, Counsel

**Mr Dominic Sutton**, Firth Industries

**Mr Travis Allison**, Quarry Manager

**Mr Jamie Exeter**, Acoustics Consultant

**Dr Mike Freeman**, Groundwater Scientist

**Ms Ruth Underwood**, Horticultural Consultant

**Mr Roger Cudmore**, Air Quality Consultant

**Mr Cees Bevers**, Ecologist

**Mr Fraser Colgrave**, Economist

**Mr Ravindu Fernando**, Transportation Engineer

**Mr David Compton-Moen**, Landscape Architect

**Mr Matt Curran**, Environmental Planner

### **Section 42A Reporting Officers:**

**Mr David Randal**, Counsel

**Mr Duncan Whyte**, Environmental Planner

**Dr Jeremy Trevathan**, Acoustic Consultant

**Ms Alexandra Badenhop**, Groundwater Scientist

**Mr Donovan Van Kekem**, Air Quality Consultant (on behalf of ORC)

**Ms Deborah Ryan**, Air Quality Consultant (on behalf of CODC)

### **Submitters:**

**Ms Rosie Hill**, Counsel for Hayden Little Family Trust, N and B Clark and Amisfield Orchard Ltd

**Mr Peter Stacey**, Air Quality Consultant

**Mr Earnscy Weaver**, Horticultural Consultant

**Mr Darren Humpheson**, Acoustic Consultant

**Mr Malcolm Little**

**Ms Justine Davis**

**Ms Nicola Clark**

**Ms Catherine Fagnant**, Orchard Worker

**Mr Bradley May**, Orchard Worker

**Ms Bridget Irving**, Counsel for Amisfield Estate Society

### Decision Summary

Consents to expand the existing Amisfield Quarry and undertake associated activities are granted. These consents are subject to a detailed suite of conditions that require mitigation measures to prevent any significant adverse effects. Comprehensive monitoring of air quality, groundwater quality and noise is required to confirm compliance with the conditions of consent.

I am satisfied on the evidence that the proposed dust control measures are consistent with best practice for New Zealand quarries. The proposal has been modified to require that an aggregate conveyor is used in the expansion block to minimise dust emissions. Real time particulate matter monitoring is proposed with a protective trigger level to prevent adverse dust effects at sensitive receptors, including neighbouring dwellings and cherry orchards. Taking into account the conditions imposed, I find that adverse effects of the proposed activities will be minor.

### BACKGROUND AND PROCEDURAL MATTERS

1. This is the report and decision of Hearing Commissioner John Iseli. I have been appointed by the Otago Regional Council (**ORC**) and the Central Otago District Council (**CODC**) to hear and decide the applications by Cromwell Certified Concrete Limited (**CCCL** or 'the applicant') pursuant to the Resource Management Act 1991 (**RMA** or 'the Act') for resource consents relating to expansion of an existing quarry at 1248 Luggate-Cromwell Road, Cromwell.
2. CCCL currently operates a gravel quarry on part of the subject site. The land use consent application to CODC (RC200343) seeks to expand the existing quarry operation to replace RC150052. The proposed expansion applies to the existing quarry site by increasing the depth of extraction, and also seeks to expand the quarry site into an adjoining bare section (**the expansion block**). The proposed expansions will result in a potential increase in production from 70,000m<sup>3</sup>/year to 200,000m<sup>3</sup>/year.
3. The key features of the proposal in relation to the CODC land use consent are:
  - Additional quarrying within the existing Amisfield Quarry;

- Expansion of the existing Amisfield Quarry (18.9 hectares) to a neighbouring site (9.8 hectares) and to increase the depth of excavation to 30m below ground level;
  - Establishing access to the expanded quarry via an underpass under an existing ROW access road within the site;
  - Increasing the annual production rate of the quarry from 70,000m<sup>3</sup> to 200,000m<sup>3</sup>;
  - Increasing the rate of groundwater take from 47 l/s to 70 l/s;
  - Extending the proposed hours of operation, including loading trucks and the arrival and departure of staff, to 0600 hours to 2000 hours Monday to Saturday;
  - Establishing an underpass to provide a link between the existing quarry and the proposed quarry expansion site;
  - Sound levels due to quarry, crushing and ancillary work at the site as measured at the notional boundary of any dwellings to not exceed 55 dBA L<sub>10</sub> (NZS 6802:1991) 0700 to 1900 hours Monday to Saturday, 45 dBA L<sub>10</sub> and 75 dBA L<sub>max</sub> (NZS 6802:1991) at all other times Monday to Saturday, and on public holidays and Sundays;
  - A sign at the entrance to the site that is to be 3m<sup>2</sup> to 5m<sup>2</sup>;
  - Vehicle movements of trucks to and from the site of up to 150 trips per day;
  - Establish a right turning bay and road widening on Luggate-Cromwell Road (SH6).
4. The consents sought from the ORC are:
- RM20.360.01 Water permit to take and use groundwater for the purpose of gravel washing and dust suppression;
  - RM20.360.02 Discharge Permit to discharge contaminants and water to land for the purpose of gravel washing;
  - RM20.360.03 Discharge Permit to discharge contaminants to air for the purpose of operating a quarry;
  - RM20.360.04 Land use consent to construct a bore for the purpose of excavating a quarry pit to a depth that intercepts groundwater.
5. Under consent RM16.108.01 the applicant is authorised to abstract groundwater at a maximum rate of 46L/s from bores G41/0127 and G41/0456 for use in processing aggregate and suppressing dust. The applicant proposes to increase this take to 70L/s. Water is abstracted and will continue to be abstracted from the Pisa Groundwater Management Zone. The water abstracted will be primarily utilised for washing and screening of aggregate and dust mitigation, with a small proportion used for potable supply, washdown and irrigation of plants on bunds.

6. CCCL proposes to discharge contaminants to land associated with the washing and screening of aggregate and dust suppression that is currently authorised by consent RM16.108.02. Due to the increased water take and proposed expansion of the quarry, an increase to the discharge of contaminants is sought. Wash water from the crushing and screening plant is directed towards the existing soakage pond that allows sediment to be filtered and settle as water is discharged via seepage. No additional water management infrastructure as part of the expansion is proposed. Stormwater will be directly discharged to ground.
7. The proposed rate of extraction is 200,000 cubic metres of aggregate per year, which exceeds the 100,000 cubic metres permitted activity provision under Rule 16.3.5.3 of the Regional Plan: Air for Otago (**RPA**). The dominant contaminant discharged to air from quarrying operations is particulate matter in the form of dust. The dust discharge consists of predominantly larger particles but also includes a proportion of inhalable particles less than 10 microns in diameter (**PM<sub>10</sub>**).
8. At present the existing quarry is consented to excavate to a maximum depth of 15 metres below ground level. The applicant now seeks to excavate the gravel resource deeper to a maximum depth of approximately 30 metres below ground level. Given the proposed increase in the depth of excavation, it is likely that groundwater will be intercepted, so the pit acts as a bore. Where groundwater is intercepted, excavation of aggregate will involve the use of a mobile dragline machine.
9. Material extracted from the 9.8ha expansion block will be transported back to the existing crushing and washing plant, to be retained at the current location. No crushing or washing/screening will occur in the expansion area and this area will be limited to excavation and transportation of material. During the hearing CCCL amended the proposal to use only a conveyor (no hauls trucks) to transport aggregate from the expansion block to the existing quarry.
10. The applications were lodged on 23 October 2020. Further information containing numerous additional reports has been provided to the councils on several occasions, most recently on 10 November 2021.

11. Prior to the hearing Ms Hill, counsel for Hayden Little Family Trust (**HLFT**), N and B Clark and Amisfield Orchard Ltd (**AOL**), filed a memorandum that raised various procedural matters relating to the timing of the hearing. A memorandum in response was issued by Ms Thomas for the applicant and an online meeting was held with counsel representing the parties. I subsequently issued a minute that addressed the matters raised and directed that the hearing should proceed as scheduled.
12. One of the matters raised by Ms Hill was a historical encroachment issue (due to confusion regarding the location of property boundaries) and the nature of any retrospective consents that may be required to rectify unauthorised expansion of the quarry onto neighbouring land. The issue relates primarily to a bund/stockpiles formed on neighbouring land in approximately 2003 and whether removal of this material may be required.
13. Counsel for the submitters' position is that further analysis is required regarding the nature of such consents, and that bundling with these applications should be required because of a potential overlap of environmental effects. Counsel for the applicant's position is that the bund did not breach consents held at the time and there is no intention to lodge an application for removal of the bund. Any possible removal of the bund is viewed as a civil matter between the applicant and the Trust owning the adjoining land.
14. Removal of stockpiled material from the bund in question at some point could contribute to a relatively small degree to cumulative effects with the activities under consideration, primarily in relation to dust discharges. However, given that no consents for remediation are currently sought, and the need for any such consents is disputed, I determined that deferral of the hearing awaiting further consents under Section 91 of the Act was not appropriate. Ms Thomas has provided further information regarding the nature of any consents that may be required for reinstatement. I remain of the view that application for any additional consents for stockpile removal is not required by Section 91 in order to determine the applications for this proposal.
15. The applicant has proposed a condition requiring that a new section of 3m high bund be formed within the quarry's legal boundary adjacent to the encroachment area. The

proposal therefore does not rely on the grant of any retrospective consents, should the relevant part of the disputed bund/stockpile remain.

16. Prior to the hearing, officer's reports were produced on behalf of the ORC and CODC pursuant to section 42A by Mr Duncan Whyte, consulting planner. These 's42A Reports' included technical reviews of the applications by Dr Trevathan (noise), Ms Badenhop (groundwater), Mr Van Kekem (air quality) and Ms Ryan (air quality).
17. The hearing to decide the applications occurred on 15-17<sup>th</sup> December 2021 in Cromwell. I visited the quarry site prior to the hearing. The hearing was adjourned on 17<sup>th</sup> December and I undertook a visit that afternoon to view submitters' properties. I specifically inspected the Clark dwelling and storage facility adjacent to the proposed quarry expansion block, taking note of views from the dwelling and deck towards the proposed quarry site.
18. On adjournment of the hearing, I issued a minute requesting the applicant to provide two proposed sets of updated consent conditions: one set for the full proposal including the expansion block and one set for deepening of the existing quarry only. Opportunity was given for the submitters and council officers to comment on the applicant's proposed conditions. The applicant was then to provide a final written reply. I received the applicant's reply on 1<sup>st</sup> March 2022 and, after considering the amended conditions and all the information provided, I identified several outstanding matters where further information was required from the applicant. I issued a minute directing that written response be provided to specific questions relating to:
  - Cleanfill deposition and site rehabilitation;
  - Mobile refuelling;
  - Sampling of monitoring bores and associated conditions;
  - The proposed aggregate conveyor serving the expansion block;
  - A community liaison group (**CLG**);
  - The proposed bond quantum;
  - Timing of bund construction;
  - A confirmation process for siting of proposed continuous PM<sub>10</sub> monitors; and
  - Revised conditions incorporating reference to plans submitted.

19. Written response to the applicant's comments on these specific matters was also sought from the submitters and councils. After receiving this material, a brief online hearing was held to address the outstanding matters on 8<sup>th</sup> April 2022. The applicant submitted requested changes to proposed conditions on 11<sup>th</sup> April and the hearing was subsequently closed.

## NOTIFICATION AND SUBMISSIONS

20. The applications to CODC and ORC were limited notified.
21. The s42A report summarises the submissions to the ORC and the matters raised as follows:
- Irrigation and Maintenance Limited - Concerns with water supply and the effects of the discharge to land on groundwater quality
  - Douglas Hilton Cook - Concerns with dust, water and land contamination
  - Lindsay Allan Moore and Rosemary Kate Sidey - Concerns about noise, dust and backfill being dumped
  - Jane Marie Miscisco - Concerns regarding drinking water, self-regulation, extra traffic, dust and noise
  - Nicola Jane Clark and Bryson David Clark - Increased rate of groundwater take, adverse effects on water quality and quantity, discharge to land and water, proposed increased discharge of dust and adverse effects on air quality and health
  - Hayden Sinclair Little, Malcolm James Little and CP Trustees Limited being trustees of the Hayden Little Family Trust - Concerns with dust, noise, visual effects, loss of prime soils, water and encroachment of land
  - Peter William Laing and Amisfield Bay Vineyard Limited - Concerns with size increase, water contamination
  - William Norman Labes and Phillipa Jane Labes - Concerns with noise, dust, water and security of site
  - Towyn Trust and Lake Terrace Cherries Limited - Concerns with water, dust, noise and remediation
  - Stephen Ernest Morris and Olivia Jane Morris - Concerns with water, dust, noise, land use, public safety, land contamination and visual effects
  - Anthony John Agate and Frances Lindsay Agate - Concerns with increased water take, land and water contamination, dust and public safety

- David Stevens and Lynley Stevens - Concerns with water and land contamination and dust
  - Robin Palin Greer and Lois Lorraine Greer - Concerns with water supply contamination
  - Amisfield Orchard Limited - Concerns with dust, noise, visual effects, loss of prime soils and water
  - Amisfield Estate Society Incorporated - Concerns with increased water take, land and water contamination, dust and public safety
  - The Stephen and Louise Family Trust - Concerns with contamination of aquifer for domestic and stock water, depletion of the aquifer, effects of dust on human health and the environment
  - Manukau Fifty Ltd - Concerns with dust, water take effects on aquifer for other users, and rehabilitation.
22. The submission from Manukau Fifty Limited was lodged late but was accepted by the ORC under section 37(1)(b) of the Act.
23. Submissions to the CODC in relation to the land use consent application raise the following issues:
- Department of Conservation - The proposed quarry expansion is along the southern boundary of the Mahaka Katia Scientific Reserve which contains several threatened plant and bird species, along with two Critically Endangered ecosystems. The proposed quarry expansion activity will generate noise, dust and vibration effects that may disturb native bird species on the adjoining reserve. While supportive of the use of bunds for noise mitigation, concern is raised regarding the timing of the construction of the bunds in relation to bird nesting. Any remedial planting should not include pest plant species.
  - Amisfield Orchard Limited - Dust effects on amenity. Dust effects on animal, plant and human health. Dust effects on horticultural infrastructure and buildings. Noise effects. Visual effects of the quarry and proposed mitigation. Safety and stability, especially in regard to the AOL access road over the proposed expansion site. Loss of prime horticultural soils and long term horticultural productivity for a relatively short term. Inadequate information and assessment. Difficulties adhering to statutory timeframes.
  - Hayden Little Family Trust - Dust effects on amenity. Dust effects on animal, plant and human health. Dust effects on horticultural infrastructure and buildings. Noise effects. Visual effects of the quarry and proposed mitigation. Safety and stability, especially in regard to the AOL access road over the proposed expansion site. Loss of prime

- horticultural soils and long term horticultural productivity for a relatively short term. Inadequate information and assessment. Difficulties adhering to statutory timeframes. Non-compliance with existing conditions and encroachment.
- Nicola and Bryson Clark - The submitters own a lifestyle section which is also used for commercial storage purposes and immediately adjoins to the north of the existing quarry and to the west of the expansion block. The submission opposes the proposal in its entirety and raises particular concern with regard to: Proposed hours of operation; Proposed scale of operation; Proposed minimum setbacks from the existing dwelling; Visual amenity effects due to separation distance and the bund; Adverse noise, light and dust effects; Reverse sensitivity; Adverse effects on future land use/undermining productive soil; Adverse health, safety and traffic effects; Past non-compliance.
  - Phillip and Justine Davis – Noise. Dust effects. Traffic effects. Hours of the activity. Visual impacts, particularly the proposed bund. Health effects. Safety related to proximity of quarrying and local wind/climate conditions. Soil effects from windblown dust. Future land use of the site and effects on development for horticulture.
  - Waka Kotahi NZ Transport Agency - Access to the site requires safety improvements involving a right turn bay, a construction traffic management plan, and design to be submitted to Waka Kotahi for approval. Signs – area and contents are named but the location, colour, and materials are not stated and this can influence traffic safety.
  - Aukaha - Proximity to Mata-au (Clutha River) and Te Wairere (Lake Dunstan) – statutory acknowledgment area. Concern regarding ecological effects on nearby waterbodies including Awa Katia (Amisfield Burn) and tributaries and the nearby Department of Conservation reserve. Potential for archaeological discovery. Visual effects require offset by screen planting using indigenous plants. Stormwater and managing sedimentation and erosion. Engagement with iwi for the rehabilitation plan.

## THE HEARING

### Evidence Heard

24. A substantial amount of evidence was received and heard, commensurate with the complexity of the applications that required expert evidence covering numerous disciplines. I do not intend to summarise all that evidence and supporting material here. Rather, I will refer to key evidence and submissions when evaluating each of the issues in my assessment of the applications.

25. Copies of the legal submissions, statements of evidence, along with recordings of the online hearing proceedings are held by the ORC. That information is accessible via the ORC website. I took my own notes of any answers given to verbal questions that I posed to counsel, witnesses, submitters, and the reporting officers.

## **ASSESSMENT**

26. In assessing the applications, I have considered the application documentation and AEE, the s42A Reports and technical reviews, all submissions received and the information provided after the hearing adjournment and at the reconvened online hearing in accordance with my directions.

### **Status of the Applications**

27. The starting point for my assessment of the applications is to determine the status of the proposed activities.
28. Mr Whyte concluded that overall the proposal is classified as a discretionary activity under the Regional Plan: Water (**RPW**), RPA and Central Otago District Plan (**CODP**). His assessment of the status of the applications was not disputed by the parties. I determine that the applications are to be considered as discretionary activities.

### **Statutory Considerations**

29. In terms of my responsibilities for giving consideration to the applications, I am required to have regard to the matters listed in sections 104, 104B, 105 and 107 of the Act.
30. In terms of section 104(1), and subject to Part 2 of the Act, which contains the Act's purpose and principles, I must have regard to-
- (a) *Any actual and potential effects on the environment of allowing the activity;*
  - (ab) *Any measure proposed or agreed to by the applicant for the purpose of ensuring positive effects on the environment to offset or compensate for any adverse effects on the environment that will or may result from allowing the activity;*

- (b) *Any relevant provisions of a national environmental standard, other regulations, a national policy statement, a New Zealand coastal policy statement, a regional policy statement or a proposed regional policy statement, a plan or proposed plan; and*
- (c) *Any other matters the consent authority considers relevant and reasonably necessary to determine the application.*

31. Section 104(2) states that when forming an opinion for the purposes of section 104(1)(a), I may disregard an adverse effect of the activity on the environment if a national environmental standard or the plan permits an activity with that effect. This is referred to as consideration of the 'permitted baseline'.

32. In terms of section 104B for a discretionary activity, I may grant or refuse the applications, and if granted I may impose conditions under section 108.

