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Site Validation Report

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Soil Contamination Risk
Site Validation Report

148 Lincoln Rolleston Road & 6/487 Weedons Road, Rolleston, Canterbury

October 2025

QUALITY CONTROL AND CERTIFICATION SHEET

Client: Your Section FR Ltd

Date of Issue: 28 October 2025

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APPENDICES

1 Executive Summary

The subject site is located at 148 Lincoln Rolleston Road and 6/487 Weedons Road, Rolleston, Canterbury. It is proposed to subdivide the subject site for residential use. This will change the use of the land and involve disturbance and off-site disposal of soils. As such, an assessment under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Health) Regulations 2011 (NESCS) has been undertaken. It is noted also that Momentum Environmental Ltd (MEL) is obligated to consider the requirements of Section 10(4) of the Health and Safety at Work (Asbestos) Regulations 2016.

Preliminary and Detailed Site Investigation reports (PSI, DSI) were prepared by MEL in July 2022 and March 2024 for a larger site that includes the current subject site. These previous investigations identified two areas of contamination above 'residential 10% produce' soil guideline values (SGVs) on the subject site. No areas of contamination were identified beyond the current subject site.

The first contaminated area was a burn area on 148 Lincoln Rolleston Road contaminated with arsenic above 'residential 10% produce' SGVs, sampled as BP1. The second contaminated area was a mound with buried waste material and a burn area on top, on 6/487 Weedons Road, with arsenic, lead and cadmium contamination exceeding 'residential 10% produce' SGVs, sampled as J6 and J7. The contaminated soils were considered to pose a moderate risk to users under residential use. It was recommended that the contaminated areas be remediated. Remediation by excavation and disposal to an appropriate off-site disposal facility was considered to be the most viable remediation option.

Remediation of the contaminated areas by excavation and off-site disposal began in July 2025 and was concluded in October 2025. The two contaminated areas were excavated on 29 July 2025. Excavation continued until XRF testing indicated all soils with contaminant concentrations above 'residential 10% produce' SGVs had been removed. Validation samples were then collected to confirm the XRF readings. The excavated soils were mixed and stockpiled on the subject site to allow sampling to inform appropriate disposal options. The stockpile sampling results showed the excavated soils qualified for disposal at Burwood Landfill. A total of 314.14 tonnes of soils were then disposed of at Burwood Landfill. Following removal of the contaminated soil stockpile, the underlying soils were XRF tested and sampled to confirm all the contaminated material had been removed.

Heavy metal concentrations were all below 'residential 10% produce' SGVs in the final validation samples. One or more heavy metal concentrations are above expected background levels in 13 out of 23 validation samples.

The remediation actions have successfully remediated the contaminated areas at the subject site. The subject site is considered suitable for residential use with no further investigations required. Contaminant levels within the remediated areas remain elevated above expected background values. During future earthworks, any material requiring off-site disposal from the subject site may not qualify for disposal as cleanfill material.

2 Objectives of the Investigation

This report has been prepared in general accordance with the Ministry for the Environment's (MfE) "Contaminated Land Management Guidelines No. 1: Reporting on Contaminated Sites in New Zealand, revised 2021" (CLMG No. 1). This report includes all requirements for a Site Validation Report.

The objectives of this investigation are to:

- Describe project information and any physical and environmental features of the subject site.
- Summarise any relevant resource consent information, specifically consent condition requirements.
- Summarise previous contaminated land investigations, specifically remedial strategy and objectives of the remediation.
- Describe remediation/management works undertaken including testing, sampling and inspections.
- Analyse all results and provide an assessment of the effectiveness of the remediation against the remediation objectives.
- Provide further recommendations such as long-term management controls if necessary.
- Describe and attach any documentary evidence, such as waste disposal documentation.

3 Scope of Work Undertaken

The scope of the work undertaken has included:

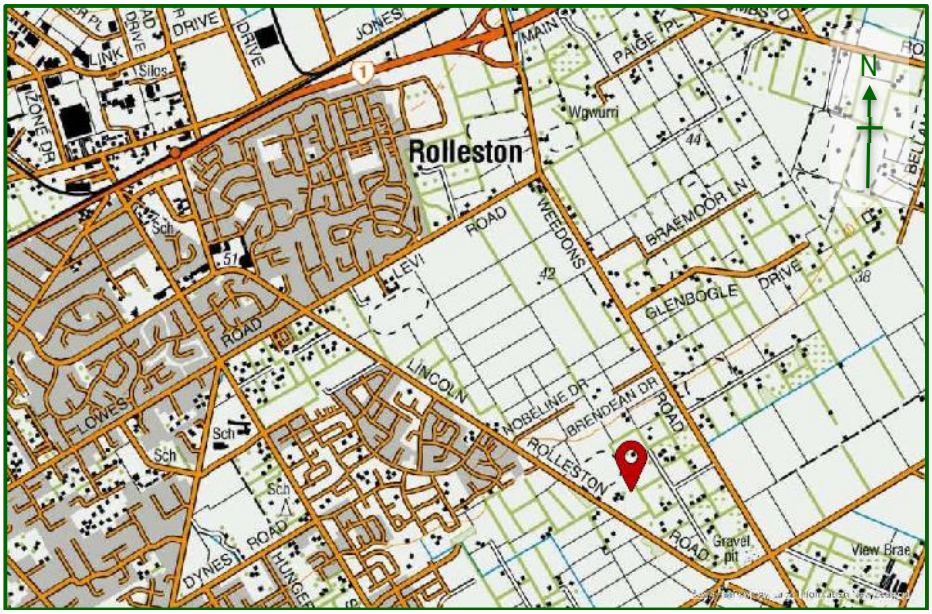
- Review of previous investigations undertaken at the subject site.
- Design and implement a Site Validation Investigation based on the remediation strategy and objectives and the remedial works undertaken.
- On site soil validation sampling and laboratory analysis.
- Analysis of results against applicable soil guidelines values (SGV).
- Preparation of report in accordance with MfE guidelines.

4 Site Identification

The subject site is located at 148 Lincoln Rolleston Road and 6/487 Weedons Road, Rolleston as shown on the plan in **Figure 1** below. The subject site consists of four lots and has a total area of approximately 9.5804ha. Details for each property are shown in **Table 1** below:

Table 1 – Property Details

Street Address	Legal Description	Area (ha)
148 Lincoln Rolleston Road	Lot 1 DP 427521	4.0050
6/487 Weedons Road	Lot 10 DP 47839	4.3381
	Lot 14 DP 47839	1.0794
	Lot 15 DP 47839	0.1579
	Total	**9.5804**



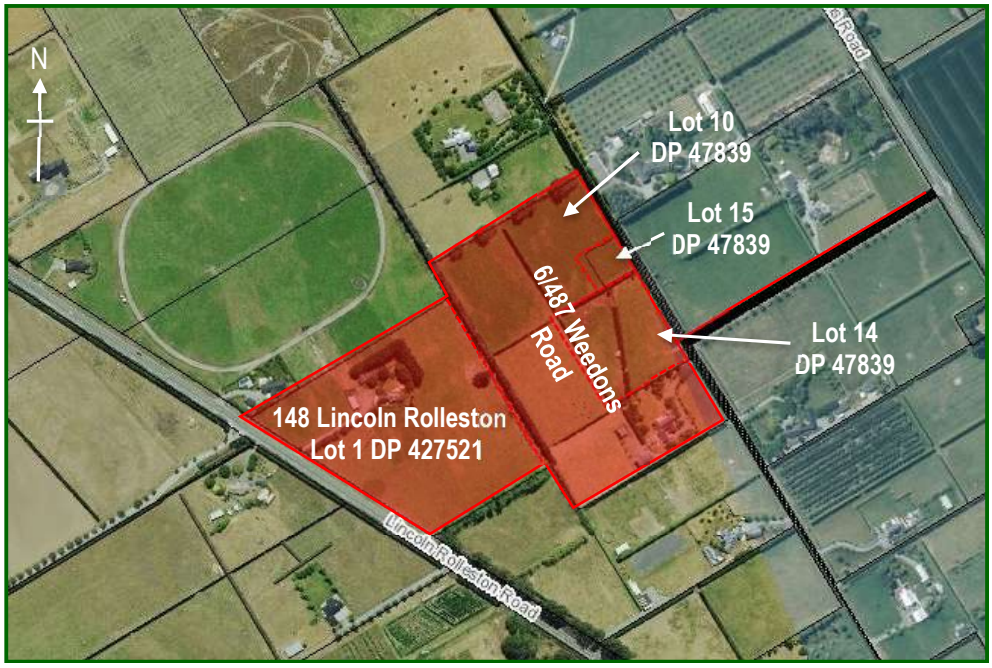


Figure 1 – Location Plan

5 Proposed Site Use

It is proposed to develop the subject site for residential use. This will involve subdivision, change of use of the land, disturbance of soils and off-site disposal of soils.

