

**Before the Commissioner / Hearing Panel
appointed by Canterbury Regional Council**

IN THE MATTER OF The Resource Management
Act 1991

**AND
IN THE MATTER OF** Applications CRC192408,
CRC192409, CRC192410,
CRC192411, CRC192412,
CRC192413 and CRC192414
by Fulton Hogan Limited
(Applicant) for a suite of
resource consents to establish
a quarry operation

Section 42A Officer's Report

Report of Rowan Vincell Caudell Freeman

INTRODUCTION

1. Fulton Hogan Limited (the applicant) has applied for resource consents to establish an aggregate quarry (the 'Roydon Quarry' or the site) in Templeton.
2. Regarding the proposed quarry, my technical report assesses the effects associated with contaminated land matters.
3. My evidence is supplementary to the Canterbury Regional Council's (CRC) Section 42A Officer's Report prepared by Ms Goslin. That report outlines comprehensive details about the nature of the resource consents sought by the applicant.

Qualifications and Experience

4. I am CRC's Principal Science Advisor for contaminated land. CRC's office is located at 200 Tuam Street, Christchurch.
5. I hold a Bachelor of Science in Geology from Tennessee Technological University and a Post Graduate Diploma in Science (Environmental Science) from the University of Canterbury.
6. I am a Certified Environmental Practitioner (Site Contamination) under the Environment Institute of Australia and New Zealand. I am a member of the Australasian Land and Groundwater Association (ALGA) and recently sat on the Waste Management Institute of New Zealand's (WasteMINZ) Contaminated Land Management Sector Group (CLMSG) panel for over a year. The CLMSG seeks to support New Zealand's environmental industry by promoting contaminated land management practices which are ethical, sustainable, and consistent.
7. I have been an environmental professional for 15 years and possess a good working knowledge and understanding of the regulatory and planning framework governing contaminated land management in New Zealand.
8. Pre-2009, I worked in the northeast United States as a project geologist undertaking environmental investigations into soil, groundwater and air quality on industrial, oil refinery, utility, pharmaceutical, municipal, and private sites.

9. I joined CRC in 2009. I have undertaken and/or coordinated numerous environmental investigations on residential and commercial/industrial sites on behalf of CRC.
10. As technical leader for CRC's Contaminated Sites Team, I provide technical advice and undertake technical reviews on contaminated land matters. I serve a variety of internal and external customers including:
 - a. Ministry for the Environment (MfE),
 - b. Resource monitoring and compliance officers,
 - c. Consent planners,
 - d. Private land owners,
 - e. Commercial/industrial environmental managers,
 - f. Territorial authorities,
 - g. CRC solicitors,
 - h. Land developers, and
 - i. Environmental consultants/engineers.
11. I have read the Environment Court Code of Conduct for Expert Witnesses and I agree to comply with the code.
12. My evidence is within my expertise. I have considered and stated all material facts known to me which might alter or qualify the opinions I express. Where/if my evidence overlaps with matters better explained by another CRC expert, I have deferred to them.
13. My evidence has been informed by the following:
 - a. Resource Consent Application to Establish 'Roydon Quarry', Templeton (November 2018);
 - b. Roydon Quarry Draft Cleanfill Management Plan (November 2018) – AEE Report - Appendix F;
 - c. Preliminary and Detailed Site Investigation (Golder Associates, November 2018) – AEE Report - Appendix H;
 - d. Section 92 Request for Further Information (January 2019);
 - e. Roydon Quarry Proposal (Reference CRC192408-192414, RC185627) – Response to Request for Further Information (March 2019);
 - f. Roydon Quarry Proposal (Reference CRC192408-192414, RC185627) – Response to Request for Further Information (August 2019);
 - g. Horticultural Data Summary Report – Environment Canterbury (Nov. 2015); and
 - h. Other relevant information held on CRC and Landcare Research databases.
14. The remainder of my report is set out as follows:
 - a. Summary of the consent application;
 - b. Scope and limitations of evidential report;
 - c. Assessment of actual and potential effects;

- d. Responses to submissions;
- e. Assessment of mitigation methods; and
- f. Conclusion.