33. In terms of section 105, when considering section 15 (discharge) matters, I must, in addition to 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 reason for the proposed choice; and*
- (c) *Any possible alternative methods of discharge, including discharge to any other receiving environment.*

34. Section 107 applies to the discharge of contaminants into land and ultimately groundwater from the soakage pit. Section 107 restricts the granting of the discharge permit if, after reasonable mixing, the contaminant or water discharged (either by itself or in combination with the same, similar, or other contaminants or water), is likely to give rise to all or any of the following effects in the receiving waters:

- (c) *the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;*
- (d) *any conspicuous change in the colour or visual clarity;*
- (e) *any emission of objectionable odour;*
- (f) *the rendering of fresh water unsuitable for consumption by farm animals;*
- (g) *any significant adverse effects on aquatic life.*

35. I consider each of these sections of the RMA in reaching my decision on the applications.

## Permitted Baseline and the Receiving Environment

36. The permitted baseline is potentially applicable primarily in terms of air quality effects and visual amenity effects. In circumstances where I determine that the baseline applies, I am only required to consider those effects assessed to occur above that baseline level.
37. As set out by Mr Whyte in the ORC s42A report, the discharge of contaminants to air from the existing quarry is permitted by the RPA. This includes the crushing and screening of aggregate at a rate of less than 200 tonnes per hour and extraction at up to 100,000 cubic metres per year. The permitted baseline in terms of the discharge to air from the existing quarry was not disputed by the parties and I determine that it applies in terms of the discharge to air.
38. Considerable discussion occurred in relation to the baseline for visual effects of the proposed bund, particularly in terms of the effects on the Clark dwelling. I questioned several witnesses on this matter.
39. Ms Thomas summarised this issue in her written reply. She noted that no height rule would come into play under the CODP, and the size of a permitted bund would be only limited by the extent of earthworks which can be undertaken as a permitted activity. Based on a bund being 3m high with a base 18m wide (worst case), a 3m high bund which is 111m long could be formed on the expansion land as a permitted activity. This would comply with the 2,000m<sup>2</sup> and 3,000m<sup>3</sup> permitted activity limits in the CODP. The Clark boundary with the expansion land is 269m long. Therefore, a bund could be formed along almost half the length of the Clark boundary as a permitted activity.
40. Ms Thomas submitted that construction of a bund within the Rural Resource Area is not fanciful, and there are a range of reasons why such bunds are formed. She also noted that the CODP does not control fence heights in the Rural Resource Area and permits buildings up to 10m high with no restriction in area provided they are not used for residential purposes and set back at least 10m from site boundaries. She argued that a fence along the boundary of the expansion land or a permitted building 10m from the boundary would have a greater visual impact on the Clark property at 1308 Luggate-Cromwell Road than the proposed 3m high bund set back over 50m from the Clark dwelling.

41. I determine that the permitted baseline is applicable in terms of visual amenity effects, particularly in relation to bunding which could be undertaken as a permitted activity for more than 100m along the boundary with the Clark property. I accept that establishment of such bunds is not fanciful in this rural area.
42. In relation to the existing environment, Ms Thomas submitted that the effects of the existing quarry (as authorised by the existing land use consent) can be disregarded when considering the effects of the proposal. She agreed with Mr Whyte that it is the differences in effect between the existing operation and the proposal that are relevant, noting that the existing environment is limited to the duration of current ORC consents which expire in 2036.
43. Ms Hill submitted that the existing quarry environment is limited to 2026, given the finite nature of the remaining aggregate resource. This was disputed by Ms Thomas, who noted that the time taken to remove the remaining aggregate will vary depending on a range of factors. I accept her submissions in this regard and determine that consideration of the existing environment in terms of the current authorised quarry operation is applicable to 2038.
44. With regard to the future receiving environment around the quarry, relevant case law<sup>1</sup> has established that I may have regard to unimplemented consents which have been granted and are likely to be implemented. Amisfield Orchard Limited (**AOL**) has obtained a consent to establish a dwelling to the east of the expansion block, described as Receptor R6 in the assessment of dust effects accompanying the applications. The parties are agreed that a dwelling at R6 can be considered to form part of the future receiving environment. I have taken into account potential effects on a future dwelling at the location of receptor R6 (referred to as the future AOL dwelling) in my evaluation.
45. Ms Hill and Ms Thomas were not in agreement regarding the status of any future dwelling at Receptor R9 identified by Mr Cudmore on the Hayden Little Family Trust (**HLFT**) land. Ms Thomas noted that R9 represents a building platform only and no dwelling has been consented on that platform at present. There has been no evidence called by HLFT to show that it is 'practically certain' the platform will be built on. However, Ms Hill submitted that a dwelling on that platform should still be considered as part of the future receiving

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<sup>1</sup> *Queenstown Lakes District Council v Hawthorn Estate Ltd* [2006] NZRMA 424 (CA) at [84].

environment, given the legitimately consented residential building platform and the likelihood of implementation.

46. I have decided to adopt a conservative approach and consider the effects of the proposal on a dwelling at Receptor R9 on HLFT land as part of the future receiving environment. I note that my determination on this matter does not have a material impact on my evaluation of the effects of the proposal.
47. AOL and HLFT have also expressed an intention to develop two seasonal workers camps on their land. Counsel for the parties agreed that any seasonal workers camps are not relevant when assessing the future receiving environment, given such use would require resource consent as a restricted discretionary activity.

#### **Section 104(1)(a) Actual and potential effects on the environment**

48. The applications are for a somewhat complex proposal requiring several resource consents. Consequently, there are numerous potential effects of varying significance that require my consideration. The following actual and potential effects on the environment have been identified and assessed:
  - (a) Effects of dust discharges
  - (b) Effects on landscape character and visual amenity
  - (c) Effects on other groundwater users
  - (d) Effects on groundwater and surface water quality
  - (e) Noise effects
  - (f) Effects on utilisation of productive soils
  - (g) Transport effects
  - (h) Positive effects
  - (i) Economic effects
  - (j) Ecological effects
  - (k) Effects on public safety
  - (l) Lighting effects
  - (m) Effects on cultural values
  - (n) Heritage effects
  - (o) Effects of natural hazards
  - (p) Archaeological effects

- (q) Effects of hazardous substances
- (r) Construction effects
- (s) Cumulative effects.

49. I record that I have considered all these actual and potential effects in relation to the proposal. The key effects in dispute between the parties are dust effects, landscape and visual amenity effects, groundwater effects on other users (bore interference), groundwater quality effects, noise effects and effects on utilisation of productive soils. I have therefore focussed on consideration of these effects in my evaluation of the applications.

### **Effects of Dust Discharges**

50. The effect of particulate matter (dust) discharge from quarrying and associated activities was a key issue addressed by evidence from several parties. Expert air quality evidence was provided by Mr Cudmore on behalf of the applicant, Mr Van Kekem and Ms Ryan on behalf of the Councils and Mr Stacey on behalf of several submitters. Evidence regarding dust effects on horticultural crops, particularly cherries, was provided by Ms Underwood for the applicant and Mr Weaver for the submitters.
51. The key contaminants discharged from quarrying and processing of aggregates are total suspended particulate matter (**TSP**), inhalable particulate matter less than 10 microns in diameter (**PM<sub>10</sub>**) and respirable crystalline silica (**RCS**). The evidence was that, given that crushing and screening of aggregate will continue to occur at the current location within the existing quarry site (well removed from dwellings), any adverse health effects of RCS are expected to be negligible. Bearing in mind the nature of quarrying now proposed for the expansion block, including use of a conveyor, I accept that evidence.
52. The primary issue requiring my consideration is the potential effect of TSP emissions from quarrying activities on nearby sensitive receptors (the Clark dwelling and potential future dwellings on the AOL and HLFT building platforms) and on the adjacent cherry orchards. The separation distance from quarrying to these receptors is small. A setback distance of 50m from quarrying to the Clark boundary in the vicinity of the dwelling to the west is proposed. The AOL building platform, where a dwelling has been consented, is a similar distance to the east of the expansion land but would be at a lower elevation.

53. The four air quality experts initially differed regarding the appropriate setback distance from quarrying to neighbouring dwellings. Based on their review of the application and assessment prior to the hearing, Mr Van Kekem and Ms Ryan recommended a 100m setback from dwellings. However, following caucusing and proposed amendments to mitigation and monitoring, they considered that the buffers proposed by the applicant to dwellings are sufficient. Mr Stacey maintained his position that a 150m buffer distance is appropriate, even with the application of best practice dust controls and a conveyor in the expansion block.
54. The air quality experts were involved in caucusing and the matters in contention were refined substantially in the process of producing a Joint Witness Statement (**JWS**). They were further refined in comments on proposed conditions from the applicant that include additional mitigation proposed during the course of the hearing.
55. In her reply for the applicant, Ms Thomas outlined the primary areas of agreement detailed in the JWS of the air quality experts. She noted that in particular, the experts agree that:
- (a) Mr Cudmore’s description of potential sources of dust and their character is correct;
  - (b) Sufficient water is available for dust mitigation;
  - (c) Whilst progressive stripping of the expansion area would have benefits for dust management, the potential effects of this can be mitigated by covering the unused open areas with washed reject material. Conditions in relation to the timing of bund construction are agreed;
  - (d) The mitigation recommended in paragraph 11.3 of Mr Cudmore’s evidence in chief is appropriate and best practice;
  - (e) The wind monitoring, wind speed and direction trigger levels are all agreed. The proposed trigger values are set at appropriate levels, including investigation and cease work levels;
  - (f) An adaptive management approach is proposed whereby the trigger levels will be reviewed by a Suitably Qualified and Experienced Practitioner (**SQEP**) to evaluate the effectiveness of the trigger levels for managing activities and address any verified dust impacts. The conditions proposed by the applicant now provide for these levels to be adjusted downwards without the need for a s127 or s128 review of the consent conditions;
  - (g) Light-scattering based technology is the most appropriate for real-time PM monitors used in quarry dust management.

56. The key mitigation measures set out in Mr Cudmore's evidence in chief (at paragraph 11.3) include:
- Maintenance of haul and other site access roads such that they have a minimum of 50mm deep surface consisting of visually clean aggregate;
  - Regular cleaning of the sealed section of the site's main access road;
  - Use of dust suppression water with polymers on haul and access roads as a back-up contingency to the maintenance of the haul road condition with clean gravel;
  - Use of dust suppression water with polymers to dampen active open areas of quarry and stockpiles of sand, crusher dust and other fine chip material, both prior to and during dry windy conditions;
  - Covering of inactive areas of quarry floor with clean reject gravels;
  - Covering of trucks which transport fine dusty materials from the site.
57. Mr Cudmore also recommended conditions that required the placement of one permanent and two mobile real-time PM<sub>10</sub> monitors (with GPS information) such that real-time ambient PM<sub>10</sub> concentrations are measured at the boundary of the site and generally nearest off-site sensitive receptors (such as dwellings and crops), which are most often downwind of active quarry areas. He also proposed use of real-time 10-minute averaged wind direction and wind speed monitoring data along with ambient PM<sub>10</sub> monitoring data to warn if trigger levels have been met in terms of wind speed and/or high particulate matter concentrations at the site boundary, and therefore the need to either cease dust generating activities and/or implement mitigation actions to effectively reduce dust emissions.
58. During the hearing the applicant confirmed that it has decided to adopt the use of a conveyor to transport aggregate quarried from the expansion land back to the processing plant operating within the existing quarry, instead of a haul road. Based on the expert evidence, I consider that this is a key mitigation measure that will substantially reduce dust emissions from the expansion block. During the reconvened online hearing, Mr Allison accepted a consent condition expressly requiring that no haul trucks be used within the expansion block. The dispersion modelling undertaken by Mr Cudmore confirmed that haul roads are a major dust source for aggregate quarries.
59. Additional mitigation proposed by the applicant includes formation of bunds around the expansion block only during winter months, limiting the active quarry area to 2ha, ceasing

work during high wind speeds (greater than 7m/s, 10-minute average), and preparation of a comprehensive Dust Management Plan (**DMP**) including all measures necessary to comply with conditions of consent (to be certified by the consent authority). The evidence of Mr Cudmore was that the dust control measures now proposed are in line with best practice for quarries in New Zealand. He cited examples of quarries at Parkburn (adjacent to Pisa Moorings, Cromwell), Miners Road near Yaldhurst, Christchurch and Roydon Quarry in Templeton, Christchurch where similar mitigation had been implemented successfully to avoid dust nuisance effects at nearby sensitive receptors.

60. The submissions and the photographs provided by neighbours indicated that significant improvement in dust control would be required, relative to basic measures undertaken during operation of the existing quarry as a permitted activity. The evidence of Mr Stacey was that a large “step change” in mitigation would be required. This was accepted by the applicant. Mr Sutton stated that the involvement of Fletcher Group (owners of CCCL) with other major quarries means that expertise and resourcing is available to achieve the level of dust control that will be required.
61. I accept the evidence of Mr Cudmore, based on his extensive experience at major quarry sites, that the degree of dust control now proposed is consistent with best practice. I questioned the experts regarding the practicality of implementing the comprehensive mitigation measures and monitoring now proposed. Mr Cudmore, Ms Ryan and Mr Van Kekem confirmed that in their professional opinion the conditions now proposed are practical and achievable.
62. An important component of the proposed dust control strategy is the use of mobile real-time PM<sub>10</sub> monitors that can be used to indicate if dust concentrations become elevated near sensitive receptors. A trigger level of 150µg/m<sup>3</sup> (1-hour average) is proposed, a concentration that the experts agreed is protective. A more restrictive early warning level, based on a shorter averaging time, would be set via the DMP. I accept that this approach would allow the quarry manager to identify and respond to dust events that could adversely affect sensitive receptors. The primary response measure is to stop quarry activities upwind of the sensitive receptor. In addition, video monitoring via two cameras on the boundary bunds is proposed.
63. In the JWS the experts agreed that monitoring of PM<sub>10</sub> via light scattering methods would be acceptable for real-time dust monitoring. However, in closing comments Mr Van Kekem

and Ms Ryan indicated that a Beta Attenuation Monitor (BAM) may be more appropriate for the fixed monitoring site. I have considered this matter and determine, based on the evidence of Mr Cudmore, that PM<sub>10</sub> monitoring by nephelometer is acceptable and appropriate in this case. The experts agreed that the following condition is appropriate for the fixed monitor: *“The permanent monitor shall be installed, operated, maintained and calibrated in accordance with the AS/NZS 3580.12.1:2015 Methods for sampling and analysis of ambient air – Determination of light scattering – Integrating nephelometer method, or else an equivalent or superior standard which is approved by the Consent Authority.”* That condition requires maintenance and calibration of the fixed monitor.

64. I determine that sufficient mitigation and monitoring is proposed to prevent any significant adverse effects of TSP from quarrying at dwellings. The operation of a conveyor within the expansion block, with no haul trucks used, substantially reduces the potential for dust emissions from this area. Excavation of aggregate will occur below ground level with a maximum open area of 2ha. No gravel processing will occur in the expansion block. Stripping of overburden and formation of the bunds can generate dust emissions, but that work is proposed to occur during winter with appropriate controls.
65. The Clarks operate a commercial storage business on their property. The existing storage shed is approximately 40m from the proposed quarrying area in the expansion block. Analysis of meteorological conditions by Mr Cudmore shows that this building would be affected by strong winds transporting dust from the quarry for a larger proportion of time than the Clark dwelling. Given the nature of the building construction there is potential for dust to penetrate the building and settle on valuable equipment stored at the facility and I therefore consider the building to be of moderate sensitivity. I determine that the storage facility should be taken into account when implementing dust mitigation (Condition 19(b)) and in the definition of sensitive receptors in Condition 9(c). Taking into account these changes that will be included in the DMP, I consider that adverse effects of dust on the storage facility will be acceptable.
66. The experts are in general agreement that the degree of dust mitigation now proposed is high and is appropriate given the close proximity of sensitive receptors. Mr Stacey considered a 150m buffer between quarrying and sensitive activities on submitters' properties (including cherry orchards) should nevertheless be applied as a safeguard if the proposed measures are not effectively implemented. I am satisfied on the evidence that

the proposed measures could be effectively applied by the applicant such that application of 150m buffer is not necessary. I note that review of the PM<sub>10</sub> triggers by a SQEP is proposed and location of the mobile PM<sub>10</sub> monitors will be reviewed annually. I further consider that the proposed Community Liaison Group (**CLG**) condition is appropriate and will enable feedback from neighbours regarding any dust control improvements required.

67. The potential effects of dust on sensitive crops, notably cherries, were addressed in the evidence of Ms Underwood. She discussed studies on the effects of uncontrolled dust from unsealed roads to provide an indication of the distance at which uncontrolled dust can affect sensitive crops. She noted that key factors are the wind direction (with more dust being distributed in the prevailing downwind direction) and the height of the crop (with taller crops being affected for a shorter distance from the source of the dust). She referenced key studies undertaken by P.R McRea (paragraphs 5.3 - 5.12 of her evidence in chief). Based on those studies, Ms Underwood concluded that the likely distance at which uncontrolled road dust could affect cherry crops (which are classified as tall trees) is 25 - 100m from the dust source, and 50-150m for grapevines (which are of medium height). She noted that this is an indication of the distance that dust from the quarry could potentially carry and affect these crops when downwind of uncontrolled dust.
68. The degree of dust control proposed for quarrying in this case is expected to be substantially better than for unsealed roads. That is particularly so for the expansion block where an aggregate conveyor is proposed and haul trucks will not be used. I therefore consider that it is reasonable to conclude that the potential distance of dust deposition effects on cherry crops to the east of the expansion block is likely to be considerably less than 100m. That conclusion, of course, is subject to implementation of the best practice dust controls proposed.
69. Ms Underwood stated that because export-destined cherries are washed during packing, the risk of cherries being rejected based on light dust contamination is relatively low. The evidence of Mr Weaver was that only limited washing of cherries occurs prior to packing, and that there is potential for dust that has accumulated in the stem bowl of the fruit to remain. Given the degree of dust control proposed in this case, I accept the evidence of Ms Underwood that the risk of rejection of fruit due to dust contamination is very low.
70. Concerns were also expressed by Mr Little and Mr Weaver regarding potential effects of dust on rain covers, micro sprinklers and mechanical equipment used in the cherry

orchards. Based on the evidence of Mr Cudmore that the rate of dust deposition is expected to be small, I find that any effects on equipment used at the orchards are unlikely to exceed those caused by background dust from permitted activities such as unsealed roads.