6 Site Description

6.1 Environmental Setting

Table 2 – Environmental Setting

Topography	The subject site is generally flat land.
Geology	The ECan GIS database describes the soils at the subject site as a combination of Templeton deep silt and Eyre shallow silt. Nearby and onsite bore logs indicate that topsoils are underlain by layers of sandy gravel, claybound gravel and gravel.
Soil Trace Elements	According to the ECan GIS database, natural concentrations of trace elements for the subject site are those of the 'Regional, Recent' soil group.
Groundwater	The subject site lies over the unconfined and semiconfined gravel aquifer system. Groundwater levels recorded for onsite bore logs are between 9.5m and 12.2m deep. The direction of groundwater flow is generally south-easterly.
Surface Water	According to ECan's GIS database, a water race runs along the boundary between 148 Lincoln Rolleston Road and 6/487 Weedons Road. However, during the Preliminary Site Investigation (PSI) this was observed to be dry and the owner of 148 Lincoln Rolleston Road at the time advised that it had been shut off approximately 15 years ago.

6.2 Site Layout & Current Site Uses

The subject site is divided into two rural residential properties. The dwelling and sheds on 148 Lincoln Rolleston Road have recently been demolished. 6/487 Weedons Road contains a dwelling and sheds.

6.3 Surrounding Land Uses

The surrounding land is mainly similar rural residential land. Land to the south-west is currently under development for residential use.

7 Summary of Previous Investigations

Momentum Environmental Ltd completed Preliminary and Detailed Site Investigations (PSI, DSI) in July 2022 and March 2024 for a larger site that includes the current subject site. These previous investigations identified two areas of contamination above 'residential 10% produce' soil guideline values (SGVs) on the subject site. No areas of contamination were identified beyond the current subject site.

The first contaminated area is a burn area on 148 Lincoln Rolleston Road contaminated with arsenic above 'residential 10% produce' SGVs, sampled as BP1. The second contaminated area is a mound with buried waste material and a burn area on top, on 6/487 Weedons Road, with arsenic, lead and/or cadmium contamination exceeding 'residential 10% produce' SGVs, sampled as J6 and J7.

The conceptual site model addressed the risks associated with the identified contaminants:

Table 3 – Conceptual Site Model

Conceptual Site Model				
Source	**Pathways**		**Receptor**	**Risk Assessment**
Burn Area BP1: arsenic concentrations double the 'residential 10% produce' SGV. Zinc exceeds the EGV. **Burn Area/Mound:** Arsenic up to 10 times the 'residential 10% produce' SGV and 3 times the commercial SGV and EGV. Lead and cadmium above 'residential 10% produce' SGVs also present. Lead and zinc above EGVs.	**Human**	Dermal contact, ingestion and inhalation	Future site occupiers / land users	Moderate risk to human health in an uncontrolled residential use as results exceed the 'residential 10% produce' SGV.
			Workers involved in soil disturbance at the site	Moderate risk to human health as some results exceed the commercial / outdoor worker SGV for arsenic. It is likely this risk can be managed by the implementation of an appropriate Site Management Plan.
	Ecological	Infiltration through soils to groundwater	Groundwater is assumed to be 9.5 - 12.2m deep.	**BP1** - Low risk as heavy metals bind well to the soils, and the contamination is likely to be limited to the top 100-150mm of soils. **Burn Area/Mound** - Low risk as heavy metals bind well to the soils, and the contamination is likely limited to the mound of soils and approximately 150-200mm of the underlying soils.
		Surface runoff to waterways	No nearby surface water	Low risk of contaminated soils during soil disturbance activities due to the separation distances.

It was recommended that the identified contaminated areas be remediated prior to development of the subject site for residential use.

Remediation by excavation and offsite disposal of the contaminated soils to an appropriate disposal facility was considered to be the most viable remediation option. A Remediation Action Plan (RAP) and Site Management Plan were produced to support this option. The RAP indicated the soils might qualify for disposal at Burwood Landfill following mixing and additional testing.

8 Summary of Remedial Works and Site Validation Investigation

8.1 Soil Guideline Values

Human health soil contaminant standards for a group of 12 priority contaminants were derived under a set of five land-use scenarios and are legally binding under The Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Health) Regulations 2011 (NES). These standards have been applied where applicable. The regulations describe these as Soil Contaminant Standards. For contaminants other than the 12 priority contaminants, the hierarchy as set out in the Ministry for the Environment Contaminated Land Management Guidelines No 2 has been followed. These are generally described as Soil Guideline Values. For simplicity, this report uses the terminology Soil Guideline Values (SGV) when referring to the appropriate soil contaminant standard or other derived value from the hierarchy. For soil, guideline

values are predominantly risk based, in that they are typically derived using designated exposure scenarios that relate to different land uses. For each exposure scenario, selected pathways of exposure are used to derive guideline values. These pathways typically include soil ingestion, inhalation and dermal adsorption. The guideline values for the appropriate land use scenario relate to the most critical pathway.

The land-use scenario applicable for the site is 'residential 10% produce'. The 'commercial/industrial' land use scenario is used as a proxy for workers involved in disturbing soils.

The adopted trigger values used to determine need for assessment of ecological receptors (including stormwater disposal areas) also referred to as Ecological Guideline Values (EGVs) are the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (online) – Sediment GV-high (ANZWQ) multiplied by three.

Heavy metal concentrations will also be assessed against the expected background levels for soils as published in *Background Concentrations in Canterbury Soils*, Tonkin and Taylor, July 2007.

8.2 Summary of Remedial Works

The excavation of the two contaminated areas was undertaken in accordance with the approved RAP on 29 July 2025. Each remediation area was excavated until XRF testing indicated that heavy metal concentrations were below 'residential 10% produce' SGVs. The excavation at burn area BP1 measures approximately 5x6m and extends to a depth of 100-200mm deep. The excavation of the burn/mound area extended further than anticipated with a final area of approximately 410m^2 excavated to 100-350mm depth.

The photos below show the final excavated remediation areas with XRF test locations marked with a 'O' to indicate readings below 'residential 10% produce' SGVs. Any readings above 'residential 10% produce' SGVs were marked with an 'X' and further excavation undertaken.

Photo 1 – Excavated & XRF tested burn area BP1

Photo 2 – Excavated & XRF tested burn area/mound on 6/487 Weedons Rd

Photo 3 – Excavated & XRF tested burn area/mound on 6/487 Weedons Rd

Photo 4 – Excavated & XRF tested burn area/mound on 6/487 Weedons Rd

Validation samples were taken from the walls and base of each area and submitted to Hill Laboratories for heavy metal analysis to confirm the XRF readings. The validation sample results were all below 'residential 10% produce' SGVs indicating the two contaminated areas have been successfully remediated and no further remediation works were required.

To assist with determining an appropriate disposal facility for the excavated soils it was recommended that the excavated soils be thoroughly mixed and then stockpiled for additional sampling. The contractor was advised the soil should be stockpiled on geofabric or, if geofabric was not used, approximately 50mm depth of underlying soils should be excavated when the stockpile is removed to ensure no contaminated soils remain on the subject site.