SUMMARY OF CONSENT APPLICATION

- 15. The Roydon Quarry is proposed to be developed as per Figure 7 of the resource consent application. The site includes the following legal descriptions: RS 6475; Section 6 SO 510345; RS 6324; RS5381; Lot 1 DP 4031, and RS 6342. The Selwyn District Council (SDC) is the land use resource consenting authority. The quarry is proposed to include staged extraction faces, stockpiles and loading areas, haul roads, aggregate processing areas, and vehicle refuelling and workshop areas.
- 16. On 16 July 2019, I visited the site accompanied by the applicant's representative, Ms. Marsha Mason, and a representative of the applicant's consultant Mr. Geoffrey England of Golder Associates Limited. Weather conditions were fine with high cloud cover.
- 17. The site is rural and flat and covers approximately 170 hectares (ha). There are no major surface water courses within 1 km of the site.
- 18. CRC well data indicates that groundwater may be as shallow as 10 metres below ground level (m bgl). Groundwater bore logs available for locations on site show that most of the material starting from surface to approximately 1 m bgl is silty sand. From 1 m bgl to about 10 m bgl, fine to coarse gravels in a matrix of fine to coarse sand (with some cobbles, boulders and trace silt) are reported.
- 19. Information retrieved from Landcare Research (S-MAPONLINE, 2019) shows site soils are moderately well drained to well drained.
- 20. The evidence of Dr. Lisa Scott (Dr. Scott) will expand on the groundwater environment beneath and surrounding the site.

SCOPE AND LIMITATIONS OF EVIDENTIAL REPORT

Scope

- 21. My review focuses on assessing potential environmental effects related to contaminated land matters associated with the proposed quarry. These are:
 - a. Hazardous activities and industries (i.e. potentially contaminating activities);
 - b. Remediation and / or management of contaminated areas; and
 - c. Cleanfill management.

Limitations

- 22. My evidential report excludes matters associated with the resource consent application that do not relate to contaminated land (e.g. dust discharges, air quality, groundwater quality).
- 23. Matters related to the protection of human health from contaminants in soil are managed by the regulatory planning framework published under the Resource Management (National Environmental Standard for Assessing and Managing

Contaminants in Soil to Protect Human Health) Regulations 2011 (NESCS or the Regulation).

24. The NESCS is implemented by territorial local authorities (in this case, Selwyn District Council (SDC)) and not regional councils. Therefore, even though I understand the workings of the NESCS, I believe comments regarding the status of any activity triggering the Regulation would be better addressed by an RMA planner. I understand it will be addressed in the report by Mr Henderson for the SDC land use consent.

ASSESSMENT OF ACTUAL AND POTENTIAL EFFECTS

Hazardous activities and industries list (HAIL)

25. The HAIL includes a collection of activities and industries that cause land contamination due to the storage, use or disposal of persistent hazardous substances. The HAIL is published by the MfE and regional councils maintain databases of HAIL activities in their respective regions.
26. CRC's database of HAIL activities is the 'Listed Land Use Register' (LLUR).
27. In 2018, the applicant undertook a preliminary and detailed site investigation (PSI/DSI) for the site. The findings were provided in a report under *Appendix H* of the resource consent application.
28. The purpose of a PSI is to query multiple lines of information (historical aerial images, council records, site occupant accounts, etc.) about historical and current HAIL activities that could contaminate the site. A PSI informs the objectives of subsequent DSIs and is a key part of developing a conceptual site model (i.e., an understanding of contaminant sources, contamination migration pathways, and potentially at-risk environmental receptors) for a site.
29. In June 2019, I queried the LLUR for CRC's HAIL records on the site. The LLUR included HAIL activity record "A8 – Livestock dip or spray race operations" for 107 Dawsons Road and 220 Jones Road. I also reviewed HAIL activities external to the site but within 100 metres of the site boundary. I have determined that those HAIL activities are unlikely to have any impact on the site (as they currently are) with respect to the proposed quarry.
30. In May-June 2019, I supervised the audit of the PSI/DSI report provided by the applicant under Appendix H of the application. The audit revealed that the applicant's investigation identified more HAIL activities than recorded on the LLUR.
31. The PSI/DSI work may have been designed as a screening exercise as opposed to comprehensive site characterisation exercise. With two exceptions (soil sample collection depth and soil sample distribution), the PSI/DSI work appears to have been undertaken in general accordance with MfE guidelines:
 - a. Contaminated Land Management Guidelines No.1: Reporting on contaminated sites in New Zealand (revised 2011)
 - b. Contaminated Land Management Guidelines No. 5: Site investigations and analysis of soils (Revised 2011)
32. The PSI/DSI report stated that discrete surface soil samples were collected from 107 Dawsons Road. I consider the description of these samples as "surface samples" is not correct by MfE requirements.