71. In his evidence in reply (paragraph 2.5), Mr Cudmore stated that orientation and geometry of the excavation will result in deep side walls and bunding, which run northeast-southwest. These will create a significant barrier to any uncontrolled dust within the quarry floor entering into the neighbouring AOL orchard (located to the east). He considered that the potential for discharge to the orchard given site wind patterns and the pit wall, even without any dust mitigation, is low.
72. Mr Van Kekem and Ms Ryan considered that, adopting a precautionary approach, a buffer distance of 100m from sensitive crops during the sensitive spring to late summer period could be applied. Given my conclusions regarding the degree of mitigation and potential dust effects on crops, I find that the setback distances from orchards that are proposed by the applicant are sufficient.
73. Mr Cudmore noted that the AOL orchard to the east of the expansion area will have an effective separation distance of 55 m to 60 m from the eastern edge of the extraction area. He considered that increasing setbacks within the expansion land by another 25 m or 50 m won't change any potential impact of uncontrolled dust to a significant extent because beyond 50 m, any uncontrolled dust would be dominated by suspended particulate (the settleable fraction will struggle to escape the combination of the quarry wall and proposed bunding). Fine suspended particulate has a relative flat decay in concentration with distance. However, he considered that the rapid decay in the settleable particle fraction with distance has been demonstrated by the modelling provided in his primary evidence and also in the Parkburn Quarry dust deposition results described by Mr Van Kekem at the hearing. I accept his evidence in this regard.
74. Mr Stacey noted that the proposed bund will be 3m high and the AOL orchard will be 5m lower in elevation. He suggested that the lower elevation of the orchard land creates additional risk in terms of dust effects. Mr Cudmore argued that the lower elevation of the AOL land in fact assists in reducing dust risk, stating that settleable dust will struggle to exit the pit itself, leaving suspended fine dust as the main fraction which (if not controlled) has potential to travel beyond the site boundary. Mr Van Kekem expressed a similar view to Mr

Cudmore. I accept that the elevation of the AOL orchard, relative to the quarry, is not likely to result in dust effects exceeding Mr Cudmore's predictions.

75. The experts discussed setback distances to residences for other quarries in New Zealand, including the Fulton Hogan Miners Road Quarry and the Roydon Quarry where conveyors are used to transport aggregate. It was noted that setbacks are determined based on the specific circumstances of each case, including prevailing wind conditions in relation to dwellings and other circumstances such as proximity of a gazetted airshed. Mr Van Kekem comments in his supplementary evidence that most quarries have a minimum setback of at least 100m.
76. Mr Cudmore's response to the setback issue was that the extent of any buffer needs to be considered on a case by case basis and is related to the exposure frequency of an occupied house or other receptor to dust generating wind conditions. He considered that because the exposure frequency is low in this case (based on detailed analysis of meteorological data), then smaller buffers can be adopted, especially given quarrying within closer distances will only occur for a relatively short time. Mr Cudmore noted that the process plant remains fixed, whereas quarrying within 50m to 100m of a dwelling typically would only occur over timeframes in the order of a few months to a year. He further noted that in the case of this proposal, excavation will also be undertaken below groundwater level for significant periods when negligible dust emissions would be generated.
77. Mr Cudmore considered that the Fulton Hogan Parkburn Quarry is a relevant example given its proximity (approximately 2kms to the south of the site) and the aggregate resource is the same. The Parkburn Quarry operates with relatively small setbacks (in the order of 50m) to a large number of sensitive receptors (including the residential subdivision of Pisa Moorings and an orchard with a packhouse). He noted that those receptors are directly downwind of the Parkburn quarries in frequent strong and dry northeasterlies.
78. The applicant has proposed the following setback distances in condition 35 of the discharge to air consent:

*Active quarrying excavations within Lot 3 DP 301379 shall be set back:*

- a. *At least 25 m from the boundary of that land apart from along the right of way between Lot 8 DP 301379 and Lot 3 DP 301379 where a 10 m setback is required;  
and*

- b. 50 m from the boundary of Lot 3 DP 301379 in the vicinity of the existing main dwelling on Lot 2 DP 301379; and*
- c. 50 m from a commercial crop sensitive to dust which existed at the time this consent was granted; and*
- d. 50 m from a dwelling authorised by RC210261 on Lot 1 DP 508108, if one exists at the time of extraction.*

*As shown on Site Plan Rev F included in Appendix 1 to this consent.*

79. Considering the evidence regarding the best practice dust mitigation and monitoring now proposed and the frequency of exposure of sensitive receptors (based on analysis of wind data), I determine that the buffer distances proposed in condition 35 are sufficient and are not expected to result in significant adverse dust effects to crops, dwellings or the Clark storage facility.
80. As discussed earlier at paragraph 37, the permitted baseline includes the crushing and screening of aggregate at a rate of less than 200 tonnes per hour and extraction at up to 100,000 cubic metres per year. I have taken this into account in reaching my conclusions regarding the effects of dust from the proposal.
81. Dust from existing background sources in the rural environment, including the riverbed of the Amisfield Burn and unsealed roads will result in cumulative effects with the quarry discharge. I have considered such cumulative effects in reaching my conclusion on dust impacts. I note that dust emissions from the existing quarry would be substantially reduced by compliance with the proposed conditions.
82. Ms Hill raised the issue of potential bund removal in the encroachment area, as detailed earlier in this decision. In response to my question on this matter, Mr Allison stated that the bunded area that may require removal in future is essentially a gravel stockpile that would require approximately two weeks to relocate. Given the nature and duration of such works, I consider that cumulative effects of the quarry discharges with dust emissions from this source will be minor.
83. Overall, based on the comprehensive suite of conditions I intend to impose, I conclude that the quarry discharge is unlikely to cause adverse health effects or result in objectionable or offensive dust effects at sensitive receptors. Any adverse effects on crops are expected to be minor. The experts agree that the dust mitigation proposed is consistent with best

practice and that the conditions now proffered are generally appropriate. Having carefully evaluated the substantial volume of evidence submitted on this matter, I prefer the evidence of Mr Cudmore and Ms Underwood to that of the opposing experts for the submitters. The evidence of Mr Cudmore and Ms Underwood is thoroughly researched and referenced, being based on relevant experience and sound scientific understanding.

## **Effects on Landscape Character and Visual Amenity**

### *Visual Amenity*

84. The Landscape Visual Impact Assessment (**LVIA**) submitted with the application was prepared by Align. Mr Compton-Moen was not involved with this work and was engaged by the applicant after the close of submissions. He reviewed the LVIA and the visual montages contained therein.
85. Mr Compton-Moen agreed with the conclusion of the LVIA that visual amenity effects on the wider landscape are predicted to be low. He considered that the proposed bunds with setbacks and irregular slope on a gentle gradient would not be out of character with the wider area. I accept his evidence in this regard.
86. The focus of the assessment of visual amenity effects was on the impact of the quarry expansion on the Clark dwelling at 1308 Luggate-Cromwell Road. The top of the 3m high bund proposed around the quarry expansion block would be approximately 70m from this dwelling, taking into account the 50m setback from the boundary. Mr Compton-Moen considered that the use of such bunding to screen view of the site is appropriate and is common practice for aggregate quarries. He submitted that the bunding is in keeping with the working rural character of the area.
87. Mr Compton-Moen assessed the visual amenity effects of the quarry and associated bunding on sites adjacent to the expansion land as moderate-low (minor), based on the New Zealand Institute of Landscape Architects (**NZILA**) seven point scale. He considered that the views from the Clark dwelling would be “largely unchanged”. His opinion was based on the visual montages in the LVIA and I note that Mr Compton-Moen did not specifically visit the Clark dwelling to assess the views from that location in person. I consider that it would

have been appropriate for him to do so, given Ms Clark's expressed concerns and the conclusions of Mr Whyte.

88. I visited the Clark property during the hearing, including the dwelling and adjacent accommodation and storage buildings, to assess the views from the property towards the quarry expansion land and beyond. I was accompanied by Ms Clark during that visit.
89. Mr Whyte in the s42A report assessed the adverse visual amenity effects at the Clark property as more than minor. That was one of the reasons for his initial recommendation to decline consent for quarrying of the expansion block. However, in rebuttal Mr Compton-Moen noted that Mr Whyte had incorrectly interpreted the NZILA seven point scale in determining that "moderate-low" on the scale translated to a more than minor visual effect.
90. Mr Compton-Moen recommended bunds around the expansion block with a relatively shallow (1:3 to 1:5) and irregular outer slope. That is in keeping with the undulating surrounding ground. He considered that the bunds should be planted with species agreed with DOC and mana whenua, suggesting use of low-growing species typical of the adjacent DOC reserve.
91. In verbal comments provided at the hearing in December 2021, Mr Whyte stated that reducing the proposed bund slope to 1:5 – 1:6 along the boundary with the Clark dwelling and planting with the proposed vegetation would result in minor adverse visual amenity effects. I agree. During the reconvened online hearing, Mr Allison verbally confirmed that the applicant would propose a shallow (1:5 - 1:6) outer bund slope in the vicinity of the Clark dwelling to mitigate visual impact. I therefore determine that condition 20 of the CODC land use consent relating to bunding on the expansion block should read:

*"The perimeter bunding shall include:*

- a. *Establishment of 3 m high earth bunds around the perimeter of that parcel of land, with the exception of site accessways. Where topography varies, a uniform top bund elevation shall be maintained. The outer face of the bund adjacent to the full length of the boundary with the Clark property to the west of Lot 3 DP 301379 shall have a gradient of 1:5 – 1:6 with an irregular slope profile. In all other areas the outer face of the bund shall have a gradient of 1:3 – 1:5 with an irregular slope profile.*
- b. *Following the construction of the bunds, they shall be immediately stabilised using mulch or another suitable product.*

- c. *As soon as practicable following construction of the bunds, they shall be planted with native plant species (90% cover) selected in accordance with the Bund Landscape Plan and Condition 19 and thereafter watered to ensure 90% cover is established and maintained. Dead or diseased plants shall be replaced in the next planting season.*
- d. *Control of weed species shall be undertaken.”*

92. Based on this amendment and the other conditions proposed concerning bunding, I accept the evidence of Mr Compton-Moen that adverse effects of the proposal on visual amenity for the Clarks will be minor. The conditions require bund construction during winter, a certified bund landscape plan, planting and maintenance with native vegetation (90% cover) and weed control.
93. In reaching my conclusion regarding visual amenity effects of the bund on the Clark property, I have taken into account the permitted baseline as described at paragraph 39 of this decision. Based on a bund being 3m high with a base 18m wide, a 3m high bund which is over 100m long could be formed on the expansion land as a permitted activity. I also note that other permitted activities such as shelter belts and sheds, typical of rural areas, could screen views from the property.
94. In relation to potential impact on the consented AOL building platform, Mr Compton-Moen considered that the proposed bunding would not block mountain views to the west or create shading. I consider that visual amenity effects when viewed from the AOL and HLFT properties and the DOC reserve will be less than minor.
95. The formation of the bunds on the expansion block will cause visual construction effects, particularly for the Clark property. The bunds would be constructed over a relatively brief period of time during winter and proposed conditions require that planting be established during the subsequent growing season. I also intend to impose conditions requiring at least 90% vegetative cover, maintenance of native plantings and pest control to address concerns expressed by Ms Clark. Given these conditions, I consider that construction effects associated with the bunds will be minor.

### *Landscape Character*

96. The site is zoned Rural Resource Area in the CODP and I accept that the surrounding area has a working rural character, rather than rural-residential. Mr Compton-Moen stated that the site is not in an area identified as having landscape value in the district plan. I accept that the existing quarry is part of the landscape.
97. Mr Compton-Moen considered that the scale of the proposed expansion will not substantially affect the broader landscape. He considered that the design of the works, including bunding, will retain open character and not compromise the landscape and amenity values of prominent hillsides and terraces. He also concluded that during operation of the quarry and following rehabilitation, the site will retain a strong rural character in keeping with the surrounding rural environment. I accept his evidence in this regard.
98. The submission from the Clarks expressed concern regarding the potential feeling of enclosure that could arise from the effect of the existing quarry to the south and west of their property and the proposed expansion to the east. That concern is understandable. However, I note that existing quarry to the west and south is a considerable distance from the Clark dwelling and the top of the proposed 3m bund will be approximately 70m from the dwelling. Given the setbacks and mitigation proposed, I accept the evidence of Mr Compton-Moen that the sense of open character will be adequately maintained.

### **Effects of the Groundwater Take on other Groundwater Users and the Amisfield Burn**

99. The applicant proposes to increase the rate of groundwater take from the two bores serving the quarry, from 46L/s to 70L/s. The increased abstraction will result in drawdown effects on neighbouring bores and potentially some stream depletion effects on the Amisfield Burn to the south of the quarry. These effects have been assessed by Dr Freeman and reviewed by Ms Badenhop for the ORC.
100. Dr Freeman provided an updated assessment that modelled a combined drawdown effect on the groundwater level in neighbouring bores of less than 1m. He stated that the drawdown modelling is conservative, being based on pumping at 70L/s, 12 hours per day for 280 consecutive days. Dr Freeman explained that a 10m groundwater column is

available in bores for extraction. Thus, a 9m column of water, at least, would remain available in neighbouring bores after the drawdown effect is taken into account.

101. Ms Badenhop's initial review concluded that there was potential for significant bore interference effects to occur. She highlighted areas of uncertainty due to the short duration of the pumping test and the lack of sensitivity analysis. Subsequent caucusing between the experts, prior to the hearing, resulted in a JWS being produced. The outstanding differences between the experts were resolved in the JWS and Ms Badenhop stated that she is now "reasonably comfortable" that adverse effects on other groundwater users will be minor.
102. Dr Freeman concluded that stream depletion effects on the Amisfield Burn are unlikely. Ms Badenhop initially expressed some concern that the rate of pumping from the quarry bores could increase the duration and frequency of drying of the Amisfield Burn close to the lake. Following caucusing she accepted that the volume of depletion is unlikely to be significant.
103. I accept the evidence of Dr Freeman that the proposed increased groundwater take is not likely to result in significant adverse effects on existing groundwater users or the Amisfield Burn.

### **Effects on Groundwater and Surface Water Quality**

#### *Effects of the Settling Pond Discharge and Quarrying Below Groundwater*

104. The discharge of sediment from the settling ponds has potential to cause turbidity in groundwater extracted from neighbouring users. The extraction of gravel below groundwater can also contribute to these effects. Irrigation and Maintenance expressed concerns regarding ongoing effects on bore G41/0321 and AES submitted regarding impacts on bore G41/0111. The AES bore (south of the Amisfield Burn) is a registered drinking water supply serving at least 9 properties. Irrigation and Maintenance consider that pumping could induce the flow of turbid water from the settling ponds to their bore, even though it is located upgradient (on the west side of the highway) in terms of the direction of groundwater flow.
105. The evidence of Dr Freeman is that shallow unconfined groundwater in the local area is vulnerable to contamination and it is likely that aesthetic determinants (including turbidity) will be elevated at times, especially after heavy rain. Based on analysis of groundwater

monitoring data, he considered that there is potential for regular minor increases in turbidity and iron to be detected that are not caused by the discharge.

106. Based on the evidence, I consider that there remains a degree of uncertainty regarding the potential effects of the sediment discharge on neighbouring bores. The submission from Irrigation and Maintenance notes that the issues experienced with turbidity in the supply from G41/0321 have occurred for some time and a wool filter has been used as mitigation. The JWS prepared by Ms Badenhop and Dr Freeman concluded that it is possible that suspended solids detected in neighbouring bores could have originated from the existing soakage pit discharge. However, the experts also considered that it is possible that the suspended sediment in neighbouring bores is caused by other processes. I therefore determine that it is appropriate that a comprehensive groundwater monitoring programme be undertaken to detect elevated contaminant concentrations that could affect local bores.
107. Ms Badenhop has recommended a dedicated monitoring network, including sampling of target bores (including G41/0321 and G41/0111), three dedicated monitoring piezometers around the boundary of the existing quarry (MW1-MW3) and surface water in the excavation pond and settling pond. The monitoring methodology involving quarterly sampling was developed between Dr Freeman and Ms Badenhop during the course of proceedings.
108. In response to my questions of Dr Freeman at the reconvened online hearing, the applicant has also proposed to undertake monthly monitoring of turbidity and iron in bores MW1 to MW3 for a period of two years to provide more frequent data regarding potential effects of quarry activities on neighbouring bores. I consider that monthly monitoring is appropriate given the degree of uncertainty regarding possible turbidity effects caused by both the settling pond discharge and proposed extraction to a depth of 10m below groundwater. I note that Ms Irving, on behalf of AES, requested more frequent monitoring so that any changes to groundwater could be detected more quickly. This monthly monitoring of the three boundary bores is not onerous and I determine that it should continue for the duration of consent.
109. Ms Irving submitted that under the National Policy Statement for Freshwater Management 2020 the needs of AES as a drinking water supplier sit ahead those of the applicant. She also considered that a precautionary approach is appropriate with ongoing monitoring on a

regular basis, at least quarterly. I agree. I am satisfied that the monitoring programme and conditions I intend to impose, including mitigation, are comprehensive and appropriate in this regard. I note that AES has had input to the proposed conditions and Ms Irving indicated that the submitter is now largely satisfied with the proposed monitoring and mitigation.

110. In response to questions I posed at the reconvened hearing regarding monitoring for turbidity, given the elevated levels of this aesthetic determinant measured in neighbouring bores, Dr Freeman proposed an amended condition that increased the turbidity limit from 2.5 NTU to 4.0 NTU to align with the current World Health Organisation (**WHO**) guideline and proposed NZ Drinking Water Standard. I determine that the amendment is appropriate in the circumstances.
111. Ms Hill and Mr Little expressed concern that bore G41/036 (referred to as the Little and Nyhon bore) was not included in the proposed monitoring network. I questioned Dr Freeman regarding this matter. His response was that G41/0346 is located approximately 53m from Lake Dunstan and that extracted groundwater will be dominated by the lake influence rather than flow from beneath the quarry. He noted that Permitted Activity provisions apply to groundwater takes within 100m of the lake for this reason. Ms Badenhop agreed and I accept their expert advice.
112. Proposed condition 14 of the discharge permit requires that any measured exceedance of the New Zealand Drinking Water Standard (**NZDWS**) Maximum Acceptable Value (**MAV**) or Guideline (Aesthetic) values in the monitoring network triggers investigation into the cause of the elevated sample results. Should a SQEP determine that contamination of the water supply in a target bore was likely to have been caused by the quarry activities, an alternative drinking water supply is to be provided with 48 hours. I note that “upgradient” bore has been amended to “target” bore to address concerns of Irrigation and Maintenance regarding the potential direction of contaminant flow.
113. Condition 13 requires provision of an annual groundwater monitoring report, including assessment by a SQEP regarding any identified effects on sensitive receptors. Condition 15 of the discharge permit requires additional or alternative sediment treatment/management measures in the event that the sediment discharge from the settling pond is causing significant adverse effects at any target monitoring bore. I am satisfied that the proposed conditions are now sufficient to address any adverse effects that may arise as a result of the discharge or other sources of contamination within the quarry.

