

**BEFORE INDEPENDENT HEARINGS COMMISSIONERS APPOINTED BY
CANTERBURY REGIONAL COUNCIL AND CHRISTCHURCH CITY COUNCIL**

IN THE MATTER OF the Resource Management Act 1991

AND

IN THE MATTER OF Applications by SOL Quarries Ltd to extend the existing SOL
quarry onto land at 93 and 133 Conservators Road, Christchurch
(RMA 2019 373 CRC193563, CRC193564, CRC193773)

**Statement of evidence of Grant Brokenshire
on behalf of SOL Quarries Ltd**

Automated Dust Suppression System

Dated: 20 November 2020

Confirmation for design, supply & installation of an automated sprinkler system for SOL Quarries Ltd at Conservators Rd, Yaldhurst

1 Introduction

SOL Quarries have requested confirmation that an automated sprinkler system can be installed at the quarry, providing dust suppression during weather conditions which would otherwise result in fugitive dust beyond the SOL property boundary. Reports from PDP & Tonkin & Taylor agree that there is sufficient water available for dust suppression. ECAN & CCC planning staff have questioned the reliance on “human behaviour” with respect to the systems current & proposed, to be used as outlined in the PDP & Tonkin & Taylor reports.

2 Quarry Areas Requiring Dust Suppression

The PDP & T&T reports have identified 4 key areas totalling 9 Ha requiring dust suppression.

- Internal Haul Roads
- Stripped Areas (Awaiting Excavation)
- Clean Fill with and without seed establishment.
- Newly established bunds

3 Available Water Supply

SOL Quarries have 3 water sources available with a combined maximum daily water take of 314m³:

- SDC PWRS 104m³/day (Unsecure stock water quality at maximum rate of take at 1.2l/sec.)
- Bore BX23/0520 100m³/day (Also supplies potable water to existing tanks with max rate of take at 5l/sec.)
- Bore M35/0947 110m³/day. (ref CRC 203210.)

4 Existing Water Use

Figures based on reports and site observations.

- Average water use at 72m³/day via Bore BX23/0520 as per PDP report.
- Potable Water: 10m³/day.
- Water Cart: 10m³ per 90 min (excluding breaks and fill time.) throughout a working day.
- Processing Plant 10-15m³/day via. (6.30am - 7pm.)
- Vehicle washing: 5-10m³/day.

5 Required Depth Of Application & Water Volume

For the purposes of this report, WaterForce will adopt the daily peak as described by T&T (08 July) at 7.0mm/day over 9 Ha. These figures may equate to an additional 63m³/day of water use.

6 Site Considerations

Key irrigation design constraints onsite include:

- Heavy vehicle traffic on haul roads.
- Area requiring dust suppression moves with quarry operations.
- Maximum rate of tank fill is 6.2l/sec or 22.3m³/hr.
- Power supply can be upgraded if required.

7 Conclusions

WaterForce have created automated systems in the past for dust and odour suppression based on environmental triggers such as wind.

7.1 It is possible to apply dust suppression water to 9Ha based on the above parameters.

7.2 Potable water should be isolated from the SDC PWRS, perhaps using the existing storage tanks with air gaps installed as a separation means.

7.3 Dust suppression application would be similar to the existing methods applied onsite and should not impede quarrying operations.

7.4 Design and operating logic for an automated system shall follow consent conditions yet to be finalised and agreed with SOL Quarries Ltd.