33. MfE (2011) Contaminated Land Management Guideline No. 5 (subsection 3.6.2, pg. 21) states:
- Surface samples are defined as no deeper than 15 cm, and are typically collected from 0–7.5 cm. The collection of surface soil samples deeper than 15 cm increases the possibility of dilution of the surface soil sample by mixing with less contaminated subsurface soils.*
34. The applicant reported collecting soil samples at 0.20 metres below ground surface. This discrepancy is minor, and I am reasonably satisfied that the area of the livestock pens and foot rot trough have been adequately characterised.
35. Soil sample distribution across the remaining area of 107 Dawsons Road was poor and because some areas of interest have not yet been tested for contamination, the value of the current conceptual site model (CSM) for this area questionable.
36. The CSM for the site should be updated as various areas of interest (which have not already been adequately investigated) are characterised.
37. My site visit confirmed the existence of several areas of interest identified by the applicant; however, I also observed potential areas of interest not covered in the PSI/DSI report at 107 Dawsons Road and 220 Jones Road. These are discussed immediately below.

107 Dawsons Road

38. Historical aerial images show an area of land covering approximately 0.8 hectares may have been used for market gardening, possibly during or prior to the 1970s and up to the 1980s (Attachment 1). This area is included under the most easterly extent of Stage 4 of the proposed quarry (Figure 7, application document).
39. Persistent hazardous pesticides (e.g. arsenic and dichlorodiphenyltrichloroethane (DDT)) may have been applied there in the past. During my site visit, this area of land lay overgrown by weeds and grass. This area of interest was not addressed by the PSI/DSI.
40. Under subsection 6.6.1 of the PSI/DSI report, the applicant identified a waste dumping area situated on the southeast corner adjacent to Dawson Road. The waste dump is on the most easterly extent of Stage 4 of the proposed quarry (Figure 7, application document).
41. When I observed the waste dumping area at the site and in historical aerial imagery, I concluded that the PSI/DSI report did not fully convey the duration or spatial extent of the waste dumping area. It was not safe to enter the area due to overgrown vegetation, loose debris and potentially unstable ground. I estimate the dump covers approximately 500 m². Historical aerial imagery suggests the waste dump may have existed prior to 1940.
42. I observed a stockpile of old battery cases under mature trees between Shed#2 and Shed#3 (Figure 2, PSI/DSI report). The battery plates were removed from the cases. I did not explore the stockpile because it was not safe to do so. This observation was not included in the PSI/DSI report.
43. It is possible that the battery plates were removed before the cases were disposed; however, it is not clear whether this occurred at the site or elsewhere. The stockpile of old battery cases is an uncharacterised area of interest, albeit very small compared to the wider site extent.

44. During my site visit, buckets of oil and a 1,000-litre intermediate bulk container, which appeared to be holding product, remained poorly stored since first being observed by the PSI/DSI in May 2018.

220 Jones Road

45. Historical aerial images from the 1960s and 1970s show a stockyard (Attachment 2); however, this was not discussed in the PSI/DSI. Since visiting the site, the applicant has provided laboratory analytical data from supplemental DSI work which demonstrates that the likelihood that common livestock dipping chemicals being used at this location in the past is low. The former stockyard at 220 Jones Road is no longer an area of interest, with respect to contaminated land.

Remediation and / or management of contaminated areas

46. The applicant has indicated that they will use a remedial action plan (RAP) to guide their approach to remediating contaminated material at the site (proposed conditions 46-51 of the SDC Land use consent, RC185627¹. I agree that a RAP should be prepared and submitted; however, the applicant does not appear to have given a timeframe for submitting the RAP.
47. The applicant has only identified SDC as recipient of the RAP (proposed condition 46). CRC should also be provided with a copy of the document for review, since contaminants of concern in materials being handled during remediation may pose a risk to the groundwater resource from stormwater ingress and discharge to ground.
48. CRC should provide input to the RAP to ensure proper storage and management of any contaminated or potentially contaminated stockpiles; material sorting piles; and remediation excavations. The terms relating to the remediation of contaminated material are otherwise acceptable.