The excavated soils were stockpiled next to the 6/487 Weedons Road burn/mound remediation area. The soils were mixed as the excavation progressed and then thoroughly mixed again once the excavation was complete. The final stockpile volume was approximately 150m^3. The soils were a mixture of topsoil and silty gravel subsoil with some waste materials including plastic, balage wrap, timber, metal and ash. Twelve field composite samples (samples SP1 – SP12) were taken from the stockpile on 30 July 2025 and submitted to the Hill Laboratories for seven heavy metal analysis. The samples were collected by a Suitably Qualified and Experienced Practitioner (SQEP) in accordance with the Contaminated Land Management Guidelines (MfE, 2020) and the Technical Guidelines: Characterising Surplus Soil for Disposal, (WasteMinz, September 2024).

Photo 5 – Stockpiled excavated soils

Photo 6 – Material within stockpile

The stockpile sample results confirmed the soils meet Burwood Landfill waste acceptance criteria. These results are included in the tables of laboratory results in **Appendix D** with a copy of the laboratory report in **Appendix E**. The stockpiled soils and approximately 150-200mm depth of underlying soils were then transported to Burwood Landfill for disposal. A total of 314.14 tonnes of soil were disposed of at Burwood Landfill under waste manifest 660983. Disposal Documentation is included in **Appendix A**.

Following the removal of the stockpiled soils, on 07 October 2025, the excavated underlying area was XRF tested to confirm no contaminated soils remained and three validation samples were taken to confirm the XRF readings.

Photo 7 – XRF testing after stockpile removed from site

8.3 Summary of Site Validation Investigation

The site validation investigation was undertaken on 29, 30 September and 07 October 2025. A total of 224 XRF tests were performed across the walls and base of each excavated area (including the stockpile area). Iterative XRF testing and excavation of the remediation areas occurred until the XRF testing indicated all remaining soils contained heavy metals below 'residential 10% produce' SGVs.

On 29 July 2025, five validation samples were collected from the walls and base of the excavated burn area BP1 and fifteen validation samples were collected from the walls and base of the excavated burn/mound area. Three additional validation samples were taken on 07 October 2025 to confirm the stockpiled contaminated soils had been successfully removed from the subject site. The samples were all submitted to Hill Laboratories for heavy metal analysis to confirm the XRF readings.

A Validation Sampling Plan is included in **Appendix B.**

8.4 Quality Assurance and Quality Control

Field quality assurance measures as described in Section 4.3.1 of the "Contaminated Land Management Guidelines No 5: Site Investigation and Analysis of Soils, revised 2021" (CLMG) were followed. These included using trained staff, choosing appropriate sample containers, accurate and individual labelling and recording of locations, completing appropriate laboratory chain of custody forms, chilling of samples as appropriate and timely delivery to laboratories. All non-disposable sampling equipment was decontaminated between samples using Decon 90 and rinsed with tap water. All samples were submitted to IANZ accredited laboratories.

8.5 XRF Quality Assurance Measures

The XRF used was an Olympus Vanta VCR. The manufacturer's instructions were followed in the use of the device. Calibration samples were tested prior to each day's testing and compared with the manufacturer's specifications, and silicon blank readings were taken to ensure there was no contamination of the XRF window.

As the device reads multiple metals, the contaminants to focus on were narrowed down to those likely to be present based on the risk profile and the limitations of the XRF. The results from the XRF for arsenic, chromium, copper, lead, nickel and zinc were analysed in detail but only reported if relevant to human health risk.

9 Site Validation Investigation Results

9.1 Evaluation of Results

The final validation sample results confirmed the XRF readings with heavy metal concentrations below the 'residential 10% produce' SGVs in all samples. Arsenic concentrations are 3 - 14mg/kg. Lead concentrations are 9.4 – 21mg/kg. Cadmium concentrations are <0.10 – 0.45 mg/kg.

None of the validation results exceed ecological guideline values. One or more heavy metals are above expected background levels in 13 out of the 23 validation samples.

The table of XRF validation results is attached in **Appendix C.** Tables of laboratory validation results are attached in **Appendix D** and copies of the laboratory reports are attached in **Appendix E.**

9.2 Results of Field & Laboratory Quality Assurance and Quality Control

No quality control issues were identified during sampling.

All laboratory tested samples were submitted to Hill Laboratories for analysis. Hill Laboratories holds IANZ accreditation. As part of holding accreditation the laboratory follows appropriate testing and quality control procedures. No quality control issues were identified.

9.3 Results of XRF Quality Assurance and Quality Control

The quality assurance measures described in **Section 8.5** above were followed. Calibration checks and blank testing showed no quality control issues.

10 Summary of Resource Consent and Conditions

Resource consents RC245401 (subdivision) and RC245402 (land use) were granted by Selwyn District Council (SDC) for the whole development site on 13 November 2024. The resource consent contained several general conditions relating to the remediation of contaminated soils, including the requirement to remediate contaminated material in accordance with an approved RAP, evidence of appropriate disposal of any soils requiring off-site disposal, and provision of a Site Validation Report which shall be submitted to Selwyn District Council following completion of works. This Site Validation Report has been prepared in general accordance with the "Contaminated Land Management Guidelines No 1: Reporting on Contaminated Sites in New Zealand, revised 2021" and is considered to have met the conditions of consent.

11 Conclusion

Previous investigations had identified two areas on the subject site that were contaminated with heavy metals above the 'residential 10% produce' SGVs. The contaminated soils were considered to pose a moderate risk to users under residential use and it was recommended that the contaminated areas be remediated. Remediation by excavation and disposal to an appropriate off-site disposal facility was considered to be the most viable remediation option.

The two contaminated areas were excavated on 29 July 2025. Excavation continued until XRF testing indicated all soils with contaminant concentrations above 'residential 10% produce' SGVs had been removed. Validation samples were then collected to confirm the XRF readings. The excavated soils were mixed and stockpiled on the subject site to allow sampling to inform appropriate disposal options. The stockpile sampling results showed the excavated soils qualified for disposal at Burwood Landfill. A total of 314.14 tonnes of soils were then disposed of at Burwood Landfill. Following removal of the stockpiled soils, the underlying soils were XRF tested and sampled to confirm all the contaminated material had been removed.

Heavy metal concentrations were below the 'residential 10% produce' SGVs in the final validation samples. One or more heavy metal concentrations are above expected background levels in 13 out of 23 validation samples.

The remediation actions have successfully remediated the contaminated areas at the subject site. The subject site is considered suitable for residential use with no further investigations required.

12 Limitations

Momentum Environmental Limited has performed services for this project in accordance with current professional standards for environmental site assessments, and in terms of the client's financial and technical brief for the work. Any reliance on this report by other parties shall be at such party's own risk. It does not purport to completely describe all the site characteristics and properties. Where data is supplied by the client or any third party, it has been assumed that the information is correct, unless otherwise stated. Momentum Environmental Limited accepts no responsibility for errors or omissions in the information provided. Should further information become available regarding the conditions at the site, Momentum Environmental Limited reserves the right to review the report in the context of the additional information.

Opinions and judgments expressed in this report are based on an understanding and interpretation of regulatory standards at the time of writing and should not be construed as legal opinions. As regulatory standards are constantly changing, conclusions and recommendations considered to be acceptable at the time of writing, may in the future become subject to different regulatory standards which cause them to become unacceptable. This may require further assessment and/or remediation of the site to be suitable for the existing or proposed land use activities. There is no investigation that is thorough enough to preclude the presence of materials at the site that presently or in the future may be considered hazardous.