7.5 A concept plan has been presented to support the consent application.



Recoverable Signature

X

Grant Brokenshire

Grant Brokenshire

Signed by: e1fd6ec1-b80a-4007-8571-cb4458c6a92d

WaterForce Ltd

Christchurch






Designed by: GB

Date: 13/05/2020




Pipe key

-  Proposed Mainline
-  Proposed Bund Mainline

Sprinkler / Valve key

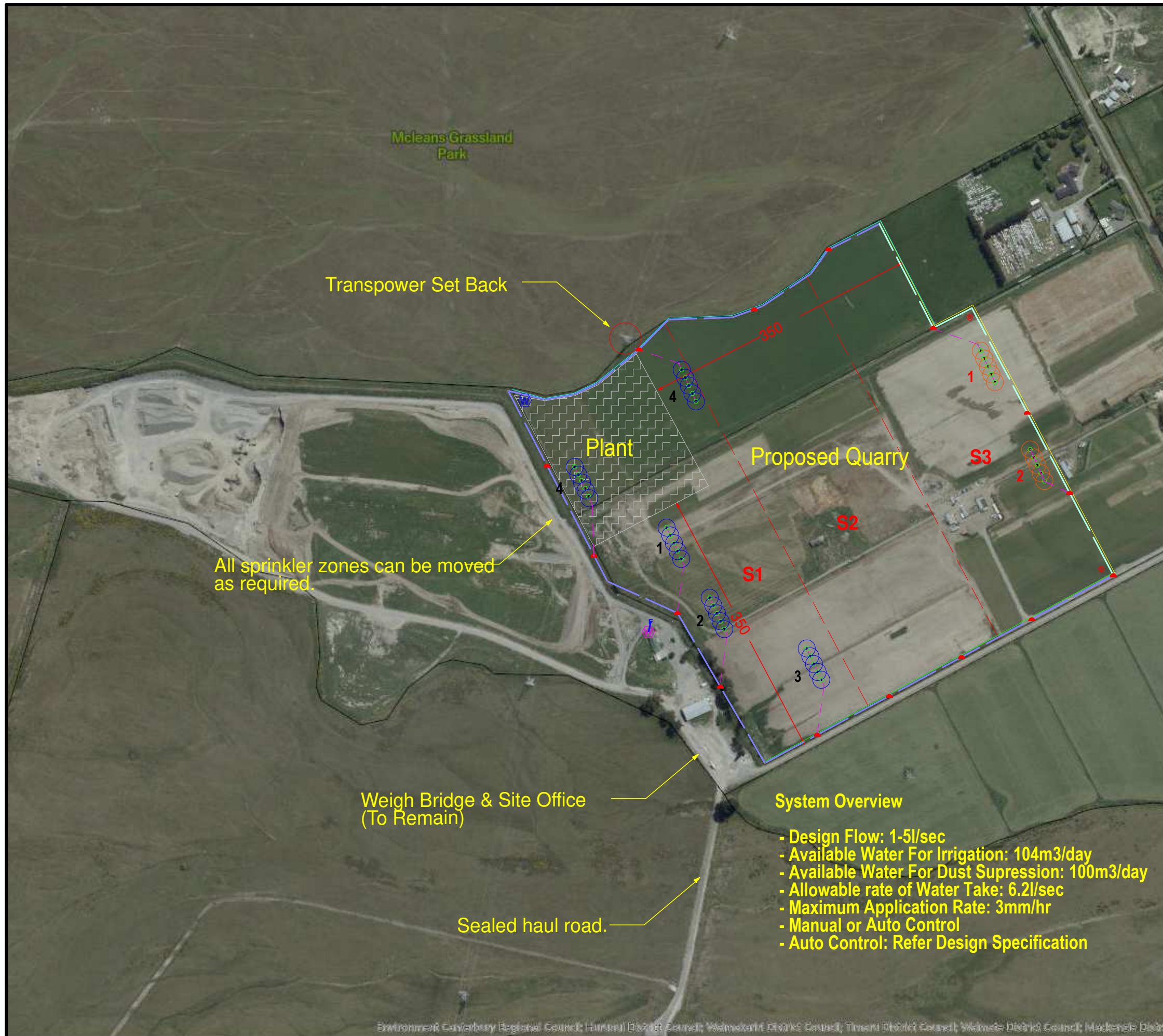
-  40mm Quick Coupling Valve Assembly (Existing)
-  40mm Quick Coupling Valve Assembly
-  Bore Water Supply - 5l/sec at 5 Bar -100m³/day
-  Monitoring Station
-  Tanker Fill

Proposed Irrigation Scheme

-  Stock Water Supply - 1.2 l/sec To Storage - 104m³/day (New storage tanks and pump TBC)
-  100m K Line Zone - 1l/sec @ 4 Bar Nozzle Pressure
-  Bund Irrigation Zone - 1l/sec @ 4 Bar Nozzle Pressure



**Concept Drawing Only
Issued For Consent**



System Overview

- Design Flow: 1-5l/sec
- Available Water For Irrigation: 104m³/day
- Available Water For Dust Suppression: 100m³/day
- Allowable rate of Water Take: 6.2l/sec
- Maximum Application Rate: 3mm/hr
- Manual or Auto Control
- Auto Control: Refer Design Specification