Cleanfill Management

49. Cleanfill management is addressed under proposed conditions 16-20 of the SDC Land use consent, and a draft Cleanfill Management Plan (CMP) has been provided by the applicant under Appendix F of the resource consent application.
50. The MfE 2002 'A guide to the management of cleanfills' (MfE 2002) is currently New Zealand's only endorsed cleanfill management guideline. Section 4.2 of MfE 2002 defines materials which can enter cleanfills and Section 4.3 defines materials which cannot enter cleanfills.
51. WasteMINZ is currently developing the 'Technical Guidelines for Disposal to Land' (last updated August 2018) (WasteMINZ guidelines), which are supported by the MfE. Section 2.1 of the WasteMINZ guidelines states that one of its purposes is to replace MfE 2002. If or when the WasteMINZ guidelines are finalised, it would be appropriate for cleanfilling at the site to be guided by them.
52. Based on the CMP, the applicant has proposed to undertake cleanfilling in the manner prescribed by MfE 2002. My only concern, with respect to the proposal is related to Section 5.3 of the CMP.
53. Under Section 5.3, the applicant indicates that if cleanfill is sourced from a site where a DSI has been undertaken and shows that the contaminants of concern are "at or below background concentrations" that material would be acceptable as cleanfill. It is my understanding that material going to cleanfill must meet "at or below

¹ All conditions discussed in my report reference the proposed conditions provided in the second response to further information, dated August, 2019)

background” for the receiving site and not the site of origin. This point should be clarified between the applicant, SDC and CRC.

54. From my experience, much of the materials currently being sourced as cleanfill in Canterbury originate from urban development, greenfield, and former farmland. Urban soils have been proven by many studies to hold contaminants of concern at elevated concentrations (irrespective of HAIL status) due to anthropogenic activities: historical use of leaded petrol; historical use of lead-based paints which contaminate soil around old housing stock; industrial air discharges; fossil fuel combustion; uncontrolled shallow filling, etc.
55. Christchurch City and the surround suburbs are not an exception with respect to passive contaminant accumulation in soils over time and any material the applicant sources any urban centres, even from non-HAIL sites will require scrutiny.

MITIGATION METHODS

56. If all areas of interest with respect to potential contamination at the site are adequately characterised by the DSI and addressed as described by recommendations laid out under Section 10 of the PSI/DSI, then the risk to the environment from the proposed quarry would be low.
57. A long-term quarry management plan is needed for the site to capture site development, ongoing operation, cleanfilling and subsequent site rehabilitation work. At present, the applicant refers to four separate management plans under proposed condition 63 of the SDC Land use consent. These can be readily combined into one comprehensive living document for the benefit of the applicant, SDC and CRC.
58. Proposed conditions 5-9 of CRC192411 and CRC192412 address “hazardous Activities” with respect to vehicle washdown and mobile refuelling. I am satisfied with the process describe for truck washdown; however, I recommend that any designated refuelling areas (proposed condition 8) must also be serviced by a water-oil separator, as described under proposed condition 5.
59. Proposed conditions 10-13 of CRC192411 and CRC192412 address “spills” of hazardous substances during operation of the quarry. The applicant has commented that a spill management plan will be developed (proposed condition 11) but has not provided a timeframe for that deliverable and have not committed to sharing this with SDC or CRC for records or review. The adequacy of spill management procedures will not be clear to CRC until the spill management plan has been provided and reviewed.

RESPONSE TO SUBMISSIONS/MATTERS RAISED

60. To the best of my knowledge, there have been no submissions to the application with specific reference to contaminated land matters.

CONCLUSIONS

61. I am not aware of any contaminated land matters external to the site that will impact or be impacted by the development of the proposed Roydon Quarry.

62. I am not aware of any contaminated land matters within the site that will impact or be impacted by proposed Roydon Quarry, assuming all current or accidentally encountered future contaminated land matters are addressed in the manner described by the applicant.

Signed: Rowan Freeman Date: 14 August 2019

Name: Principal Science Advisor,
Environment Canterbury.

REFERENCES

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