Appendix A – Disposal Documentation

Christchurch City Council
Burwood Landfill

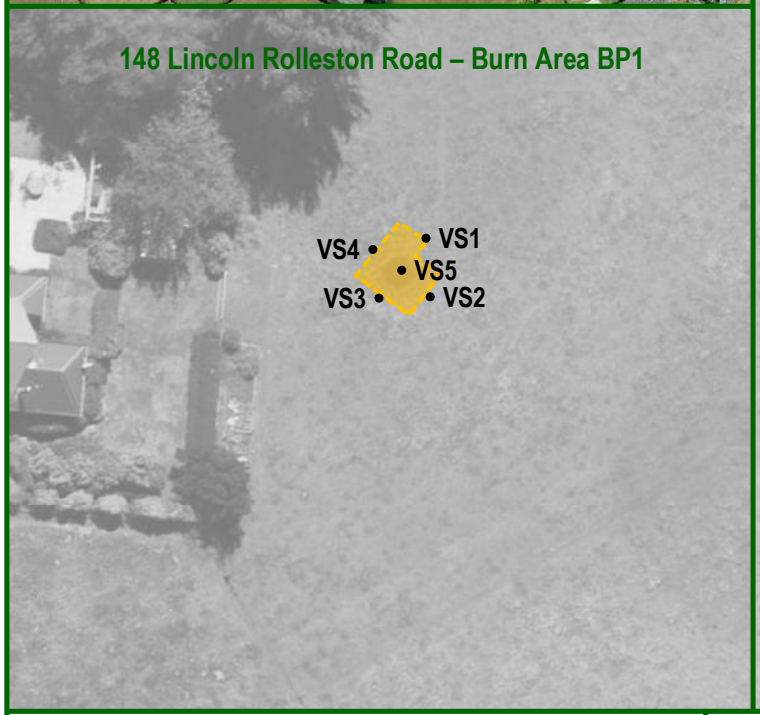
Transactions from 1/09/2025 to 28/09/2025

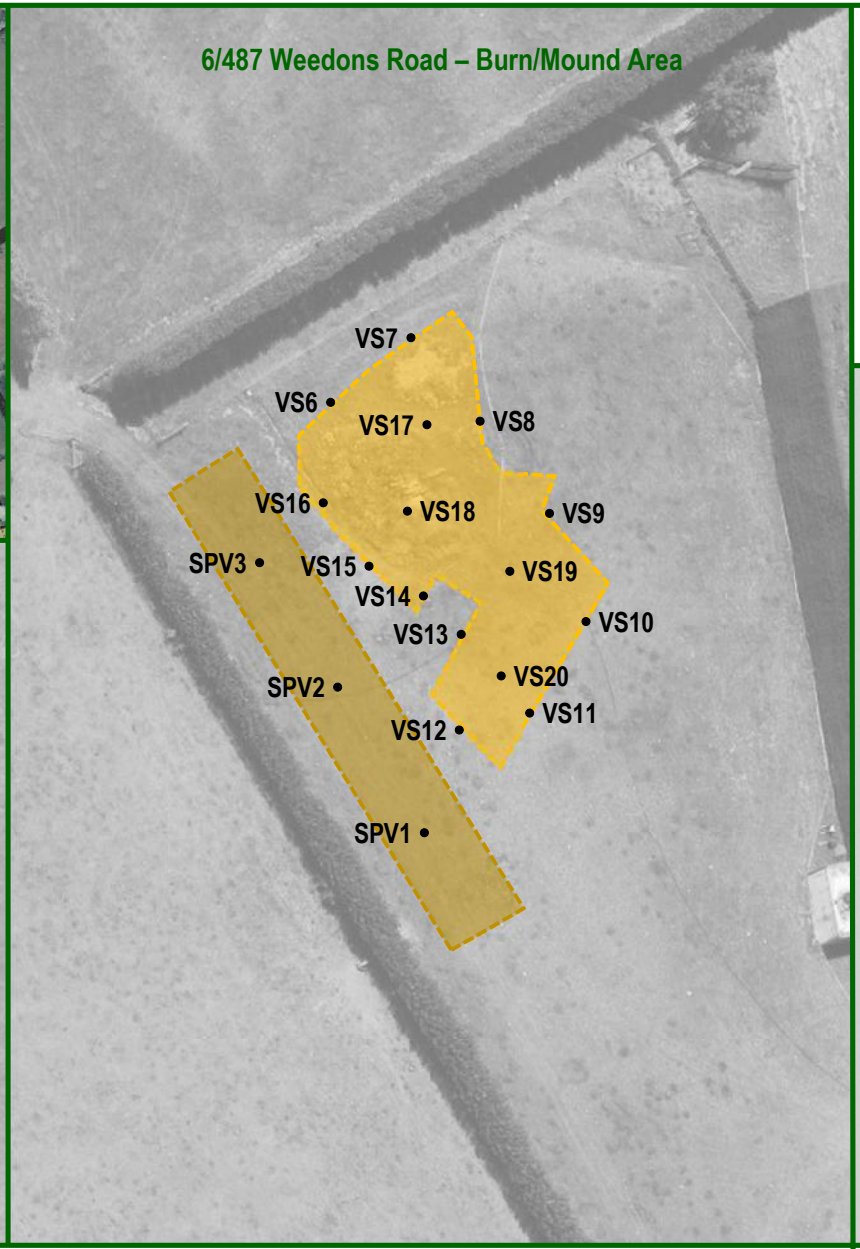
Christchurch City Council

4144952 Yoursection Limited

Date	Time:	Tran Docket:	Manifest No.	Vehicle ID	Transporter	Product	Rate/tonne	Net Weight (tonnes)	Amount incl GST
18/09/2025	11:30	491331	660983	QRW428	Ongrade Drainage	CCC Special Soil Class A	$125.00	9.46	$1,359.88
18/09/2025	12:20	491336	660983	QZB514	Ongrade Drainage	CCC Special Soil Class A	$125.00	15.42	$2,216.63
18/09/2025	13:23	491342	660983	QRW428	Ongrade Drainage	CCC Special Soil Class A	$125.00	9.88	$1,420.25
18/09/2025	14:41	491347	660983	QZB514	Ongrade Drainage	CCC Special Soil Class A	$125.00	17.44	$2,507.00
18/09/2025	15:36	491349	660983	QRW428	Ongrade Drainage	CCC Special Soil Class A	$125.00	9.20	$1,322.50
19/09/2025	9:38	491356	660983	QZB514	Ongrade Drainage	CCC Special Soil Class A	$125.00	17.50	$2,515.63
19/09/2025	10:09	491357	660983	HBZ473	Ongrade Drainage	CCC Special Soil Class A	$125.00	9.86	$1,417.38
19/09/2025	10:13	491359	660983	QRW428	Ongrade Drainage	CCC Special Soil Class A	$125.00	10.62	$1,526.63
19/09/2025	12:45	491362	660983	QZB514	Ongrade Drainage	CCC Special Soil Class A	$125.00	18.60	$2,673.75
19/09/2025	12:57	491363	660983	HBZ473	Ongrade Drainage	CCC Special Soil Class A	$125.00	13.86	$1,992.38
19/09/2025	12:59	491364	660983	QRW428	Ongrade Drainage	CCC Special Soil Class A	$125.00	10.82	$1,555.38
19/09/2025	14:56	491367	660983	QRW428	Ongrade Drainage	CCC Special Soil Class A	$125.00	10.40	$1,495.00
19/09/2025	16:04	491370	660983	QZB514	Ongrade Drainage	CCC Special Soil Class A	$125.00	17.80	$2,558.75
22/09/2025	8:40	491374	660983	QZB514	Ongrade Drainage	CCC Special Soil Class A	$125.00	18.10	$2,601.88
22/09/2025	9:33	491382	660983	QRW428	Ongrade Drainage	CCC Special Soil Class A	$125.00	11.38	$1,635.88
22/09/2025	10:58	491391	660983	QZB514	Ongrade Drainage	CCC Special Soil Class A	$125.00	19.22	$2,762.88
22/09/2025	11:47	491395	660983	QRW428	Ongrade Drainage	CCC Special Soil Class A	$125.00	11.30	$1,624.38
22/09/2025	13:50	491399	660983	QZB514	Ongrade Drainage	CCC Special Soil Class A	$125.00	19.84	$2,852.00
22/09/2025	13:58	491400	660983	QRW428	Ongrade Drainage	CCC Special Soil Class A	$125.00	11.16	$1,604.25
23/09/2025	8:59	491419	660983	HBZ473	Ongrade Drainage	CCC Special Soil Class A	$125.00	13.68	$1,966.50
23/09/2025	9:50	491427	660983	QRW428	Ongrade Drainage	CCC Special Soil Class A	$125.00	11.12	$1,598.50
23/09/2025	12:15	491446	660983	HBZ473	Ongrade Drainage	CCC Special Soil Class A	$125.00	13.56	$1,949.25
23/09/2025	12:48	491450	660983	QRW428	Ongrade Drainage	CCC Special Soil Class A	$125.00	13.92	$2,001.00
						Total Incl GST:		**314.14**	**$45,157.68**