114. Ms Badenhop concluded that any turbidity effects of excavation below groundwater level are not likely to be greater than the impact of the settling pond discharge. I accept her advice. I consider that the proposed groundwater monitoring programme is sufficient to address such effects.

*Effects of Fuel or Oil Spills*

115. Because the proposed excavation will expose groundwater there is a risk that spills of diesel fuel, hydraulic fluid and other hydrocarbon contaminants could adversely affect neighbouring bore supplies. AES have expressed concern regarding potential effects on the drinking water supply from bore G41/0111 and have suggested revised conditions to address this issue. Several of those suggestions have been adopted in conditions now proposed by the applicant.

116. I asked several questions of the applicant regarding the mobile refuelling strategy and spill management. These questions were addressed in written response from Mr Allison and in his verbal responses provided at the reconvened online hearing.

117. It is now proposed that, with the exception of the long-reach excavator, all refuelling and maintenance of vehicles will occur in the designated workshop area, with fuels and lubricants stored in a bunded facility. Mr Allison explained that it would be impractical to refuel the long reach excavator at the workshop, given the distance of travel and the need to detach the boom. He stated that approximately 700L/day of fuel would be required for the excavator and described proposed measures to minimise spill risk.

118. Long-reach excavator refuelling would occur at 10m from any surface water (including exposed groundwater), would utilise a dry break nozzle (with shut-off valve and sensor) and drip tray, and spill kits would be carried by the mobile refuelling vehicle. I accept that the measures now proposed are now sufficient to ensure that the risk of a significant hydrocarbon contamination event is very low. The proposed quarterly groundwater monitoring programme includes testing for total petroleum hydrocarbons. I determine that such quarterly monitoring should continue for the duration of consent.

119. I am satisfied that, based on the consent conditions I intend to impose, any adverse effects of fuel or oil spills are likely to be minor.

*Effects of Contaminants from Rehabilitation Works, Including Cleanfill Deposition*

120. The deposition of cleanfill material as part of quarry rehabilitation does not form part of the proposal because the applicant's position is that cleanfill can be deposited as a permitted activity. Based on the evidence and responses to my questions of Mr Whyte and Mr Curran I am satisfied that consents are not currently required for the deposition of cleanfill above groundwater. Nevertheless, I consider that appropriate conditions should be included for rehabilitation and fill activities to ensure that the risk of contaminants entering groundwater is low. I posed several questions to the applicant's witnesses on this matter at the reconvened online hearing and further detail was provided.
121. Ms Irving for AES noted that cleanfill deposition is of concern because of potential for contamination of the drinking water supply from bore G41/0111. She suggested changes to proposed conditions addressing this issue that have been adopted by the applicant. I questioned Dr Freeman regarding potential effects if groundwater rose above the level of cleanfill deposition, particularly if contaminants were inadvertently contained within the fill material. He agreed that this does pose risks to groundwater and proposed that a survey of maximum groundwater levels across the site be undertaken, with cleanfill deposition only to occur above that level.
122. The conditions now proposed include the following controls in respect of cleanfill management:
- Recording the location and origin of any deposited cleanfill;
  - Placing cleanfill above the highest surveyed groundwater level across the site;
  - Installing a sign at the site office stating that groundwater is vulnerable to contamination and that material may not be deposited without written permission;
  - Locking gates to prevent access to the quarry outside operating hours.
123. I consider that the comprehensive groundwater monitoring regime proposed, including provision of alternative water supplies if necessary, is appropriate to address any effects associated with deposition of contaminated material. That conclusion is based on quarterly monitoring that I determine to be appropriate for the duration of consent, including the period of rehabilitation works.

124. I determine that the purpose of the bond should be extended to specifically include the removal of any contaminated material and provision of alternative water supplies, if necessary. For this reason, I find that the sum of the bond required under condition 62 of the CODC land use consent should be increased to a minimum of \$250,000. Dr Freeman conceded that remediation or mitigation works to address any detected groundwater contamination could take a substantial period of time. I consider that the bond amount should cover the provision of alternative water supply for a period of at least three months. Review of the bond amount is required by proposed conditions 63 and may ultimately require a greater quantum than \$250,000 to address the purposes detailed in condition 62.
125. The applicant proposes that backfilling into exposed groundwater for rehabilitation of the existing quarry site will only occur with virgin excavated natural material from within the site. Bearing in mind the groundwater monitoring regime proposed, I am satisfied that proposed conditions are now sufficient to prevent any significant adverse effects associated with fill deposition and rehabilitation works.

### **Noise Effects**

126. The effects of noise from the proposed quarry activities were assessed by Mr Exeter for the applicant and reviewed by Dr Trevathan for CODC and Mr Humpheson for a group of submitters. Mr Trevathan's review of Mr Exeter's assessment concluded that the modelled noise levels are expected to be conservative, with worst case predictions at receptors being within 2dB of the proposed limits. He noted that the primary noise effect would occur at the Clark property.
127. Compliance with the CODP noise limits is predicted. The experts were agreed on the appropriate noise limits to be specified in conditions, including for construction noise.
128. Dr Trevathan stated that the Clarks currently observe "low levels of quarry noise" and that a significant change to this is not predicted. Mr Exeter stated that the predicted increase of less than 2dB is not expected to be a noticeable change.
129. The noise experts agreed that the principal source is the processing equipment in the existing quarry. The location of that equipment is not proposed to change. Dr Trevathan stated that the noise experienced from crushing and screening would be 5-10dB higher than

excavation noise. Within the expansion land the primary noise sources would be excavators and the conveyor working below ground level in the quarry pit.

130. Mr Humperson's initial review of the assessment concluded that he had limited confidence in the noise predictions given gaps in information and uncertainties associated with the modelling. However, the three experts subsequently engaged in caucusing and produced a JWS indicating that they are now largely agreed regarding the assessed effects of noise. The only outstanding area of disagreement between the experts concerned the frequency of noise monitoring to be undertaken within the quarry expansion block.
131. Dr Trevathan considered that monitoring on two occasions would be sufficient, whereas Mr Humpheson argued that noise monitoring should be undertaken on three separate occasions. I accept the advice of Dr Trevathan that monitoring on two occasions, as detailed in condition 37 of the CODC land use consent, will provide sufficient assurance that the proposed noise limits will be met. He noted that the effects of noise in this case are predictable based on the proposed use of similar equipment.
132. Condition 37 requires that the second round of noise monitoring be undertaken when works move to 200m from the Clark dwelling. Condition 38 requires that a report be prepared by a SQEP assessing compliance with the noise limits when works move closer to the Clark dwelling and any future dwelling on the AOL building platform. I am satisfied on the evidence that the proposed monitoring requirements are sufficient and that adverse effects of noise will be minor.

#### **Effects on Utilisation of Productive Soils**

133. Several submitters expressed concern regarding the loss of productive soils that could be used to grow cherries or other crops. Those submitters included Ms Clark and Ms Davis who considered that potential frost bowl effects caused by bunding on the expansion land could affect future use of their land for growing cherries.
134. It is clear that the proposal to extract aggregate to a depth of 10m below groundwater level will restrict long term uses of the site, particularly for the expansion block where it is proposed that a lake will remain after rehabilitation. It is proposed that the existing quarry area will be rehabilitated and covered with soil from the bunds. That land could be used for

livestock grazing and other rural uses, but the evidence is that it would have limited horticultural value.

135. I accept the evidence of Mr Weaver that the expansion block is productive land that is well suited to growing cherries or viticulture. The local soils are classified as having relatively low fertility, but they are clearly suitable for such horticultural uses. Mr Weaver considered that the rehabilitated quarry depression would be too frost prone for growing cherries. He also considered that the proposed bunds around the expansion block will adversely affect frost flow and drainage at upgradient properties, particularly in relation to the Clark property to the west of the site.
136. Mr Weaver's concerns that the bunding would create a "frost bowl" affecting neighbouring land was disputed by Mr Cudmore. His evidence was that there is a gap in the proposed bunding created by the right of way that would allow drainage flow to occur. Mr Cudmore has considerable experience in assessing such drainage flows for air quality assessments and I accept his evidence in this regard.
137. Ms Clark stated her intention to develop a cherry orchard on her land in the future. She confirmed that no works have been commenced in relation to this development. I accept Ms Thomas's submission that the potential presence of cherries on the Clark land should therefore not be included in my assessment of the future receiving environment. Nevertheless, based on the evidence of Mr Cudmore I find that quarrying of the expansion land would not prevent such horticultural development on neighbouring properties.
138. Mr Colgrave addressed the loss of productive soils in terms of economic effects. He noted that the loss of soils is typically balanced against the needs of mineral extraction and processing activities to locate where the resource exists. There are economic efficiencies derived from expanding the quarry adjacent to the existing facilities and processing equipment.
139. In terms of his policy assessment, Mr Curran stated that "primary production" includes quarrying as a use of land that should be provided for in the rural area alongside the use of productive soils. He considered that the loss of soils, particularly in relation to the pond area remaining after rehabilitation, is acceptable given the benefits of extracting aggregate from this land. As discussed later in my evaluation of relevant policies, I accept his planning

evidence in this regard and conclude that the broad policy framework anticipates this type of activity in the rural environment.

### **Transport Effects**

140. The applicant provided an assessment of transport effects supported by a technical report prepared by Abley Ltd. Mr Fernando provided evidence in relation to that assessment. Due to the proposed increase in annual aggregate production, there will be a corresponding increase in the number of heavy vehicle movements to and from the site. Mr Fernando stated that the proposal would generate up to 56 additional vehicle trips per day, with up to 24 trips occurring during the peak hour. Total vehicle trips for the expanded quarry are predicted to be up to 182 per day and up to 80 during the peak hour.
141. It is proposed that the existing quarry access will continue to serve Amisfield Quarry, including the proposed expansion area. The quarry is the sole user of this access, so the effects to be considered relate to Luggate-Cromwell Road (**SH6**).
142. The transport assessment provided by the applicant concluded that it was necessary to install a right turn bay on SH6 to accommodate the anticipated increase in heavy vehicle movements to the site.
143. Waka Kotahi NZ Transport Agency lodged a submission to the application at a time when the size, design, and location of the sign had yet to be determined. Waka Kotahi sought conditions relating to design and construction of the right turn bay from SH6 to the access in accordance with their standards and a construction management plan. Those matters have been included in the conditions now proposed by the applicant. Because the proposed access meets the design requirements of Waka Kotahi, this meets the standards in the District Plan.
144. The transport assessment also considers sight distance and other matters in the District Plan and concludes that the proposal will comply with those standards. Mr Fernando considered that no road safety or transport efficiency effects are anticipated. I accept his evidence and find that any adverse transport effects will be less than minor.

## Positive Effects

145. The extracted aggregate materials will be used for concrete, road construction and other development. I agree with Mr Whyte's comment that this is an important resource for local communities and their development. He noted that Amisfield Quarry is not the sole quarry operating in the local area (the large Parkburn Quarry is only a few kilometres distant) as a source of potential aggregate materials, but competition between suppliers is also likely to keep costs lower. There are positive effects associated with being able to source material close to where it is needed to reduce transport costs, the volume of movements and their associated emissions.
146. Mr Sutton stated that aggregate suitable for concrete production is only found in the Pisa area in the context of the Upper Clutha Valley. He noted that the cost of transporting doubles every 30km, highlighting the importance of finding local sources of material.
147. The quarry is a source of local employment, resulting in positive economic effects for the local economy. Economic effects have been traversed by Mr Colgrave and these are evaluated below. The expanded quarry would generate demand for local services and products to operate and maintain plant and machinery, and employment for transport services to move products to customers. The applicant further notes that there will be upgrading of SH6 for the right turning lane as a construction project with positive effects for employment and to the local economy.
148. I accept that granting consent to discharge from the expanded quarry operation would provide for economic wellbeing and that the proposal is consistent with the efficient use of resources. I have taken these positive effects into account in evaluating the proposal under section 104(1) of the Act.

## Economic Effects

149. The application included an Economic Assessment for Amisfield Quarry Expansion prepared by Insight Economics. The key findings of the assessment are that the proposed expansion will have a number of positive economic effects, while failure to obtain approval will have adverse economic effects. Those findings were based on the following conclusions:

- Incomes for quarry workers and for those businesses supplying products and services would continue if resource consent is granted, but would be eventually lost if the applications for resource consent are declined.
- Products of the quarry are a critical input to construction activity, and that industry accounts for 16% of businesses in 2020 and 11% of employment across the Otago economy.
- There will be positive benefits of competitive prices to customers of the quarry products and concrete since it offers the continuation of choice in the local market, and alternative locations would likely involve greater transport costs.
- Economic efficiency follows from allowing an existing activity to expand.
- Forgoing alternative uses of the expansion area are a private decision of the owner of the land without a material impact on others or the wider community.

150. In evidence Mr Colgrave emphasised the economies of scale that would derive from the expanded quarry being able to utilise the existing infrastructure. He stated that the most significant economic effects of the proposal are related to its supply of aggregates (particularly concrete aggregates) in Inland Otago. He considered that the scale of this site belies its importance in terms of its role in supplying concrete aggregates, and the contribution that it makes (and can continue to make) to Inland Otago and its economy if consents are granted.

151. Mr Whyte expressed some reservations regarding the economic assessment submitted with the application. He noted that the economic assessment does not provide a “whole of life comparison” of the proposed use of the site, as compared to an alternative productive rural use of the land which would not have the same finite lifespan. Neither does the economic assessment provide a comparison of the contribution to employment and the local economy that those alternative uses of the land may have. He also pointed out that the assessment assumes that expanded quarrying activities will not have a detrimental economic effect through lost production, additional cleaning costs, or equipment failure for neighbouring land uses as has been described in some of the submissions.

152. Ms Hill adopted some of Mr Whyte’s concerns in this regard. The evidence for the Clarks, AOL and HLFT addressed the horticultural value of the expansion land and the income which could be generated from use of that land for growing cherries. I agree with the submissions of Ms Thomas that this is not a relevant consideration and consent authorities do not need to determine the relative efficiency of the use of resources, compared with other possible

uses of those resources<sup>2</sup> . I consider that the loss of land for horticultural purposes is properly evaluated in terms of the policy framework relating to productive land.

153. Ms Thomas further submitted, at paragraph 75 of her reply in closing, that criticism of Mr Colegrave’s failure to quantify any adverse economic effects on existing orchard operations and any effects on property values is not warranted. I accept her submissions on this matter and note that such an assessment of negative economic impacts would be regarded as “double counting” in terms of the requirements of the RMA. Mr Colgrave confirmed at the hearing that it would not be appropriate for him to attempt to quantify in dollar terms any adverse effects assessed by the technical experts or adverse effects on property values.

154. I accept the evidence of Mr Colgrave and find that there are positive economic effects associated with the proposed quarry expansion.

### **Ecological Effects**

155. An ecological assessment, prepared by Landpro Senior Ecologist Cees Bevers, was provided in support of the application. The applicant’s ecological assessment concludes that the site itself has negligible ecological value and, providing appropriate mitigation is adopted to manage noise and dust, the ecological values associated with the adjacent Mahaka Katia Scientific Reserve will be appropriately protected to ensure effects on natural ecosystems and habitats within the reserve are minimal.

156. The applicant has agreed conditions with the Department of Conservation (**DOC**), who lodged a submission. Those conditions include the construction of bunds, control of weed species, implementing a pest management plan, and restrictions on the timing of works between 1 September and 1 January each year (bird nesting season). DOC subsequently withdrew their right to be heard, indicating that they are satisfied that potential adverse effects on the ecological and conservation values of the reserve have been appropriately addressed.

157. Mr Bevers provided evidence at the hearing. He noted that banded dotterels have been observed on the quarry expansion land, but visits were likely limited to occasional foraging. He stated that the reserve is a breeding site for dotterels and oyster catchers. They would

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<sup>2</sup> Meridian Energy Ltd v Central Otago District Council [2011] 1 NZLR 482 at [12]

experience some noise disturbance from the proposed quarrying, but he considered that is not likely to be significant, particularly given the bunding proposed.

158. Mr Whyte accepted that the existing quarry site and the expansion area have been disturbed and altered in a way that is likely to have removed many of the native plant species that may have previously been present, and the ecological value of the site itself is likely to be low. He agreed with the applicant's ecological assessment that the effects of the proposed activity will be less than minor.

159. I accept Mr Bevers' evidence that wildlife disturbance and adverse ecological effects associated with the proposal will be less than minor.

### **Effects on Public Safety**

160. Mr Whyte assessed effects on public safety in the s42A report. He noted that the details of the proposed underpass beneath the existing ROW access used by neighbouring properties have been provided by the applicant, including noting that safety fencing would be installed along the right of way and underpass.

161. Submitters have raised concerns for public safety based on the proximity of deep excavations adjoining the ROW access and neighbouring properties, and the long-term public safety effects following rehabilitation which is likely to involve a lake within the expansion land. Mr Whyte concluded that, with perimeter bunds and safety fencing, the potential adverse effects relating to public safety during the operation of the quarry can be avoided. There will be steep sides to the quarry during this time. He noted that following rehabilitation the applicant is proposing batter slopes of between 1:3 and 1:5, thereby allowing persons in the water to exit the lakes.

162. I agree with Mr Whyte and I am satisfied from the information presented by the applicant that there will be minimal adverse effects for public safety during the operation of the quarry and once it is rehabilitated.

## Lighting Effects

163. The application states that the quarry will operate in low light conditions during the winter and artificial lighting will continue to be required to allow the quarry to operate. Potential light sources include: dormant lighting to be used when the site is unoccupied, such as security lights; headlights on vehicles operating within and visiting the quarry; and lighting towers used to facilitate operations under low visibility conditions.
164. The applicant proposes that the operating hours of the quarry be limited to between 0700 hours to 1900 hours Monday to Saturday. Their assessment is that, providing lighting towers are oriented inward, the effects associated with light spill are expected to be negligible. The application further states that lights from vehicles moving to and from the site will generate some light spill effects, however this is not expected to be any greater than light spill from SH6 and will not impact residential dwellings.
165. Mr Whyte accepted that, due to the progressively deeper excavation of the quarry and the bunding, it is possible to contain most lighting effects within the site. He considered that potential adverse effects associated with light spill will be generally limited to the proposed operating hours and adhere to the District Plan's light spill standards. He noted that the applicant confirmed these standards will be met such that the potential adverse effects associated with lighting will be less than minor.
166. I accept Mr Whyte's assessment and find that any adverse effects of lighting will be minor.

## Effects on Cultural Values

167. Mr Whyte noted that the subject site is not affected by any known cultural, heritage or archaeological sites identified in the District Plan, Heritage NZ list or the New Zealand Archaeological Association (NZAA) site recording scheme. The site does, however, lie in close proximity to the shore of Te Wairere (Lake Dunstan), an area which is subject to statutory acknowledgement under Schedule 61 of the Ngāi Tahu Claims Settlement Act 1998.
168. Given the nature of the proposal and the scope of ground and water disturbance involved, Mr Whyte noted that the proposal could have potential adverse effects on Maori cultural

values. The application stated that Aukaha were provided with a draft of the proposal on 15 September 2020, and that the applicant would continue to engage with them for feedback.

169. Aukaha are a submitter to the application and while their submission was neutral, they requested to be heard. Aukaha made specific mention of the Statutory Acknowledgement Areas of Mata-au (Clutha River), and Te Wairere (Lake Dunstan), and of Awa Katia (Amisfield Burn) and its tributaries. They sought conditions to address archaeological effects, protect ecological values, use locally sourced indigenous plants for screening, control stormwater to manage sedimentation and erosion effects, and preparation and implementation of a rehabilitation plan.
170. Mr Whyte concluded that, based on the information provided and the potential to further mitigate adverse effects on cultural values, adverse cultural effects of the proposed activity will be negligible or avoided.
171. I find that, taking into account the proposed conditions of consent, any adverse cultural effects would be negligible.

### **Heritage Effects**

172. Mr Whyte stated that as there are no known heritage sites identified in the District Plan or the Heritage New Zealand Pouhere Taonga List, it is not anticipated there will be heritage effects associated with the proposed activities and expansion of the quarry. He considered that there will be no adverse effects on heritage values associated with the proposed activity. I agree.

### **Effects of Natural Hazards**

173. The applicant stated that the application site is on flat land that is raised above the Amisfield Burn and is not located on or close to any known seismic fault lines. The expansion of the Amisfield Quarry is not predicted to give rise to any increase in risk of subsidence on neighbouring land since setbacks and internal benching is to be provided from neighbouring sites.

174. Mr Whyte concluded that the risk of the quarry being impacted by a natural hazard that results in environmental effects is unlikely, and that it is therefore considered that environmental effects associated with natural hazards are negligible. I accept his analysis.

### **Archaeological Effects**

175. Mr Whyte confirmed that there are no known archaeological sites affected by the proposal. The submission by Aukaha requesting processes to monitor works and implement an accidental discovery protocol which has been volunteered by the applicant. Based on the conditions proposed, I find that potential adverse archaeological effects will be negligible or avoided.

### **Effects of Hazardous Substances**

176. The applicant's assessment confirms that hazardous substances at the quarry will be managed in accordance with the Hazardous Substances and New Organisms Act 1996 (**HSNO**). For example, fuel storage cells will be bunded. Mr Whyte considered that the risk of hazardous substances spilling or leaking at the quarry is unlikely and the applicant has proposed appropriate procedures to respond to a spill or leak if one did occur.

177. I have evaluated the potential risks associated with fuel or oil spills at the site in some detail in relation to adverse effects on groundwater quality. Taking into account the conditions I intend to impose, including restrictions on refuelling and requirements for groundwater monitoring, I find that any adverse effects arising from the use of hazardous substances will be minor.

### **Construction Effects**

178. Mr Whyte details that construction effects of the proposed activity relate to establishing the sign, creating the underpass, internal access, and perimeter bunds, and to the addition of a right turning lane on SH6. The applicant has proposed that construction activities will only be between 0730 hours to 1800 hours Monday to Saturday and will comply with the construction noise limits of NZS 6803:1999.

179. The applicant has provided details of the construction of the proposed underpass using a cut and cover methodology before installing a box culvert. The excavation would be 6m deep, 8m wide and 24m long. A temporary diversion of the right of way would be constructed within the applicant's property (Lot 3 DP 301379) before reinstating the right of way along with the construction of the 3m high bunds along the right of way. The applicant anticipates that the duration of construction for the underpass would be approximately six weeks.
180. Mr Whyte stated that he is satisfied that the construction effects associated with establishing the sign and construction of the underpass, perimeter bunds and internal access can be managed effectively over a short timeframe by providing alternative access, security fencing, managing construction hours, and managing the construction noise. He considered that mitigation proposed in conditions of consent are such that effects will be less than minor. He further considered that access improvements on SH6 can be similarly managed to the extent that construction effects will be less than minor.
181. There would be further construction effects during the rehabilitation phase of the quarry, according to the rehabilitation plan provided by the applicant. Rehabilitation will involve the removal of buildings and machinery, removal of the underpass and bunds, construction of batter slopes, topsoiling, and grassing. Progressive rehabilitation is proposed in accordance with the staging plan submitted. I consider that conditions of consent will adequately control the scale of construction effects associated with rehabilitation, with the resulting effects being no more than minor.
182. I have separately evaluated construction effects related to noise, visual amenity and dust discharges earlier in this decision. Overall, I find that adverse effects associated with construction activities will be minor.

### **Cumulative Effects**

183. Mr Whyte notes that cumulative effects beyond the existing quarry operations will follow as a consequence of the proposed expansion with its greater rate of groundwater take, the increased rate of extraction and processing, as well as its expanded footprint.

184. I have taken into account potential cumulative effects when assessing each of the effects associated with the proposal. I have specifically had regard to cumulative dust effects arising from the expanded quarry area, background sources such as the Amisfield Burn riverbed and potential removal of stockpiled material in the encroachment area. I conclude that cumulative effects of the proposed activities, both collectively and in combination with other sources in the local area, will be no more than minor.

#### **Section 104(1)(b) National Environmental Standards**

185. The National Environmental Standards for Air Quality (**NESAQ**) include regulations applicable to the processing of resource consents. The expert evidence is that the limits in the NESAQ are unlikely to be breached. The quarry is not located within a gazetted airshed.

186. Mr Curran and Mr Whyte agree that the NESAQ does not apply to the proposed activities. I accept their advice and find that the NESAQ does not preclude granting of consent.

#### **Section 104(1)(b) Relevant objectives and policies**

187. Mr Curran and Mr Whyte assessed the applications against the relevant objectives and policies of the regional and district planning instruments.

188. Mr Curran identified the relevant planning documents as:

- (a) The Partially Operative Otago Regional Policy Statement;
- (b) The Proposed Otago Regional Policy Statement 2021;
- (c) The Regional Plan: Air for Otago;
- (d) The Regional Plan: Water for Otago;
- (e) Proposed Plan Change 7;
- (f) The Central Otago District Plan; and
- (g) The Iwi Management Plan.

189. Mr Whyte's initial assessment found that the proposal to quarry the expansion land would result in several effects that could be more than minor and would not be consistent with the objectives and policies of the planning documents. At the end of the hearing in Cromwell, Mr Whyte stated that the reason for his recommendation in the s42A report (that consents be granted in relation to the deepening of the existing quarry only) was that he

considered that there were some uncertainties in relation to some assessment matters relating to the expansion land. He then discussed those uncertainties and confirmed that they had been addressed based on the evidence presented at the hearing.

190. However, Mr Whyte did not formally change his recommendation at the hearing. In closing legal submissions (at paragraph 83), Ms Thomas considered Mr Whyte's stance to be surprising given:

*“(a) Dr Trevathan’s evidence that noise effects are acceptable;*

*(b) Mr Van Kekem’s evidence that the proposal can be undertaken without resulting in off-site adverse air quality effects if his recommendations are adopted; and*

*(c) Ms Ryan’s evidence that effects on human health and nuisance amenity effects can be managed to an acceptable level.”*

191. Based on my evaluation of the evidence, as detailed in this decision, I conclude that uncertainties in the assessment of effects have been adequately addressed and that adverse effects of the expansion proposal will be minor. I therefore consider that the majority of the inconsistencies with policies identified by Mr Whyte in his s42A report have been addressed. The key remaining matter in dispute between the planning experts is the interpretation of objectives and policies relating to the use of productive soils.

192. Ms Hill argued that alternative uses of the expansion land can be considered in the context of the policies in the Partially Operative RPS and the Proposed RPS in relation to significant soils and highly productive land. She submitted that these policy statements direct that preference be given to horticultural use of the expansion land over mineral extraction. Ms Thomas noted that Mr Whyte appeared to agree with Ms Hill, stating at the hearing that the Proposed RPS refers to “maintaining” the availability of highly productive land including by prioritising the use of highly productive land for “primary production” ahead of other land uses.

193. Mr Curran's evidence in reply responded to this matter in some detail. He concluded that:
- (a) the soils within the expansion land (and the Clark land) are not considered to be significant or highly productive for horticultural purposes by either of the Regional Policy Statements;
  - (b) the interpretation advanced by Ms Hill (which discounts the operative policies in the Partially Operative RPS in relation to mineral extraction and processing) is not correct; and

(c) that what Ms Hill and Mr Whyte have overlooked is that the Proposed RPS considers mineral extraction and processing to be primary production. The excavation of the expansion land is a productive use of that land based on the evidence of Mr Sutton and Mr Colgrave.

194. In short, Mr Curran considered that Mr Whyte and Ms Hill failed to recognise the extent to which mineral extraction is provided for in the Partially Operative RPS. Of note, Policy 5.4.8 of the Partially Operative RPS directs proposals for mineral extraction to give preference to avoiding certain areas or types of land. Mr Curran pointed out that significant soils are not included in that list.
195. I have considered the policies in relation to use of productive soils. I prefer the evidence of Mr Curran on this matter. I note that Mr Whyte did not consider the policies in both the partially Operative Regional Policy Statement and the Proposed Regional Policy statement in relation to mineral extraction and processing in reaching his conclusions on this issue. I accept Mr Curran’s planning evidence that “primary production” includes quarrying as a use of land that should be provided for in the rural area alongside the use of productive soils. I find that the broad policy framework anticipates this type of activity in the rural environment.
196. Overall, and subject to the conditions of consent I intend to impose, I consider that the proposal is generally consistent with the relevant objectives and policies of the planning instruments.
197. Mr Curran also assessed the proposal against the The National Policy Statement for Freshwater Management 2020 and the Resource Management (National Environmental Standard for Sources of Human Drinking Water) Regulations 2007. I consider that appropriate conditions are proposed to protect the drinking water supply from the AES bore G41/0111. I agree with Mr Curran that the proposal is consistent with the requirements of these documents.

## **Section 105**

198. I record that I have had regard to the nature of the discharge and sensitivity of the receiving environment, the applicant’s reasons for the proposed choice, and possible alternative

methods of discharge in reaching my decision. I accept the evidence of Mr Cudmore that the proposed dust control and monitoring methods are consistent with the current best practice for aggregate quarries in New Zealand. I consider that the quarry is appropriately located in a rural zone and accept that there are sound reasons, including efficiency and the investment in existing infrastructure, for choosing to expand the existing quarry. I am satisfied that, subject to the conditions imposed, the methods of discharge and treatment are appropriate in this case.

### **Section 107**

199. The proposed discharge of wash water into a settlement pond is an appropriate mechanism for filtering sediment as a contaminant prior to recharging the aquifer through soakage. I accept the evidence of Dr Freeman that the sediment discharge is not likely to give rise to the effects described in restrictions on discharge permits in s107, including in relation to turbidity. Conditions are proposed that require further mitigation in the event that any such effects are detected by the comprehensive groundwater monitoring programme.

### **Consideration of Alternatives**

200. Ms Thomas noted that Clause 1(b) of Schedule 4 to the Act requires an assessment of the effects on the environment to include a description of any possible “alternative locations or methods” for undertaking an activity where the activity would result in any significant adverse effect on the environment. She submitted that unless this clause applies, every proposal must be assessed on its own merits without regard to whether there might or might not be a better alternative or site.
201. For discharge permits, Schedule 4 requires a description of any possible alternative methods of discharge, including discharge into any other receiving environment. Section 105 also requires that for discharge permits I have regard to the applicant’s reasons for the proposed choice and any possible alternative methods of discharge, including discharge to any other receiving environment.
202. Based on the evidence of Mr Sutton, I accept that the applicant has sound reasons to expand and deepen the existing Amisfield Quarry. Access to the aggregate resource suitable for

concrete production is limited and there are efficiencies associated with utilising the existing quarry infrastructure. In respect of the settling pond discharge and the discharge of dust from quarrying, I am satisfied that the proposed methods of discharge are appropriate and no further analysis of alternatives is required.

203. My evaluation of the evidence finds that no part of the proposal, either on its own or in combination with other aspects, is likely to cause significant effects for the purposes of Schedule 4.

## **Part 2 of the Act**

204. I agree with Mr Whyte that there is no specific reason to revert back to consideration of Part 2 matters in this case, as relevant considerations are encapsulated in the competently prepared regional planning documents. However, for completeness, I have considered the proposal against Part 2 of the Act.

205. Mr Curran summarised the key matters of relevance to Part 2 as:
- (a) The extent to which the quarry will contribute to and assist the social and economic wellbeing of the Cromwell area and Inland Otago;
  - (b) There are no section 6 (national importance) matters of relevance to this proposal;
  - (c) With respect to s7(b), the project will enable the efficient use and development of the aggregate resource contained at the site, and is well situated to make efficient use of existing road network infrastructure;
  - (d) With respect to s7(c), amenity values will be maintained in accordance with the expectations set out within the District Plan;
  - (e) With respect to s7(f), the quality of the environment will be maintained in accordance with the expectations of the various planning documents; and
  - (f) There do not appear to be any particular issues in respect of the various tangata whenua aspects of Part 2, including s6(e), 7(a), 7(aa) and 8.

206. I agree with Mr Curran's summary of key matters. In accordance with Part 2, I consider that granting the application is likely to achieve the purpose of the Act and the principles of the sustainable management of natural and physical resources, as defined in section 5. I accept that operation of the expanded quarry will contribute to economic and cultural wellbeing and be an efficient use of resources. Considering the mitigation measures now proposed

and required by conditions, I find that the proposal would safeguard the life supporting capacity of air and water, and provide for the health and safety of communities.

### **Consent Conditions**

207. The proposed consent conditions have been developed with several iterations. Many of the suggested amendments from the s42A officers and submitters have been adopted by the applicant in the final set of proposed conditions. Matters traversed in the brief reconvened online hearing have also been addressed in the applicant's final version of conditions.

208. Overall, there is a good degree of agreement regarding the conditions of consent now proposed. I consider that the applicant's proposed consent conditions are now generally appropriate and I have discussed the key amendments that I intend to impose during the evaluation of effects earlier in this decision.

209. The key requirements I intend to impose in conditions that address concerns raised by submitters and the Council reporting officers are summarised as follows:

- The Clark dwelling, a potential future AOL dwelling, storage buildings on the Clark property and sensitive crops (cherry orchards) are specified as sensitive receptors in relation to dust effects and appropriate setbacks from quarrying are applied;
- A conveyor is required in the expansion block to transport aggregate back to the processing plant, with no haul trucks permitted in this area;
- Real time PM<sub>10</sub> monitoring with a 150µg/m<sup>3</sup> protective trigger concentration is required in the vicinity of sensitive receptors;
- A confirmation process for the siting of the PM<sub>10</sub> monitors is included;
- Aggregate processing must occur at the existing site, well removed from sensitive receptors;
- The area of active quarrying is limited to 2ha and open areas and haul roads are to be covered with clean gravels;
- Setting a speed restriction on all internal haul and access roads of 20 km/hr, in line with good practice for quarries in New Zealand;
- Certification by Council of a DMP and QMP is required before quarrying can proceed, recognising that operation according to these plans is critical to effective mitigation of effects;

- Bund conditions require a shallow (1:5 – 1:6), irregular outer slope along the boundary with the Clark property, with establishment and maintenance of native planting;
- A comprehensive groundwater monitoring programme is required, with quarterly monitoring in all bores for key contaminants and monthly monitoring in three piezometers for turbidity and iron;
- That groundwater monitoring is to continue for the duration of consent;
- Monitoring conditions refer to “target bores” rather than downgradient bores to take into account uncertainty regarding the direction of any contaminant movement;
- Mitigation measures and provision of alternative water supplies must be undertaken if monitoring indicates that contamination of any sensitive receptor (including the AES and Irrigation and Maintenance bores) is likely;
- The bond amount is increased to at least \$250,000 with review by a SQEP, to cover alternative water supply and remediation costs;
- A more prescriptive bond condition has been included, as recommended by Ms Hill;
- Excluding the long-reach excavator, refuelling of vehicles is restricted to the existing workshop area;
- Mobile refuelling of the excavator must occur at least 10m from surface water and include a dry break nozzle and drip tray, with spill kits carried in the refuelling vehicle;
- Recording of the origin and location of any cleanfill deposited at the site is required;
- Any cleanfill must be deposited above the highest surveyed groundwater level across the site;
- Noise monitoring is required on two separate occasions to confirm compliance with noise limits at the Clark dwelling and any future AOL dwelling;
- The traffic conditions include the recommendations of Waka Kotahi;
- Annual Community Liaison Group meetings are required to provide explanation of the results of monitoring undertaken during the preceding 12 months, and to respond to any feedback from attendees regarding effects of consented activities;
- The condition allowing annual review has been amended in line with suggestions by Ms Hill for HLFT, recognising that review addressing any unforeseen adverse effect should not be limited to the degree of effect.

### **Duration of Consents**

210. Mr Whyte noted that the applicant holds existing resource consents that allow for a groundwater take to use water, and discharge contaminants in a settlement pond for a

period of approximately 14.5 years (21 July 2036 expiry). The current application seeks new resource consents at a higher rate of take and discharge, and an additional resource consent (discharge to air) for a term of 25 years. The application for a bore is sought for an unlimited term since the bore would remain once constructed (this being a large area of exposed groundwater rather than a narrow diameter hole).

211. In the s42A report Mr Whyte considered that, if consent is granted, a duration of approximately 15 years is more appropriate for all resource consents as a consequence of the policy context. He noted the uncertainty regarding impacts on groundwater quality as a factor taken into account in his recommendation. He stated that an unlimited term for the consent to construct a bore and the CODC land use consent would be appropriate.
212. Mr Curran stated that the applicant maintains that a 25 year consent term is appropriate to adopt for the discharge of contaminants to land and air. Although consent RM16.108.01 expires on 21 July 2036, the applicant is likely to replace their water permits under the new regional planning framework when it is adopted at which point they can be aligned with the 25 year term proposed for the discharge permit.
213. Mr Whyte maintained at the hearing that the term of the ORC resource consents should match the duration of water permit RM16.108.01 (expiry 21 July 2036) since all of these other applications are bundled together and dependent on one another for the mitigation of effects. Water is required to control dust and process quarry material. The maximum allowable term of RM20.360.01 is 6 years as an interim measure, required by policy guidance, which he considered is just one indication that the allocation of water is not to be assumed in Otago. Further changes to water allocation are imminent (a new Land and Water Regional Plan by December 2023) and he considered that it cannot be assumed that an additional water permit allocation could be obtained.
214. Ms Irving for AES agreed with Mr Whyte that a shorter term for the discharges, aligning to the water take permit, would be appropriate. She submitted that a term of approximately 14.25 years would ensure all changes to the Land and Water Plan framework (giving effect to the National Policy Statement for Freshwater Management) are reflected in consents.
215. I accept the submissions of Ms Irving and Mr Whyte in relation to the duration of consents, for the reasons they have stated. Application for new discharge permits in approximately

14 years will allow water availability to be taken into account in light of changes to the planning framework. It will also provide opportunity for the results of the required groundwater quality and dust monitoring programmes, and other information gathered in compliance with conditions, to be evaluated in an updated assessment of effects.