Appendix B – Validation Sample Location Plan





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LEGEND

- **• VS/SPV** — Validation soil sample location
- Approx. extent of excavated remediation area
- Approx extent of area excavated once stockpile was removed

PLAN MUST BE PRINTED IN COLOUR

Graphic scale is approximate only

0 6 12 18 24 30m

Date: 22 October 2025 **Drawing No:** 678/8

148 Lincoln Rolleston Road & 6/487 Weedons Road, Rolleston
Validation Sample Location Plan

Notes:

1. This plan has been prepared for soil contamination risk assessment purposes only. No liability is accepted if the plan is used for any other purposes.
2. Any measurements taken from this plan which are not dimensioned on the electronic copy are at the risk of the user.
3. Soil sample locations are approximate only

Appendix C – Table of XRF Validation Results

Table of XRF Results - 148 Lincoln Rolleston Rd & 6/487 Weedons Rd, Rolleston, Canterbury

Date of testing: 29 September & 07 October 2025

Units: ppm

Type/Comment	XRF Reading No	Date	Time	Test Duration (secs)	Total Recoverable Arsenic		Total Recoverable Lead	
					Result	Error	Result	Error
Blank	1	29/07/2025	9:35:12	40.0	<LOD	3	<LOD	4
Calibration test	2	29/07/2025	9:36:23	40.0	11	1	17	1
Calibration test	3	29/07/2025	9:37:21	40.0	420	4	453	4
BURN AREA BP1								
Soils suitable to remain on site	4	29/07/2025	9:42:35	26.0	4	1	10	1
Soils suitable to remain on site	5	29/07/2025	9:43:07	25.8	3	1	13	1
Soils suitable to remain on site	6	29/07/2025	9:43:42	26.6	8	1	10	1
Soils suitable to remain on site	7	29/07/2025	9:44:22	25.4	5	1	11	1
Soils suitable to remain on site	8	29/07/2025	9:45:06	26.4	4	1	10	1
Soils suitable to remain on site	9	29/07/2025	9:45:46	26.7	5	1	8	1
Soils suitable to remain on site	10	29/07/2025	9:46:20	25.9	3	1	11	1
Soils suitable to remain on site	11	29/07/2025	9:46:57	25.4	3	1	10	1
Soils suitable to remain on site	12	29/07/2025	9:47:36	24.0	6	1	9	1
Soils suitable to remain on site	13	29/07/2025	9:48:08	21.5	3	1	12	1
Soils suitable to remain on site	14	29/07/2025	9:48:41	22.8	8	1	10	1
Soils excavated and stockpiled for disposal	15	29/07/2025	9:49:14	19.3	15	1	9	1
Soils suitable to remain on site	16	29/07/2025	9:49:41	21.5	11	1	10	1
Soils suitable to remain on site	17	29/07/2025	9:50:16	21.8	8	1	9	1
Soils suitable to remain on site	18	29/07/2025	9:50:49	21.2	6	1	7	1
Soils suitable to remain on site	19	29/07/2025	9:53:48	23.5	5	1	10	1
Soils suitable to remain on site	20	29/07/2025	9:54:19	23.1	5	1	12	1
Soils suitable to remain on site	21	29/07/2025	9:55:02	23.8	9	1	10	1
BURN / MOUND AREA								
Blank	22	29/07/2025	10:33:05	40.0	<LOD	4	<LOD	5
Soils suitable to remain on site	23	29/07/2025	10:35:58	25.3	2	1	10	1
Soils suitable to remain on site	24	29/07/2025	10:36:38	26.7	3	1	9	1
Soils suitable to remain on site	25	29/07/2025	10:37:13	24.1	2	1	13	1
Soils suitable to remain on site	26	29/07/2025	10:37:46	22.0	3	1	11	1
Soils suitable to remain on site	27	29/07/2025	10:38:22	23.3	4	1	14	1
Soils suitable to remain on site	28	29/07/2025	10:38:53	22.5	3	1	10	1
Soils suitable to remain on site	29	29/07/2025	10:39:27	23.0	3	1	7	1
Soils to be removed from site	30	29/07/2025	10:39:59	22.3	<LOD	3	9	1
Soils suitable to remain on site	31	29/07/2025	10:40:31	22.4	3	1	13	1
Soils suitable to remain on site	32	29/07/2025	10:41:07	25.0	3	1	13	1
Soils suitable to remain on site	33	29/07/2025	10:41:44	23.4	5	1	13	1
Soils suitable to remain on site	34	29/07/2025	10:42:16	23.6	6	1	15	1
Soils suitable to remain on site	35	29/07/2025	10:42:49	19.3	4	1	14	1
Soils suitable to remain on site	36	29/07/2025	10:43:19	22.5	3	1	8	1
Soils suitable to remain on site	37	29/07/2025	10:44:04	24.0	5	1	12	1
Soils suitable to remain on site	38	29/07/2025	10:50:51	30.0	3	1	8	1
Soils suitable to remain on site	39	29/07/2025	10:51:30	24.8	3	1	10	1
Soils suitable to remain on site	40	29/07/2025	10:52:04	22.7	5	1	15	1
Soils suitable to remain on site	41	29/07/2025	10:52:40	24.3	3	1	10	1
Soils suitable to remain on site	42	29/07/2025	10:53:14	23.0	3	1	8	1
Soils suitable to remain on site	43	29/07/2025	10:53:47	23.1	6	1	9	1
Blank	44	29/07/2025	10:55:08	40.0	<LOD	3	<LOD	4
Soils suitable to remain on site	45	29/07/2025	10:56:32	30.0	3	1	56	1
Soils suitable to remain on site	46	29/07/2025	10:57:18	40.0	14	1	27	1
Soils excavated and stockpiled for disposal	47	29/07/2025	10:58:15	0.7	18	5	<LOD	28
Soils excavated and stockpiled for disposal	48	29/07/2025	10:58:24	40.0	15	1	17	1
Soils excavated and stockpiled for disposal	49	29/07/2025	10:59:22	17.7	46	1	28	1
Soils suitable to remain on site	50	29/07/2025	11:00:01	30.0	6	1	31	1
Soils suitable to remain on site	51	29/07/2025	11:01:02	22.2	6	1	19	1
Soils excavated and stockpiled for disposal	52	29/07/2025	11:01:34	16.5	25	1	23	1
Soils excavated and stockpiled for disposal	53	29/07/2025	11:02:00	20.5	21	1	15	1