216. I determine that the land use consents should have an unlimited term, the discharge permits should expire on 21 July 2036, and the groundwater take should have a term of 6 years.

### **Decision**

217. For the above reasons, it is the decision of the Otago Regional Council and the Central Otago District Council, pursuant to sections 104, 104B, 105 and 107, and subject to Part 2 of the Resource Management Act 1991, to approve the applications by Cromwell Certified Concrete Limited for:

- **Land Use Consent RC200343** to operate an aggregate quarry for an unlimited term;
- **Discharge Permit RM20.360.02** to discharge contaminants to land for the purpose of gravel washing and dust suppression, for a term of 14.25 years (expiring 21 July 2036);
- **Land Use Consent RM20.360.04** to construct a bore for the purpose of excavating gravel below groundwater and to decommission the bore within Lot 8 DP 301379 following completion of excavations, for an unlimited term;
- **Water Permit RM20.360.01** to take and use groundwater for the purpose of gravel washing, irrigation, potable and sanitary use and dust suppression, for a term of 6 years;
- **Discharge Permit RM20.360.03** to discharge contaminants to air for the purpose of operating an alluvial quarry, for a term of 14.25 years (expiring 21 July 2036).

**subject to the conditions attached.**

Dated this 5<sup>th</sup> day of May 2022.

A handwritten signature in black ink, appearing to read "John Iseli". The signature is written in a cursive style with a large initial 'J' and 'I'.

**John Iseli**  
**Hearing Commissioner**

## RM20.360.02: Discharge Permit

### DISCHARGE PERMIT

**Pursuant to Section 104B of the Resource Management Act 1991, the Otago Regional Council grants consent to:**

**Name:** Cromwell Certified Concrete Limited

**Address:** 810 Great South Road, Penrose, Auckland 1061

**Activity:** To discharge contaminants to land for the purpose of gravel washing and dust suppression.

**Term:** 14.25 years (expiring 21 July 2036)

**Location of consent activity:** 1248 Luggate-Cromwell Road (State Highway 6)

**Legal description of consent location:** Lots 3, 5, and 8 DP 301379

#### **Conditions:**

1. This permit shall be exercised in general accordance with the plans and information provided with the application with the discharge of contaminants being sediment in the existing settlement pond in the north-western corner of the site.
2. This permit shall not commence until discharge permit RM16.108.02 has been surrendered or expired.
3. This consent shall be exercised in conjunction with water permits RM16.108.01 and RM20.360.01 (or any permits granted which replace those permits) which authorise the abstraction of water from bores G41/0456 and G41/0127.
4. The volume of water discharged shall not exceed:
  - a. 3,024 cubic metres per day;
  - b. 93,744 cubic metres per month; and
  - c. 846,720 cubic metres per year.
5. No contaminants other than silt and sediment shall be discharged into the Pisa Groundwater Management Zone.

*Advice note: for the purpose of this consent, silt and sediment is the natural fine material that results from the crushing and washing aggregate.*

6. The discharge treatment system shall be located at approximate map reference NZTM (NZDG2000) E1305493 N5017426 and shall include a primary settlement pond with minimum dimensions of 40 m long, 5 m wide and 1 m depth with an overflow to a larger infiltration/settlement pond. These ponds shall be maintained by the Consent Holder in effective operating condition at all times, including at least:
  - a. Three monthly inspections; and
  - b. Pond desludging at least 6 monthly or more frequently if required.
7. The Consent Holder shall ensure that there is no direct discharge from the ponds to any surface watercourse.
8. Within three months of this consent being exercised, a water quality monitoring network shall be established for the quarry which shall include:

- a. three new groundwater monitoring locations (MW1, MW2 and MW3 within 25 m of the marked locations illustrated in Appendix 1 to this consent) with the following specifications:
  - (i) A well with a 2 m screen across the water table at each site.
  - (ii) A second piezometer nested with the water table well screened at 8 to 10 m below the water table at MW2 and MW3. The nested piezometers shall be installed to provide for separation, via grouting, of the screened intervals of the two piezometers to enable depth specific groundwater quality monitoring.
- b. the settling pond and the exposed area of groundwater (to assess discharge water quality).
- c. Target monitoring bores (G41/0321, G41/0220, G41/0111), and
- d. G41/0319 to represent an upgradient (control) bore.

*Advice note: All monitoring locations should be surveyed and the final locations confirmed in conjunction with the Consent Authority. If upon inspection it is apparent that the headworks of an existing bore do not allow sampling, it will not form part of the water quality monitoring network.*

9. The bore drilling and installation of the piezometers required by Condition 8 shall be overseen by a suitably qualified person. A report that demonstrates compliance with the requirements of Condition 8 shall be submitted to the Consent Authority within one month of the installation of the bore.
10. The consent holder shall take quarterly representative water samples from the water quality monitoring network established in Condition 8 commencing within three months of this consent being exercised. Quarterly monitoring shall continue for the duration of this consent. During each monitoring event:
  - a. Water levels shall be measured and recorded at the time of sampling.
  - b. Field parameters (temperature, pH, Dissolved Oxygen, Electrical Conductivity and Oxidation Reduction Potential) should be measured and recorded at the time of sampling using a calibrated water quality meter in a flow cell. Samples should be collected after field parameters have stabilised to within 5% of the previous three measurements. Field filtering of samples shall be completed for dissolved metals analysis.
  - c. Samples should be analysed by a laboratory with IANZ accreditation or equivalent for Total petroleum hydrocarbons, total suspended solids, turbidity, major ions (sodium, potassium, calcium, magnesium, alkalinity, chloride, sulphate, nitrate), copper, chromium, zinc, Arsenic and E-coli, iron and manganese. Samples should be analysed for both total and dissolved metals.
  - d. The sampling shall be undertaken by a suitably qualified person in general accordance with the National Environmental Monitoring Standards Water Quality Part 1 of 4: Discrete Sampling, Measuring, Processing and Archiving of Discrete Groundwater Quality Data.

If permission to sample any of the private bores is not granted, the remaining water quality network shall still be sampled.

11. In addition to water quality sampling described in Condition 10, within three months of consent being exercised the Consent Holder shall take monthly water samples from Bores M1, M2 and M3. Monthly monitoring shall continue for the duration of this consent. Those samples shall be analysed in accordance with Condition 10. a., c., and d., for turbidity and iron.

12. Prior to consent being exercised the consent holder shall take representative water samples from the target monitoring bores, the settling pond and G41/0319 in accordance with Condition 10 a. – 10 d.

If permission to take baseline samples from any of the private bores is not granted, the remaining water quality network shall still be sampled.

13. The Consent Holder shall submit an Annual Groundwater Report before the end of February to the Consent Authority ([customerservices@orc.govt.nz](mailto:customerservices@orc.govt.nz)) and owners of sampled bores. The report shall:
- a. Be undertaken by a suitably qualified and experienced water quality expert who has reviewed all the available water quality and level data.
  - b. Include a conceptual groundwater for the site based on the collected data.
  - c. Include an assessment of whether the data indicates activities on the Consent Holder's site are adversely impacting groundwater quality, and in particular, sensitive receptors.
  - d. State the identity, expertise and sampling methodology of the person(s) who collected water samples in accordance with this resource consent;
  - e. Identify any measures required under Condition 14 or 15;
  - f. Copies of the complaints record for any complaints in relation to groundwater quality for the preceding 12 months.
14. Should the measured value of any of the determinants in a sample from monitoring bores measured in accordance with Condition 10 and 11 exceed a NZ Drinking Water Standard Maximum Acceptable Value or Guideline (Aesthetic) Value (as specified in the relevant New Zealand Drinking Water Standards at the time of sampling), except for turbidity for which the NZDWS (2005, revised 2018) aesthetic guideline of 2.5 NTU is replaced by a guideline of 4.0 NTU, then the Consent Holder shall:
- a. Advise the Consent Authority ([customerservices@orc.govt.nz](mailto:customerservices@orc.govt.nz)) and bore owners within 48 hours of receipt of the results;
  - b. Within one week from the receipt of the results, begin an investigation into the cause of the elevated sample results. The investigation is to be carried out by a suitably qualified water quality expert and is to include, but is not limited to;
    - (i) results of water quality sampling;
    - (ii) activities at Amisfield Quarry,
    - (iii) activities at the neighbouring property,
    - (iv) rainfall in the past 48 hours, and
    - (v) and any additional water quality monitoring that may be required to assess the potential cause of contamination.
  - c. Within one month of receipt of the elevated sample results, submit a report signed by a suitably qualified water quality expert to the Consent Authority and the bore owner on the investigation undertaken, any potential sources of contamination identified, the likely cause(s) of the contamination and recommend any remedial measures to prevent or mitigate the contamination.
  - d. In the event that the report concludes that it is likely that the contamination was caused by the consent holder; and
    - (i) the contamination was in potable drinking water supply, the Consent Holder shall, within 48 hours of receipt of the report, provide the bore owner with an alternative supply of potable drinking water sufficient to provide 2,000 litres per day to each household provided by the supply until such time as monitoring

demonstrates compliance with the relevant MAV or Guideline values. All costs associated with this shall be borne by the consent holder.

- (ii) the contamination was in a monitoring bore, sampling frequency at the closest target monitoring bore identified in Condition 8 (c) shall increase to 1 per week until the issue has been rectified.

*Advice Note:*

*1. The Guideline Values and Maximum Acceptable Values (MAV) are specified in the publication 'Drinking-water Standards for New Zealand 2005 (Revised 2018)', Ministry of Health or its replacement. The Guideline Values are the limits for aesthetic determinants that, if exceeded, may render the water unattractive to consumers. These standards are primarily aimed at water supply authorities who generally treat water to ensure that these standards are met.*

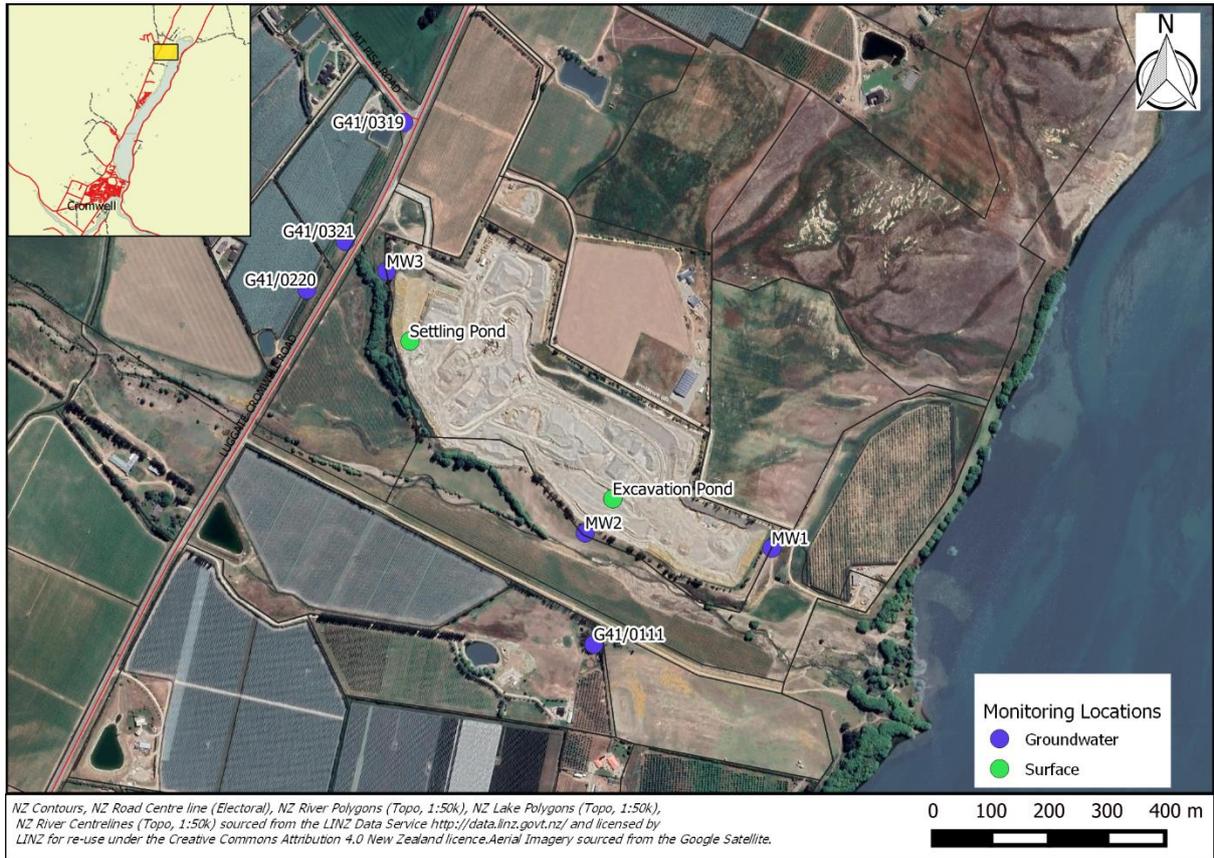
*2. Shallow groundwater in this area is vulnerable to increases in turbidity and other contaminants such as nitrate nitrogen, following heavy rainfall. It is likely that if groundwater quality monitoring is undertaken within days or weeks of heavy rainfall that there will be increases in these contaminants in groundwater.*

*3. The NZ Drinking Water Standards are currently (April 2022) being reviewed and new standards are expected to be implemented in July 2022. The draft new standards include a turbidity aesthetic value of 4.0 NTU which would replace the current guideline value of 2.5 NTU.*

- 15. If a report required under Condition 14 concludes that the discharge is causing a significant adverse water quality effect at a target monitoring bore, the Consent Holder shall within three months of receiving that report implement additional or alternative sediment treatment/management measures to reduce the concentration of suspended solids entering the infiltration/settling pond:
  - a. The Consent Holder shall report to the Consent Authority as soon as practicable on the completion of any such works; and
  - b. Within 12 months of completion of any additional sediment treatment/management measures, the Consent Holder shall provide a report to the Consent Authority written by a suitably qualified person on the effectiveness of those measures.
- 16. The Consent Holder shall ensure that the discharge authorised by this consent does not cause any flooding, erosion, scouring, land instability or damage to any adjacent property.
- 17. The Consent Authority may, in accordance with Sections 128 and 129 of the Resource Management Act 1991, serve notice on the Consent Holder of its intention to review the conditions of this consent within 3 months of each anniversary of the commencement of this consent for the purpose of:
  - a. Adjusting the consented rate of discharge under Condition 4, should the consented amounts or rates of water take approved under Water Permits RM16.108.01 and RM20.360.01 (or any replacement consents) be reduced; or
  - b. Adjusting the frequency and duration of the sampling of Bores M1, M2 and M3 or the target monitoring bores required by Condition 10 and 11 of this consent; or
  - c. Determining whether the conditions of this consent are adequate to deal with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage (including any adverse effects of the discharge to the ponds on groundwater quality in bore G41/0321, G41/0111 or G41/0220); or

- d. Ensuring the conditions of this consent are consistent with any National Environmental Standards.

# Appendix 1: Water Quality Monitoring Network



## **RM20.360.04: Bore Consent**

### **LAND USE CONSENT**

**Pursuant to Section 104A of the Resource Management Act 1991, the Otago Regional Council grants consent to:**

**Name:** Cromwell Certified Concrete Limited

**Address:** 810 Great South Road, Penrose, Auckland 1061

**Activity:** To construct a bore for the purpose of excavating gravel below groundwater and to decommission the bore within Lot 8 DP 301379 following completion of excavations.

**Term:** For an unlimited term

**Location of consent activity:** 1248 Luggate-Cromwell Road (State Highway 6)

**Legal description of consent location:** Lots 3 and 8 DP 301379

#### **Conditions:**

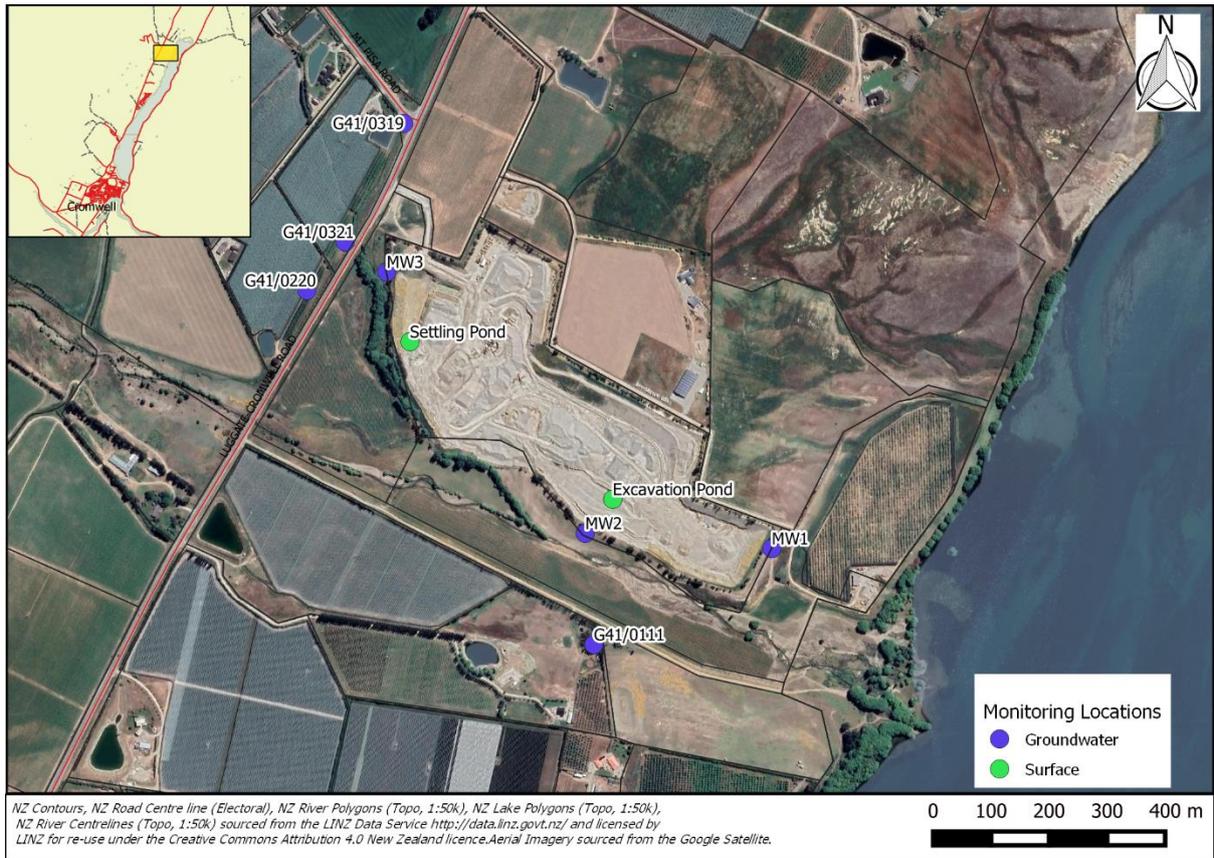
1. This permit shall be exercised in general accordance with the plans and information provided with the application.
2. If this consent is not given effect to within a period of five years from the date of commencement of this consent, this consent shall lapse under Section 125 of the Resource Management Act 1991. The consent shall attach to the land to which it relates.
3. The Consent Holder shall undertake water quality sampling and reporting as per the requirements of RM20.360.02: Discharge Permit, which are considered to provide an integrated water quality monitoring programme for the site (refer to Appendix 1 for the monitoring locations).
4. A Groundwater Management Plan (GMP) shall be submitted to the Otago Regional Council at least 1 month prior to the exercise of this consent for certification that it documents, as a minimum:
  - a. A plan showing the areas of groundwater extraction and the water quality monitoring network;
  - b. A description of the groundwater quality monitoring required by the conditions of this consent and RM20.360.02;
  - c. Names and contact details of staff responsible for implementing and reviewing the GMP in order to achieve the requirements of this consent;
  - d. A description of the proposed methods of excavating aggregate within groundwater;
  - e. A description of all relevant site operations and procedures, including mobile refuelling procedures and spill responses;
  - f. A description of all environmental effects, including (but not limited to) discharges to water;
  - g. All consent conditions and any other mitigation measures to be employed to minimise environmental effects and/or adhere to best practice;
  - h. The minimum maintenance frequency for all machinery operated by the Consent Holder and working on the site;
  - i. Confirmation by survey of the highest groundwater levels across the quarry;