Soils suitable to remain on site	54	29/07/2025	11:02:33	21.5	5	1	14	1
Soils suitable to remain on site	55	29/07/2025	11:03:04	25.9	3	0	10	1
Soils suitable to remain on site	56	29/07/2025	11:03:42	21.9	7	1	14	1
Soils suitable to remain on site	57	29/07/2025	11:05:00	21.0	10	1	16	1
Soils excavated and stockpiled for disposal	58	29/07/2025	11:05:31	40.0	15	1	19	1
Soils excavated and stockpiled for disposal	59	29/07/2025	11:06:28	16.0	34	1	16	1
Soils suitable to remain on site	60	29/07/2025	11:06:56	22.6	7	1	10	1
Soils excavated and stockpiled for disposal	61	29/07/2025	11:07:33	18.6	31	1	21	1
Soils suitable to remain on site	62	29/07/2025	11:08:03	26.1	5	1	17	1
Soils excavated and stockpiled for disposal	63	29/07/2025	11:08:40	23.3	40	1	18	1
Blank	64	29/07/2025	11:12:22	40.0	<LOD	3	<LOD	4
Soils suitable to remain on site	65	29/07/2025	11:13:33	22.6	5	1	14	1
Soils suitable to remain on site	66	29/07/2025	11:14:09	25.0	6	1	15	1
Soils suitable to remain on site	67	29/07/2025	11:14:47	27.2	8	1	16	1
Soils suitable to remain on site	68	29/07/2025	11:15:25	30.0	10	1	18	1
Soils excavated and stockpiled for disposal	69	29/07/2025	11:16:04	15.7	47	2	17	1
Soils excavated and stockpiled for disposal	70	29/07/2025	11:16:34	16.4	31	1	55	1
Soils suitable to remain on site	71	29/07/2025	11:17:01	17.0	4	1	11	1
Soils suitable to remain on site	72	29/07/2025	11:17:21	22.2	4	1	12	1
Soils suitable to remain on site	73	29/07/2025	11:17:53	23.9	9	1	17	1
Soils suitable to remain on site	74	29/07/2025	11:18:27	21.8	7	1	14	1
Soils suitable to remain on site	75	29/07/2025	11:18:58	22.5	8	1	16	1
Soils suitable to remain on site	76	29/07/2025	11:19:30	21.3	6	1	17	1
Soils suitable to remain on site	77	29/07/2025	11:20:10	25.0	11	1	14	1
Soils suitable to remain on site	78	29/07/2025	11:20:52	22.0	8	1	15	1
Blank	79	29/07/2025	11:28:46	40.0	<LOD	3	<LOD	4
Soils suitable to remain on site	80	29/07/2025	11:31:55	27.1	7	1	13	1
Soils suitable to remain on site	81	29/07/2025	11:32:46	25.3	4	1	15	1
Soils suitable to remain on site	82	29/07/2025	11:35:20	23.5	6	1	12	1
Soils suitable to remain on site	83	29/07/2025	11:35:53	26.3	11	1	20	1
Soils excavated and stockpiled for disposal	84	29/07/2025	11:36:42	8.7	47	2	25	2
Soils excavated and stockpiled for disposal	85	29/07/2025	11:37:07	12.3	28	1	14	1
Soils suitable to remain on site	86	29/07/2025	11:37:34	21.2	7	1	10	1
Soils excavated and stockpiled for disposal	87	29/07/2025	11:38:14	13.5	19	1	15	1
Soils excavated and stockpiled for disposal	88	29/07/2025	11:38:38	17.3	16	1	12	1
Soils suitable to remain on site	89	29/07/2025	11:40:00	26.1	5	1	16	1
Soils excavated and stockpiled for disposal	90	29/07/2025	11:41:20	11.1	38	1	18	1
Soils suitable to remain on site	91	29/07/2025	11:42:46	21.7	10	1	16	1
Soils suitable to remain on site	92	29/07/2025	11:43:18	22.3	4	1	10	1
Soils suitable to remain on site	93	29/07/2025	11:43:48	23.7	8	1	11	1
Soils excavated and stockpiled for disposal	94	29/07/2025	11:44:20	14.0	29	1	16	1
Soils excavated and stockpiled for disposal	95	29/07/2025	11:44:42	15.2	116	2	29	1
Soils excavated and stockpiled for disposal	96	29/07/2025	11:45:13	17.5	17	1	16	1
Soils excavated and stockpiled for disposal	97	29/07/2025	11:45:43	13.2	35	2	81	2
Soils excavated and stockpiled for disposal	98	29/07/2025	11:46:07	10.2	45	2	23	2
Soils suitable to remain on site	99	29/07/2025	11:46:28	21.0	10	1	16	1
Soils suitable to remain on site	100	29/07/2025	11:47:02	27.8	13	1	16	1
Soils suitable to remain on site	101	29/07/2025	11:47:52	25.7	12	1	12	1
Soils excavated and stockpiled for disposal	102	29/07/2025	11:48:31	11.6	25	2	28	2
Soils excavated and stockpiled for disposal	103	29/07/2025	11:49:00	14.4	35	1	38	1
Soils excavated and stockpiled for disposal	104	29/07/2025	11:49:26	13.1	19	1	16	1
Soils suitable to remain on site	105	29/07/2025	11:50:01	27.6	11	1	19	1
Soils suitable to remain on site	106	29/07/2025	11:50:46	22.7	9	1	16	1
Blank	107	29/07/2025	11:52:39	40.0	<LOD	3	<LOD	4
Soils excavated and stockpiled for disposal	108	29/07/2025	11:57:43	21.1	71	1	14	1
Soils excavated and stockpiled for disposal	109	29/07/2025	11:58:13	11.0	61	2	16	1
Soils excavated and stockpiled for disposal	110	29/07/2025	11:58:35	16.9	17	1	15	1
Soils excavated and stockpiled for disposal	111	29/07/2025	11:59:01	30.6	16	1	20	1
Soils excavated and stockpiled for disposal	112	29/07/2025	11:59:41	11.0	19	1	19	1
Soils excavated and stockpiled for disposal	113	29/07/2025	12:00:18	14.0	21	1	18	1
Soils suitable to remain on site	114	29/07/2025	12:00:51	22.9	14	1	18	1
Soils suitable to remain on site	115	29/07/2025	12:01:28	21.7	8	1	16	1

Soils excavated and stockpiled for disposal	116	29/07/2025	12:02:04	10.6	42	2	33	1
Soils suitable to remain on site	117	29/07/2025	12:02:27	22.9	8	1	14	1
Soils suitable to remain on site	118	29/07/2025	12:05:19	25.1	7	1	18	1
Soils excavated and stockpiled for disposal	119	29/07/2025	12:05:56	40.0	17	1	14	1
Soils suitable to remain on site	120	29/07/2025	12:07:02	22.4	8	1	16	1
Soils suitable to remain on site	121	29/07/2025	12:07:37	22.6	5	1	14	1
Soils suitable to remain on site	122	29/07/2025	12:08:16	22.2	14	1	17	1
Blank	123	29/07/2025	12:09:02	40.0	<LOD	3	<LOD	4
Soils excavated and stockpiled for disposal	124	29/07/2025	12:10:14	22.0	23	1	20	1
Soils suitable to remain on site	125	29/07/2025	12:10:54	22.8	12	1	21	1
Soils excavated and stockpiled for disposal	126	29/07/2025	12:11:34	12.0	40	2	17	1
Soils suitable to remain on site	127	29/07/2025	12:12:02	26.3	13	1	20	1
Soils excavated and stockpiled for disposal	128	29/07/2025	12:12:41	30.7	17	1	21	1
Soils suitable to remain on site	129	29/07/2025	12:13:30	28.3	13	1	14	1
Soils excavated and stockpiled for disposal	130	29/07/2025	12:14:14	16.6	18	1	24	1
Soils excavated and stockpiled for disposal	131	29/07/2025	12:14:52	20.3	19	1	17	1
Soils suitable to remain on site	132	29/07/2025	12:21:34	21.9	11	1	17	1
Soils excavated and stockpiled for disposal	133	29/07/2025	12:22:13	32.7	21	1	17	1
Soils suitable to remain on site	134	29/07/2025	12:23:09	21.9	7	1	15	1
Soils suitable to remain on site	135	29/07/2025	12:23:42	21.5	6	1	15	1
Soils suitable to remain on site	136	29/07/2025	12:24:22	21.8	5	1	14	1
Soils suitable to remain on site	137	29/07/2025	12:24:54	40.0	15	1	78	1
Soils suitable to remain on site	138	29/07/2025	12:25:51	22.1	8	1	16	1
Soils suitable to remain on site	139	29/07/2025	12:26:23	22.9	12	1	13	1
Soils excavated and stockpiled for disposal	140	29/07/2025	12:27:05	11.6	31	1	27	1
Soils excavated and stockpiled for disposal	141	29/07/2025	12:27:39	12.9	34	1	31	1
Soils excavated and stockpiled for disposal	142	29/07/2025	12:28:06	12.8	17	1	37	1
Soils suitable to remain on site	143	29/07/2025	12:28:35	21.3	10	1	39	1
Soils excavated and stockpiled for disposal	144	29/07/2025	12:32:20	31.6	16	1	23	1
Soils excavated and stockpiled for disposal	145	29/07/2025	12:33:39	25.4	19	1	34	1
Soils excavated and stockpiled for disposal	146	29/07/2025	12:34:07	22.0	15	1	28	1
Soils excavated and stockpiled for disposal	147	29/07/2025	12:34:44	32.6	17	1	44	1
Soils suitable to remain on site	148	29/07/2025	12:35:36	21.8	13	1	49	1
Soils excavated and stockpiled for disposal	149	29/07/2025	12:36:16	21.2	24	1	19	1
Blank	150	29/07/2025	12:38:25	40.0	<LOD	3	<LOD	4
Soils suitable to remain on site	151	29/07/2025	12:39:49	21.4	9	1	16	1
Soils suitable to remain on site	152	29/07/2025	12:40:18	22.0	6	1	17	1
Soils suitable to remain on site	153	29/07/2025	12:40:49	21.4	7	1	18	1
Soils suitable to remain on site	154	29/07/2025	12:41:22	22.0	11	1	22	1
Soils suitable to remain on site	155	29/07/2025	12:42:06	22.5	7	1	15	1
Soils excavated and stockpiled for disposal	156	29/07/2025	12:42:46	30.7	15	1	44	1
Soils excavated and stockpiled for disposal	157	29/07/2025	12:43:29	29.6	19	1	41	1
Soils excavated and stockpiled for disposal	158	29/07/2025	12:44:13	14.4	21	2	35	2
Soils suitable to remain on site	159	29/07/2025	12:44:41	21.0	7	1	17	1
Soils suitable to remain on site	160	29/07/2025	12:45:15	21.9	9	1	15	1
Soils suitable to remain on site	161	29/07/2025	12:45:46	29.4	6	1	13	1
Soils suitable to remain on site	162	29/07/2025	12:46:35	22.3	8	1	19	1
Soils suitable to remain on site	163	29/07/2025	12:47:06	21.8	6	1	14	1
Soils suitable to remain on site	164	29/07/2025	12:47:36	23.0	7	1	12	1
Soils suitable to remain on site	165	29/07/2025	12:48:11	27.5	13	1	42	1
Soils excavated and stockpiled for disposal	166	29/07/2025	12:50:45	22.0	18	1	25	1
Soils excavated and stockpiled for disposal	167	29/07/2025	12:51:15	18.4	28	1	84	2
Soils excavated and stockpiled for disposal	168	29/07/2025	12:51:44	31.2	16	1	22	1
Soils excavated and stockpiled for disposal	169	29/07/2025	12:52:27	7.7	20	1	21	2
Soils excavated and stockpiled for disposal	170	29/07/2025	12:56:41	30.0	18	1	29	1
Soils excavated and stockpiled for disposal	171	29/07/2025	12:57:21	13.2	42	1	33	1
Soils excavated and stockpiled for disposal	172	29/07/2025	12:57:46	10.9	29	1	17	1
Soils excavated and stockpiled for disposal	173	29/07/2025	12:58:06	10.4	28	1	16	1
Blank	174	29/07/2025	13:02:53	40.0	<LOD	3	<LOD	4
Soils suitable to remain on site	175	29/07/2025	13:04:15	22.4	8	1	44	1
Soils suitable to remain on site	176	29/07/2025	13:04:46	27.0	8	1	40	1
Soils suitable to remain on site	177	29/07/2025	13:05:22	22.8	6	1	20	1

Soils excavated and stockpiled for disposal	178	29/07/2025	13:05:59	17.6	22	1	14	1
Soils excavated and stockpiled for disposal	179	29/07/2025	13:06:29	12.4	20	1	15	1
Soils excavated and stockpiled for disposal	180	29/07/2025	13:06:53	11.8	63	2	14	1
Soils excavated and stockpiled for disposal	181	29/07/2025	13:07:31	16.2	35	1	16	1
Soils suitable to remain on site	182	29/07/2025	13:08:02	21.7	14	1	28	1
Soils excavated and stockpiled for disposal	183	29/07/2025	13:08:36	14.2	20	1	21	1
Soils excavated and stockpiled for disposal	184	29/07/2025	13:09:09	7.8	48	2	15	2
Soils suitable to remain on site	185	29/07/2025	13:09:45	21.9	14	1	11	1
Soils excavated and stockpiled for disposal	186	29/07/2025	13:10:55	10.5	22	2	20	2
Soils suitable to remain on site	187	29/07/2025	13:17:34	22.1	7	1	14	1
Soils suitable to remain on site	188	29/07/2025	13:18:40	29.2	8	1	16	1
Soils suitable to remain on site	189	29/07/2025	13:19:41	28.0	9	1	15	1
Soils excavated and stockpiled for disposal	190	29/07/2025	13:20:22	21.5	20	1	14	1
Soils excavated and stockpiled for disposal	191	29/07/2025	13:20:55	13.8	19	1	13	1
Soils suitable to remain on site	192	29/07/2025	13:21:33	21.9	12	1	11	1
Soils suitable to remain on site	193	29/07/2025	13:22:03	22.4	10	1	15	1
Soils excavated and stockpiled for disposal	194	29/07/2025	13:22:34	11.5	25	1	16	1
Soils excavated and stockpiled for disposal	195	29/07/2025	13:22:56	7.3	25	2	19	2
Soils excavated and stockpiled for disposal	196	29/07/2025	13:23:12	9.2	18	1	15	2
Soils suitable to remain on site	197	29/07/2025	13:23:39	21.3	14	1	21	1
Soils suitable to remain on site	198	29/07/2025	13:29:55	21.5	6	1	16	1
Soils excavated and stockpiled for disposal	199	29/07/2025	13:30:29	30.0	15	1	13	1
Soils excavated and stockpiled for disposal	200	29/07/2025	13:31:28	16.8	23	1	15	1
Soils excavated and stockpiled for disposal	201	29/07/2025	13:31:57	14.6	24	1	13	1
Soils suitable to remain on site	202	29/07/2025	13:32:31	21.2	14	1	14	1
Soils excavated and stockpiled for disposal	203	29/07/2025	13:33:10	24.9	18	1	13	1
Soils suitable to remain on site	204	29/07/2025	13:34:57	22.1	9	1	19	1
Soils excavated and stockpiled for disposal	205	29/07/2025	13:35:58	16.6	17	1	16	1
Soils suitable to remain on site	206	29/07/2025	13:44:11	21.8	6	1	14	1
Soils suitable to remain on site	207	29/07/2025	13:44:43	22.6	8	1	13	1
Soils suitable to remain on site	208	29/07/2025	13:45:22	22.0	7	1	11	1
Soils suitable to remain on site	209	29/07/2025	13:45:57	21.4	4	1	17	1
Soils suitable to remain on site	210	29/07/2025	13:46:31	22.1	6	1	11	1
Soils suitable to remain on site	211	29/07/2025	13:47:07	21.5	12	1	14	1
Soils suitable to remain on site	212	29/07/2025	13:47:43	21.5	11	1	13	1
Soils suitable to remain on site	213	29/07/2025	13:48:18	21.8	12	1	13	1
Blank	214	29/07/2025	13:50:11	40.0	<LOD	3	<LOD	4
UNDER STOCKPILE FOLLOWING DISPOSAL								
Blank *	40	7/10/2025	9:59:19	40.0	<LOD	3	<LOD	4
Soils suitable to remain on site	41	7/10/2025	10:00:39	22.8	7	1	16	1
Soils suitable to remain on site	42	7/10/2025	10:01:13	21.6	12	1	20	1
Soils suitable to remain on site	43	7/10/2025	10:01:50	21.4	5	1	13	1
Soils suitable to remain on site	44	7/10/2025	10:02:27	21.1	7	1	17	1
Soils suitable to remain on site	45	7/10/2025	10:03:07	22.0	6	1	17	2
Soils suitable to remain on site	46	7/10/2025	10:03:50	21.3	5	1	15	1
Soils suitable to remain on site	47	7/10/2025	10:04:24	21.8	4	1	13	1
Soils suitable to remain on site	48	7/10/2025	10:05:02	21.4	4	1	15	1
Soils suitable to remain on site	49	7/10/2025	10:05:37	22.5	4	1	16	1
Soils suitable to remain on site	50	7/10/2025	10:06:14	21.3	4	1	17	1
Soils suitable to remain on site	51	7/10/2025	10:06:51	21.2	4	1	13	1
Soils suitable to remain on site	52	7/10/2025	10:07:27	21.5	4	1	17	1
Soils suitable to remain on site	53	7/10/2025	10:08:09	22.0	4	1	16	1
Soils suitable to remain on site	54	7/10/2025	10:08:52	30.0	17	1	22	1
Soils suitable to remain on site	55	7/10/2025	10:09:44	21.4	5	1	13	1
Soils suitable to remain on site	56	7/10/2025	10:10:28	21.4	6	1	15	1
Soils suitable to remain on site	57	7/10/2025	10:11:03	21.5	6	1	14	1
Soils suitable to remain on site	58	7/10/2025	10:11:42	21.0	4	1	12	1
Soils suitable to remain on site	59	7/10/2025	10:12:15	19.7	4	1	14	1
Soils suitable to remain on site	60	7/10/2025	10:12:48	26.5	3	1	18	1
Soils suitable to remain on site	61	7/10/2025	10:13:34	21.3	3	1	14	1
Soils suitable to remain on site	62	7/10/2025	10:14:12	21.6	11	1	16	1