- j. Relevant monitoring and reporting requirements.
5. Activities authorised by this consent shall not commence until the Consent Holder has received written certification of the GMP. Notwithstanding this, the works may proceed if the Consent Holder has not received a response from the Consent Authority within 20 working days of the date of the submission of the GMP.
  6. Any erosion, scour or instability of the bed or banks of the pit or formed waterbody that exceeds the extent shown in the consent application shall be reinstated or remedied by the Consent Holder. When such reinstatement or remediation is necessary, the Consent Holder shall record the following information and include it in the Annual Groundwater Report required by Condition 10 of this consent:
    - a. The location of the reinstatement or remediation works identified on a site plan;
    - b. A description of the nature of the damage that occurred, including photographs;
    - c. An assessment of the likely causes of the damage, including reference to preceding weather conditions, activities taking place in the area, the angle of the pit slopes etc.
    - d. A description of the nature of the reinstatement or remediation works required and when these were carried out;
    - e. Any changes to be made to site management measures to reduce the likelihood of similar issues arising in future.
  7. In the event of a discharge of unauthorised contaminant(s) to water or to land in a manner that may enter water, including but not limited to fuel, hydraulic fluid, overspray of weed killer, contaminated soil/hardfill or leachate, the Consent Holder shall:
    - a. Undertake all practicable measures as soon as possible to contain the contaminant;
    - b. Ensure that the contaminants and any material used to contain it are removed from the site and disposed of at an authorised landfill;
    - c. Immediately notify the Consent Authority and Amisfield Estate Society Incorporated of the spill or contamination and of the actions taken and to be taken to remediate and mitigate any adverse environmental effects;
    - d. Immediately have a suitably qualified water quality expert assess the risk of the spill to bore G41/0111 (the Amisfield Estate Society Incorporated drinking water supply) and provide recommendations on the measures to be taken to address any identified risk;
    - e. Provide a copy of the risk assessment carried out under Condition 7(d) above to the Consent Authority and Amisfield Estate Society Incorporated within 1 week and implement all recommendations in the risk assessment;
    - f. If requested by the Consent Authority, undertake additional water quality sampling and any other actions necessary to remediate or mitigate any adverse effects on the environment, to the satisfaction of the Consent Authority.
  8. The Consent Holder shall ensure that:
    - a. All machinery to be operated within exposed groundwater on the site is thoroughly cleaned of vegetation (e.g. weeds), seeds or contaminants at least 10 metres away from any waterbody, water flow channel or stormwater system, prior to entering the site;
    - b. All machinery shall be regularly maintained to ensure that no contaminants (including but not limited to oil, petrol, diesel, hydraulic fluid) shall be released into water, or to land where it may enter water, from equipment being used for the works;

- c. All contaminant storage or re-fuelling areas (other than areas where mobile re-fuelling occurs) are bunded or contained in such a manner so as to prevent the discharge of contaminants to water or to land where it may enter water;
  - d. No machinery shall be maintained, cleaned, stored or refuelled within 10 metres of any waterbody (including exposed groundwater), water flow channel or stormwater system;
  - e. Permanent storage of fuel and lubricants shall only occur within the workshop area identified on 'Site Plan Rev F' attached as Appendix 1 to this consent. Lubricant shall be stored in a bunded area capable of containing 125% of the volume being stored. Fuel shall be stored in a double skinned tank certified in accordance with the manufacturers specifications and capable of containing a spill at maximum capacity;
  - f. Refuelling and maintenance of all vehicles or machinery except for the long-reach excavator shall be undertaken within the workshop area identified on 'Site Plan Rev F' attached as Appendix 1 to this consent ;
  - g. Mobile refuelling of the excavator shall only be undertaken using a nozzle that incorporates a shut off valve and sensor system to avoid fuel leaks or overfilling of the excavator fuel tank;
  - h. Mobile refuelling occurs in accordance with best practice, a drip tray is used at all times for such refuelling, and spill kits are available at the mobile refuelling locations;
  - i. The origin and location of deposition within the site of any externally sourced cleanfill shall be recorded;
9. Externally sourced cleanfill shall not be placed horizontally within 10 metres of any waterbody (including exposed groundwater), water flow channel or stormwater system and shall only be placed above the highest surveyed groundwater level as specified in the GMP.
10. The Consent Holder shall maintain a permanent record of any complaints received alleging adverse effects from or related to the works authorised by this consent. This record shall include:
- a. The name and address of the complainant (if provided);
  - b. The date and time that the complaint was received;
  - c. Details of the alleged event;
  - d. Weather conditions at the time of the complaint; and
  - e. Any measures taken to mitigate/remedy the cause of the complaint.
- This record shall be made available to the Consent Authority on request.
11. The Consent Holder shall submit an Annual Groundwater Report before the end of February each year which includes the following:
- a. Results of the water quality monitoring carried out in accordance with Condition 3;
  - b. The identity and expertise of the person(s) who collected water samples in accordance with this resource consent;
  - c. Identification of any measures required under Condition 10(e);
  - d. Records kept in accordance with Condition 10 and 8(i); and
  - e. Copies of the complaints record for any complaints in relation to groundwater quality for the preceding 12 months.

12. The Consent Authority may, in accordance with Sections 128 and 129 of the Resource Management Act 1991, serve notice on the Consent Holder of its intention to review the conditions of this consent within 3 months of each anniversary of the commencement of this consent for the purpose of:
  - a. Adjusting the variables or frequency of the sampling requirements under Condition 3;  
or
  - b. Determining whether the conditions of this consent are adequate to deal with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage; or
  - c. Ensuring the conditions of this consent are consistent with any National Environmental Standard or National Planning Standard.

# Appendix 1: Water Quality Monitoring Network



## **RM20.360.01: Water Take**

### **WATER PERMIT**

**Pursuant to Section 104B of the Resource Management Act 1991, the Otago Regional Council grants consent to:**

**Name:** Cromwell Certified Concrete Limited

**Address:** 810 Great South Road, Penrose, Auckland 1061

**Activity:** To take and use ground water for the purpose of gravel washing, irrigation, potable and sanitary use and dust suppression.

**Term:** 6 years

**Location of consent activity:** 1248 Luggate-Cromwell Road (State Highway 6)

**Legal Description of land at point of abstraction:** Lot 8 DP 301379

**Legal Description of land where water is to be used:** Lots 3, 5, and 8 DP 301379

**Map Reference at point of abstraction:** Bore G41/0127 - NZTM 2000 E1305397 N5017068  
Bore G41/0456 - NZTM 2000 E1305502 N5017223

#### **Conditions:**

1. This permit shall be exercised in conjunction with Water Permit RM16.108.01, Discharge Permit RM20.360.02, and any consents granted in replacement of those permits.
2. If this consent is not given effect to within a period of five years from the date of commencement of this consent, this consent shall lapse under Section 125 of the Resource Management Act 1991. The consent shall attach to the land to which it relates.
3. The combined rate of abstraction from bore G41/0127 and bore G41/0456 shall not exceed 24 litres per second.
4. The rate of abstraction when combined with Water Permit RM16.108.01 shall not exceed 25 litres per second from bore G41/0127 and 45 litres per second from bore G41/456, and the quantity of water abstracted shall not exceed:
  - a. 3,024 cubic metres per day;
  - b. 93,744 cubic metres per month; and
  - c. 846,720 cubic metres per year.
5. The consent holder shall:
  - a. Maintain water meter(s) to record the water take, within an error accuracy range of +/- 5% over the meter(s)' nominal flow range, and a telemetry compatible datalogger with at least 24 months data storage and a telemetry unit to record the rate and volume of take, and the date and time this water was taken.
  - b. The datalogger shall record the date, time and flow in litres per second.
  - c. Data shall be provided once daily to the Consent Authority by means of telemetry. The consent holder shall ensure data compatibility with the Consent Authority's time-series database.

- d. The consent holder shall ensure the full operation of the water meter(s), datalogger and telemetry unit at all times during the exercise of this consent. All malfunctions of the water meter and/or datalogger and/or telemetry unit during the exercise of this consent shall be reported to the Consent Authority within 5 working days of observation and appropriate repairs shall be performed within 5 working days. Once the malfunction has been remedied, a Water Measuring Device Verification Form completed with photographic evidence shall be submitted to the Consent Authority within 5 working days of the completion of repairs.
  - e. The water meter(s), datalogger and telemetry unit shall be verified for accuracy within one month from the first exercise of this consent.
  - f. Any electromagnetic or ultrasonic flow meter shall be verified for accuracy every five years from the first exercise of this consent.
  - g. Each verification shall be undertaken by a Consent Authority approved operator and a Water Measuring Device Verification Form shall be completed and submitted to the Consent Authority with receipts of service within 5 working days of the verification being performed, and at any time upon request.
6. The consent holder shall take all practicable steps to ensure that:
    - a. There is no leakage from pipes and structures;
    - b. There is no runoff of irrigation water either on site or off site;
    - c. A back flow preventer device is fitted to prevent any contaminants from being drawn into the source of the water.
  7. The Consent Authority may, in accordance with Sections 128 and 129 of the Resource Management Act 1991, serve notice on the consent holder of its intention to review the conditions of this consent for the purpose of imposing aquifer restriction levels, if and when an operative regional plan sets aquifer restriction levels.
  8. The Consent Authority may, in accordance with Sections 128 and 129 of the Resource Management Act 1991, serve notice on the consent holder of its intention to review the conditions of this consent within 3 months of each anniversary of the commencement of this consent for the purpose of:
    - a. Determining whether the conditions of this consent are adequate to deal with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage; or
    - b. Ensuring the conditions of this consent are consistent with any National Environmental Standard or National Planning Standard.

## RM20.360.03: Air Discharge Permit

### DISCHARGE PERMIT

**Pursuant to Section 104B of the Resource Management Act 1991, the Otago Regional Council grants consent to:**

**Name:** Cromwell Certified Concrete Limited

**Address:** 810 Great South Road, Penrose, Auckland 1061

**Activity:** To discharge contaminants to air for the purpose of operating an alluvial quarry.

**Term:** 14.25 years (expiring 21 July 2036)

**Location of consent activity:** 1248 Luggate-Cromwell Road (State Highway 6)

**Legal Description of consent location:** Lots 3, 5, and 8 DP 301379

#### **General Conditions**

1. The activity shall be carried out in general accordance with information and plans submitted with the application dated 23 October 2020 for resource consent RM20.360.03 and with evidence submitted by the Consent Holder at the hearing. Should there be any inconsistencies between those documents and consent conditions, the consent conditions shall prevail.
2. If this consent is not given effect to within a period of five years from the date of commencement of this consent, this consent shall lapse under Section 125 of the Resource Management Act 1991. The consent shall attach to the land to which it relates.
3. Aggregate extracted from the site shall not exceed 200,000m<sup>3</sup> in any 12-month period.
4. The discharge shall not give rise to dust or the deposition of particulate matter that causes a noxious, dangerous, objectionable or offensive effect beyond the boundary of the site.
5. The Quarry Manager or another nominated person shall be available at all times (including outside quarry operation hours) to respond to dust emission complaints and trigger level alerts in accordance with measures described in the Dust Management Plan (DMP).
6. The maximum area of unconsolidated land comprising of the excavation area, backfilling areas and rehabilitation area shall not exceed 2 hectares.

*Advice Note: The maximum area of unconsolidated land does not include the haul roads, processing area, stockpiles, areas which are covered with 50mm (or more) of washed gravels or stabilised with a dust suppressant (excluding water), portacoms or workshops, or the conveyor and its associated service area.*

#### **Dust Management Plan (DMP)**

7. At least one month prior to exercising this resource consent, the Consent Holder shall prepare a Dust Management Plan (DMP) and submit it for certification by the Consent Authority.
8. Works shall not commence until the Consent Holder has received written certification from the Consent Authority of the DMP.
9. The DMP shall include, but not be limited to:
  - a. A description of the purpose of the DMP;
  - b. A description of the dust sources on site;

- c. A description of the receiving environment and identification of sensitive receptors within 250 m of site boundaries (sensitive receptors being any dwelling and the land within 20 m of the façade of an occupied dwelling's notional boundary, commercial storage building and sensitive commercial crops);
- d. The methods (including dust reduction through design methodologies) which will be employed to ensure compliance with the conditions of this consent;
- e. A description of site rehabilitation methodology and associated dust control measures;
- f. A description of particulate matter and wind monitoring requirements including:
  - (i) The location of the wind monitoring equipment;
  - (ii) The location of particulate matter monitors between active work areas and sensitive off-site activities;
  - (iii) Details of wind speed trigger levels as set out in Condition 12(a) and associated alarm system. This shall also include the wind direction to be used in fulfilment of Condition 12(b);
  - (iv) Details of the particulate matter trigger levels as set out in Conditions 14 and 15 and associated alarm system; and
  - (v) Monitoring instrumentation methodology, setup requirements, maintenance and calibration procedures, and the frequency of review of the location of monitoring equipment and calibration.
- g. A description of procedures for responding to dust and wind condition-based trigger levels and associated follow up investigations, actions and recording of findings;
- h. A system for training employees and contractors to make them aware of the requirements of the DMP;
- i. Names and contact details of staff responsible for implementing and reviewing the DMP in order to achieve the requirements of this consent, and procedures, processes and methods for managing dust outside of standard operating hours;
- j. A method for recording and responding to complaints from the public in accordance with Condition 38;
- k. A maintenance and calibration schedule for meteorological and particulate matter monitoring instruments;
- l. Contingency measures for responding to dust suppression equipment malfunction or failures, including wind and particulate matter monitoring instruments;
- m. A procedure for completing an end-of-day dust control checklist;
- n. Separate Standard Operating Procedures (SOPs) dedicated to the management of potential dust discharges from specific sources, including but not limited to:
  - (i) Stockpiles;
  - (ii) Site roads – sealed and unsealed;
  - (iii) The conveyor used to convey aggregate from Lot 3 DP 301379 to the processing plant located within Lot DP 301379;
  - (iv) Triggers for the use of water for dust suppression;
  - (v) The use of dust suppressants other than water;
  - (vi) Aggregate excavation and backfilling areas;
  - (vii) Topsoil and overburden stripping and stockpiling;
  - (viii) Bund construction, maintenance and the recontouring of slopes during rehabilitation;

- (ix) Any automated dust suppression for dust prone areas that can be activated outside of working hours;
  - (x) Location and calibration of particulate matter and meteorological monitoring equipment and the frequency of review of their location and calibration;
- o. Environmental information management for recording, quality assurance, archiving and reporting all data required for dust management on the site.
10. The Consent Holder shall carry out its activities in accordance with the DMP at all times.
11. The Consent Holder may review and update the DMP where it is to modify SOPs, respond to complaints and monitoring data, implement technological or process improvements, providing revisions are certified by an independent Suitably Qualified and Experienced Practitioner (SQEP).

### **Trigger Levels and Dust Mitigation**

#### *Trigger Levels*

12. Quarry activities (except dust suppression measures) within 250 metres of a sensitive receptor location (sensitive receptors being those defined in Condition 9(c)) shall not be undertaken when:
- a. Wind speed reaches or exceeds 7 m/s (10 minute scalar average); and
  - b. Quarry activities would be directly upwind of a sensitive receptor (10-minute average wind direction); and
  - c. Less than 1 mm of rain has fallen during the preceding 12 hours.
13. If at any time, including outside normal operating hours, visible dust is blowing beyond the site boundary or if the particulate matter monitoring trigger in Condition 14 is breached the Consent Holder shall:
- a. Cease all quarry activities (including loading of purchasing trucks), except dust suppression measures;
  - b. Continue all dust suppression activities including but not limited to the immediate watering of both active and inactive exposed surfaces;
  - c. Investigate possible sources of the dust;
  - d. Only resume quarry activities (other than dust suppression) once there is no longer visible dust blowing beyond the site boundaries and when the monitoring trigger in Condition 14 is no longer being breached; and
  - e. Notify the Consent Authority within 24 hours, detailing its cause and the dust suppression actions undertaken.
14. The trigger concentration which indicates the potential for excessive quarry derived dust at or beyond the site boundary is a maximum real time PM<sub>10</sub> concentration of 150 micrograms per cubic metre, as a rolling 1-hour average, which shall be updated every ten minutes.
15. A pre-trigger concentration alert level shall be specified in the DMP, the purpose of which is to provide an early warning that the trigger concentration in Condition 14 may be reached. This shall be a maximum PM<sub>10</sub> concentration value of 150 micrograms per cubic metre, as a rolling 10-minute average, which shall be updated every 1 minute.
16. If the investigation required under Condition 13(c) determines the source of dust is localised to the excavation area only and is only impacting on areas downwind of this source, then activities within the central processing area, including sales of product, can continue. This is

contingent on all activities within the existing processing and load out area not causing visible dust blowing beyond the site boundary and their downwind real time PM<sub>10</sub> monitors not reaching or exceeding the trigger in Condition 14.

17. The Consent Holder shall submit a report by an independent Suitably Qualified and Experienced Practitioner (SQEP) to the Consent Authority 2 years after the exercise of this consent and a further report 12 months after quarrying has commenced on Lot 3 DP 301379 to confirm that the PM<sub>10</sub> trigger concentration levels set in Conditions 14 and 15 are not giving rise to a breach of Condition 4 of this consent or if they are set unnecessarily low for avoiding such effects. The report shall contain data on PM<sub>10</sub> levels recorded by the monitors from two early summer to late autumn periods (1 October to end of May) and shall identify whether a change is needed to the trigger levels in Condition 14 and 15 to achieve routine compliance with Condition 4 of this consent.
18. If the report by an independent SQEP (as required under Condition 17) determines the PM<sub>10</sub> trigger concentration should be decreased in order to achieve routine compliance with Condition 4, then the revised value as recommended by the SQEP shall be specified within an updated DMP and alarm settings on monitoring equipment shall be adjusted to reflect this revised value within 15 working days of receipt of the SQEP's report.

#### **Mitigation Measures**

19. The Consent Holder shall take all practicable measures to minimise the discharge of dust from quarry activities, including but not limited to:
  - a. Placing clean reject gravel over extraction areas if they are not being actively used by the Consent Holder. Areas where clean reject gravel cannot be placed will be stabilised using polymers;
  - b. Assessing weather and ground conditions (wind and dryness) at the start of each day and ensure that applicable dust mitigation measures and methods are ready for use prior to commencing quarry activities;
  - c. Taking wind direction and speed into account in planning quarry activities to minimise the risk of dust dispersion towards any residential dwellings, commercial storage building and sensitive commercial crops that are within 250 metres of the site boundary;
  - d. Water suppression such as using watercarts or fixed sprinklers will be applied as required to dampen down disturbed areas and stockpiles. This shall occur during dry weather, irrespective of wind speed and a back up watercart shall be available in the event that the dedicated site watercart breaks down;
  - e. Pre-dampening topsoil and overburden with a water cart or sprinklers prior to its extraction and removal.
  - f. Constructing and maintaining unsealed internal haul roads so that their surfaces consist of a crushed clean aggregate layer that is free of potholes;
  - g. Minimising drop heights when loading trucks, conveyor hoppers and when moving material;
  - h. Operating fixed and mobile crushing plant in conjunction with water dust suppression (either sprays or high-pressure fogging system) as necessary to avoid the dust trigger level, as specified in Condition 14 and 15, being reached or exceeded;
  - i. Undertaking routine onsite and offsite inspections of visible dust emissions and deposited dust throughout each day of quarry activities and electronically logging

findings and any dust suppression actions, and making the results of the inspections available to the Consent Authority when requested;

- j. Maintaining an adequate supply of water and equipment on site for the purpose of dust suppression at all times;
  - k. Application of water via watercart or fixed irrigation of dust suppression water onto any section of the external access road shall be used as a contingency/back up measure;
  - l. Fixed and mobile crushing and screening plant shall be located in the areas identified on Site Plan Rev F included in Appendix 1 to this consent.
20. Aggregate (once extracted from the quarry face) shall be placed on a field conveyor and transported from within Lot 3 DP 301379 to the processing plant within Lot 8 DP 301379. Haul tucks shall not be used for that purpose.
21. Land stripping and land rehabilitation shall be carried out during winter months (1 May to 31 August) when ground conditions are damp (or the ground or material to be used for rehabilitation has been thoroughly wetted with a water cart) and winds are below 7 m/s (10 minute average).
22. The Consent Holder shall impose a speed restriction on all internal haul and access roads of 20 km/hr.
23. The Consent Holder shall maintain the existing seal along the length of the site access road contained within Lot 5 DP 301379.
24. The northeast-southwest aligned section of conveyor within the expansion area (Lot 3 DP 301379) shall be located at least 75 m from the shared boundaries with Lot 2 DP 301379 and Lot 1 DP 508108.
25. The height of aggregate stockpiles shall be maintained below the height of existing ground level at the point immediately due northeast of stockpile.

#### **Meteorological Monitoring**

26. Prior to exercising this consent, the Consent Holder shall install a meteorological monitoring station at the location described in the DMP. The meteorological monitoring station shall be capable of continuously monitoring:
- a. Wind speed and direction at a minimum height of 6m above the natural ground level;
  - b. Rainfall;
  - c. Relative humidity; and
  - d. Temperature.
27. The meteorological monitoring instruments shall:
- a. Measure wind speed as 1-minute scalar averages with maximum resolution of 0.1 metres per second (m/s), have an accuracy of at least within +/-0.2 m/s, and a stall speed no greater than 0.5 m/s;
  - b. Measure wind direction as 1-minute vector averages with maximum resolution of 1.0 degree and accuracy of at least within +/- 1.0 degree, and a stall speed no greater than 0.5 m/s;
  - c. Measure screened temperature with accuracy of +/- 0.5 degree;
  - d. Measure relative humidity with an accuracy of +/- 1%;
  - e. Measure rainfall with an accuracy of +/- 0.2mm;

- f. Be located on the site in accordance with AS/NZS 3580:14-2014 (Methods for sampling and analysis of ambient air – Part 14 Meteorological monitoring for ambient air quality monitoring applications). If the monitoring station cannot be located in accordance with AS/NZS 3580:14-2014 an alternative location shall be agreed in writing with the Consent Authority;
  - g. Maintain a date and time stamped electronic record for at least 36 months of meteorological monitoring results, recorded as rolling 10-minute averages, which are up-dated every one-minute in real-time.
  - h. Send an alarm to the Quarry Manager (for example via mobile phone) if the wind speed trigger level in Condition 12(a) is reached or exceeded while the rainfall criteria specified in Condition 12(c) are being met.
  - i. Be maintained and calibrated in accordance with the manufacturer's specifications.
28. All meteorological monitoring data shall be made available to the Consent Authority on request.

#### **Particulate Matter Monitoring**

29. Prior to exercising of this consent, the Consent Holder shall operate and maintain one permanent real-time dust management monitor for continuous monitoring of ambient 10-minute average PM<sub>10</sub> concentrations, which shall be installed and operated at a fixed location at the existing quarry's southwest boundary and in accordance with the DMP.
- Advice Note: The permanently located real-time dust management monitor shall be an accepted method for general dust management/monitoring purposes, and does not need to be a certified USEPA, or National Environmental Standards for Air Quality (NESAQ) compliant method.*
30. The permanent monitor shall be installed, operated, maintained and calibrated in accordance with the AS/NZS 3580.12.1:2015 *Methods for sampling and analysis of ambient air – Determination of light scattering – Integrating nephelometer method*, or else an equivalent or superior standard which is approved by the Consent Authority;
31. Prior to the exercising of this consent, the Consent Holder shall operate and maintain at least two mobile real-time dust management monitors for continuous monitoring of ambient ten-minute average PM<sub>10</sub> concentrations, whose location changes for different stages of the quarry development. For the first 12 months of operations, the location of the mobile monitors shall be as identified in the DMP. The locations of the mobile monitors thereafter shall be reviewed by a SQEP and if the SQEP recommends that the locations of the monitors should be changed, this shall be identified in the annual report required by Condition 43 of this consent.
32. The mobile real-time dust management monitors can be equivalent to that used for the permanently located dust monitor, or else be a lower cost method, on the basis that this can be effectively calibrated against the permanent dust monitor.
33. The two mobile dust monitors shall be positioned at different site boundary locations, such that real-time dust monitoring is undertaken at locations which are between active excavation and central processing areas and downwind sensitive receptor locations, when the latter are within 250 metres of the dust source.
34. All three dust monitors shall:
- a. Be sited in general accordance with AS/NZS 3580.1.1:2016 *Methods for sampling and analysis of air – Guide to siting air monitoring equipment*;

- b. Have a GPS location service (or similar technology) which enables their locations to be remotely monitored and recorded;
- c. Provide and record the results continuously using an electronic data logging system with an averaging time for each parameter of not more than one minute;
- d. Record monitoring results in real-time as rolling 10-minute averages in an appropriate electronic format;
- e. Be fitted with an alarm system that is able to send warnings and alerts to the Quarry Manager or other nominated person; and
- f. Be maintained in accordance with the manufacturer's specifications.

**Setbacks**

35. Active quarrying excavations within Lot 3 DP 301379 shall be set back:
- a. At least 25 m from the boundary of that land apart from along the right of way between Lot 8 DP 301379 and Lot 3 DP 301379 where a 10 m setback is required; and
  - b. 50 m from the boundary of Lot 3 DP 301379 in the vicinity of the existing main dwelling on Lot 2 DP 301379; and
  - c. 50 m from a commercial crop sensitive to dust which existed at the time this consent was granted; and
  - d. 50 m from a dwelling authorised by RC210261 on Lot 1 DP 508108, if one exists at the time of extraction.

As shown on Site Plan Rev F included in Appendix 1 to this consent.

**Video Monitoring**

36. The Consent Holder shall install, operate and maintain at least two video cameras at locations which provide a clear view of the site activities (i.e. on the boundary bunds looking in). Data collected by the video cameras shall be recorded and kept for a minimum period of six months following recording and supplied to Otago Regional Council on request.

**Bund Formation and Planting**

37. When constructing the bunds, the following controls apply:
- a. The bunds shall be constructed during winter months (1st May to 31 August) for dust mitigation reasons and so as to avoid bird nesting season which is from 1 September to 1 January;
  - b. Maintain a buffer distance of 250 m when wind speeds are above 7 m/s (10 minute average) in a direction towards the nearest sensitive locations;
  - c. Material to be excavated shall be thoroughly wetted using a water cart, if not already damp, ahead of excavation and wetted thoroughly thereafter;
  - d. Wind monitoring shall be carried out and dust generating activities shall cease when the wind is blowing towards sensitive locations and the wind speeds exceed 7 m/s (10 minute average) in accordance with Condition 12(a);
  - e. Following the construction of the bunds they shall be immediately stabilised using mulch or another suitable product.
  - f. Vegetated cover (90%) shall be established on all new bunds as soon as practicable and maintained to ensure healthy cover during dry months.

- g. Within 12 months of the exercise of this consent, the Consent Holder shall plant or stabilise by other means the inward and outward faces of the existing bunds within Lot 8 DP 301379.

#### **Complaints Register**

- 38. The Consent Holder shall maintain a Complaints Register for any complaints received. The Complaints Register shall include:
  - a. The date and time the complaint was received;
  - b. The nature and location of where the complaint has originated, if provided;
  - c. A summary of the complaint;
  - d. Particulate matter and wind conditions at the time when the dust was observed by the complainant; and
  - e. Any corrective action undertaken by the Consent Holder to avoid, remedy or mitigate the issue raised.
  - f. Any amendments made to the DMP in response to the complaint(s).
- 39. The Complaints Register shall be provided to the Consent Authority on request.

#### **Community Liaison Group**

- 40. Within 12 months of the commencement of this consent, the Consent Holder shall, at its own cost, facilitate community liaison meetings with invitations sent by letter or email to the various organisations and the owners/occupiers of properties listed in Appendix 2 of this Consent. Meetings shall be held at not less than 12 monthly intervals.
- 41. The purpose of the meetings shall be for the Consent Holder to report to those attending on the activities undertaken in the past 12 months and the works planned in the next 12 months, to provide explanation of the results of monitoring undertaken during the preceding 12 months, and to respond to any feedback from attendees regarding effects of consented activities.
- 42. The Consent Holder shall keep minutes of the meetings and shall provide them to all invited parties within two weeks of a meeting.

*Advice note: Community Liaison Group meetings are not restricted to matters relating to the discharge of contaminants to air, other matters relating to the operation of the quarry such as groundwater matters and noise can also be discussed.*

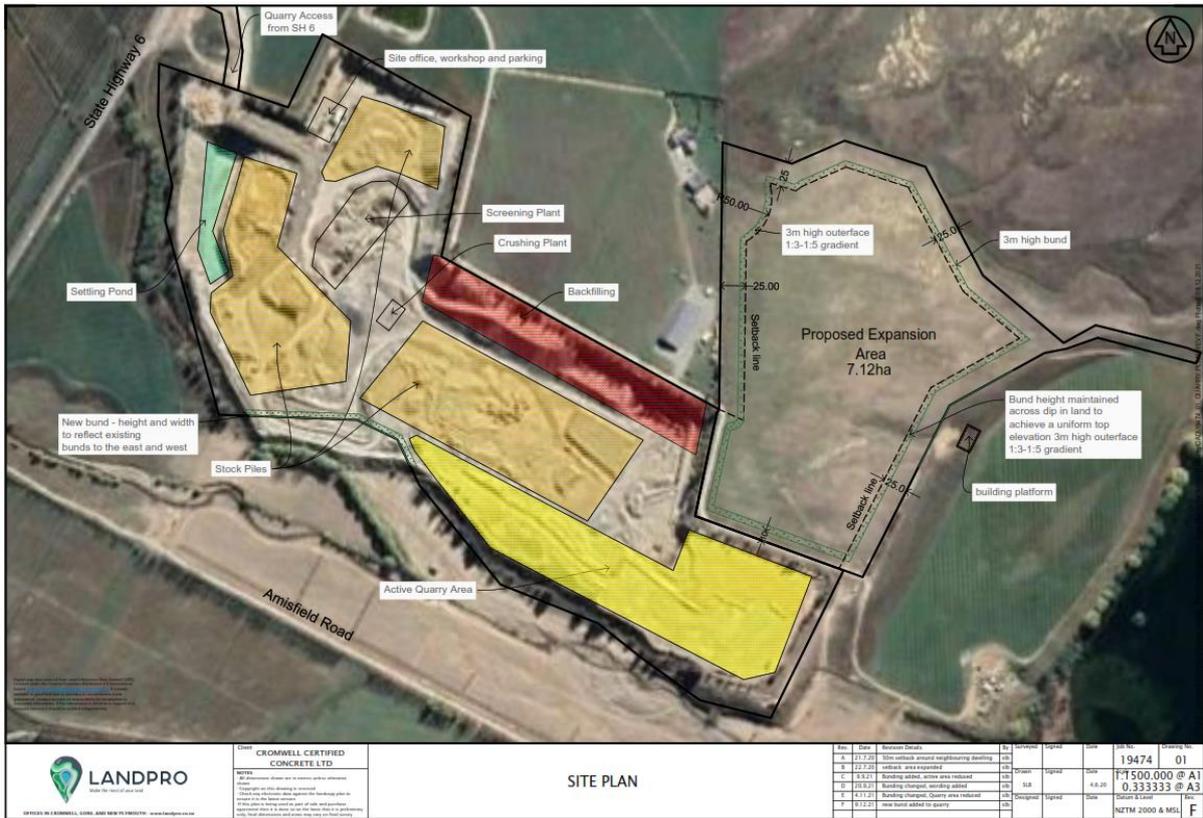
#### **Annual Report**

- 43. On the annual anniversary of this consent the Consent Holder shall provide a report to the Consent Authority to include the following:
  - a. The number of occasions that the particulate monitors recorded a breach of the trigger level in Condition 14;
  - b. Complaints Records for the preceding 12 months;
  - c. Maintenance and calibration records for the particulate monitors;
  - d. The volume of aggregate extracted in the preceding 12 months;
  - e. Any amendments made to the DMP; and
  - f. Details of the work plan for the next 12 months, including specification by a SQEP of the locations of the mobile PM<sub>10</sub> monitors during that period so as to comply with the requirements of conditions 31, 33 and 34(a) of this consent.

## **Review**

44. The Consent Authority may, in accordance with Sections 128 and 129 of the Resource Management Act 1991, serve notice on the Consent Holder of its intention to review the conditions of this consent within 3 months of each anniversary of the commencement of this consent for the purpose of:
  - a. To deal with any adverse effect on the environment which may arise from the exercise of the consent that was not foreseen at the time of granting of the consent, and which is therefore more appropriate to deal with at a later stage; and/or
  - b. To require the Consent Holder to adopt the best practicable option to reduce any adverse effects on the environment resulting from the activity; and/or
  - c. Ensuring the conditions of this consent are consistent with any National Environmental Standard or National Planning Standard; and/or
  - d. Implementing any changes required to adopt recommendations included in a report prepared and pursuant to Condition 17 of this consent.

# Appendix 1: Site Plan



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Client: **CROMWELL CERTIFIED CONCRETE LTD**  
 Notes:  
 1. All dimensions shown are in metres unless otherwise stated.  
 2. The plan is to be used as part of a set of plans and is not to be used in isolation.  
 3. The plan is to be used as part of a set of plans and is not to be used in isolation.

## SITE PLAN

Rev.	Date	Revision Details	By	Reviewed	Signed	Date	Scale	Sheet No.	Sheeting No.
0	11.7.20	50m setback around neighbouring dwelling	CS					19474	01
1	22.7.20	setback area expanded	CS						
2	9.8.21	Bundling added, service area reduced	CS	SR	Signed	4.6.20		1:1500.000 @ A1	0.333333 @ A3
3	26.9.21	Bundling changed, service added	CS						
4	4.11.21	Bundling changed, Quarry area reduced	CS	Proposed	Signed			Sheet 1 of 1	F
5	9.12.21	new bund added to quarry	CS					NZTM 2000 & MSL	F

## Appendix 2: People/Organisations to be invited to Community Liaison Group meetings

- Owners/occupiers of the following properties:
  - Lot 2 DP 300388 [Department of Conservation]
  - Lot 1 DP 508108 [Amisfield Orchard Limited]
  - Lot 2 DP 508108 [Hayden Sinclair Little, Tessa Leanne Nyhon]
  - Lot 6 DP 301379, Lot 1 DP 301379 & Lot 10 DP 301379 [Manukau Fifty Limited]
  - Lot 2 DP 301379 [Bryson David Clark, Nicola Jane Clark]
  - Lot 2 DP 518956 [Justine Kate Davis, Philip John Davis, GCA Legal Trustee 2018 Limited]
  - Lot 7 DP 518513 [Lowburn Land Holdings LP]

Holders of the following groundwater permits:

- 2003.363 [Lowburn Land Holdings Limited Partnership]
- 2010.152.V1/G41/0220 [Wanaka Road Wine Holdings Ltd]
- 2001.831/G41/0238 [Manukau Fifty Limited]
- 2004.853/G41/0326 [Jane Marie Miscisco]
- 2006.036/G41/0346 [Felton Park Limited]
- RM14.211.02/G41/0321 [Irrigation and Maintenance Limited]

Organisations

- Aukaha
- Amisfield Estate Society, which takes water from Bore G41/0111
- Otago Regional Council
- Central Otago District Council