* Calibration tests performed at the start of the day at another site

Appendix D – Table of Laboratory Validation Results

Table of Laboratory Results - 148 Lincoln Rolleston Road & 6/487 Weedons Road

Date of sampling: 29 & 30 July 2025

VALIDATION SAMPLING

Soil Results	Sample Name:	VS1	VS2	VS3	VS4	VS5	VS6	VS7	VS8	VS9	VS10	Soil Guideline Values					
	Depth:	wall	wall	wall	wall	base	wall	wall	wall	wall	wall	Residential 10% Produce	Commercial/ Outdoor Worker	Reference	Ecological Receptors	Reference	Background[1]
	Lab Number:	3949363.1	3949363.2	3949363.3	3949363.4	3949363.5	3949363.6	3949363.7	3949363.8	3949363.9	3949363.10						
Heavy Metals																	
Arsenic	mg/kg	11	4	5	6	3	5	4	5	13	10	20	70	NES	210	ANZWQ	12.58
Cadmium	mg/kg	0.34	0.14	0.15	0.2	< 0.10	0.19	0.19	0.27	0.44	0.45	3	1,300	NES	30	ANZWQ	0.19
Chromium	mg/kg	18	13	12	12	10	12	12	13	16	14	460	6,300	NES	1110	ANZWQ	22.70
Copper	mg/kg	20	5	7	8	3	18	14	37	40	25	>10,000	>10,000	NES	810	ANZWQ	20.30
Lead	mg/kg	12.2	10.7	11.7	11.3	9.4	16	15.3	19.2	19.1	21	210	3,300	NES	660	ANZWQ	40.96
Nickel	mg/kg	8	8	8	7	7	8	8	8	9	8	400	6,000	NEPM	156	ANZWQ	20.70
Zinc	mg/kg	137	48	57	66	32	122	110	158	144	109	7,400	400,000	NEPM	1230	ANZWQ	93.94

Soil Results	Sample Name:	VS11	VS12	VS13	VS14	VS15	VS16	VS17	VS18	VS19	VS20	Soil Guideline Values					
	Depth:	wall	wall	wall	wall	wall	wall	base	base	base	base	Residential 10% Produce	Commercial/ Outdoor Worker	Reference	Ecological Receptors	Reference	Background[1]
	Lab Number:	3949363.11	3949363.12	3949363.13	3949363.14	3949363.15	3949363.16	3949363.17	3949363.18	3949363.19	3949363.20						
Heavy Metals																	
Arsenic	mg/kg	12	7	14	8	6	5	4	7	13	12	20	70	NES	210	ANZWQ	12.58
Cadmium	mg/kg	0.27	0.17	0.22	0.14	0.22	0.1	0.13	0.18	0.25	< 0.10	3	1,300	NES	30	ANZWQ	0.19
Chromium	mg/kg	14	13	15	13	13	12	12	13	15	21	460	6,300	NES	1110	ANZWQ	22.70
Copper	mg/kg	21	12	23	13	24	53	13	19	26	5	>10,000	>10,000	NES	810	ANZWQ	20.30
Lead	mg/kg	21	15	16.5	15	17.2	16.6	17.2	18.3	17.9	12.3	210	3,300	NES	660	ANZWQ	40.96
Nickel	mg/kg	8	8	8	8	9	8	8	9	9	8	400	6,000	NEPM	156	ANZWQ	20.70
Zinc	mg/kg	84	62	104	72	101	155	91	78	84	45	7,400	400,000	NEPM	1230	ANZWQ	93.94

Indicates result exceeds 'Residential 10% Produce' SGV
Indicates result exceeds Ecological Guideline Values
Indicates result exceeds Background

Notes:

Assumes soil pH of 5 for Cadmium.

References:

NES - National Environmental Standard for Assessing and Managing Contaminants in Soils, MfE

NEPM - National Environmental Protection Measures 2013, Australia

ANZWQ - Australian and New Zealand - Guidelines for Fresh and Marine Water Quality (online) - 3 x Sediment GV-high

[1] Concentrations for 'Regional, Recent' soil group from Background concentrations in Canterbury soils, Tonkin and Taylor, July 2007

Table of Laboratory Results - 148 Lincoln Rolleston Road & 6/487 Weedons Road - Stockpile Sampling

Date of sampling: 30 July 2025

STOCKPILE SAMPLING TO INFORM DISPOSAL OPTIONS

	Sample Name:	SP1	SP2	SP3	SP4	SP5	SP6	SP7	SP8	SP9	SP10	SP11	SP12	Soil Guideline Values			Waste Acceptance Criteria			
Soil Results	Depth:	0-50	0-50	0-50	0-50	0-50	0-50	0-50	0-50	0-50	0-50	0-50	0-50	Residential 10% Produce	Recreational	Reference	Cleanfill[1]	Wheatsheaf Quarry	Burwood Landfill	Hororata Managed Fill
	Lab Number:	3949363.21	3949363.22	3949363.23	3949363.24	3949363.25	3949363.26	3949363.27	3949363.28	3949363.29	3949363.3	3949363.31	3949363.32							
Heavy Metals																				
Arsenic	mg/kg	6	13	20	**27**	**24**	**24**	10	5	**25**	**28**	20	**22**	20	80	NES	12.58	17	80	140
Cadmium	mg/kg	0.18	0.29	0.5	0.77	0.73	0.54	0.27	0.14	1.11	0.75	0.64	0.57	3	400	NES	0.19	0.8	400	55
Chromium	mg/kg	13	16	20	25	22	18	15	11	23	25	20	22	460	2,700	NES	22.70	290	2,700	375
Copper	mg/kg	13	37	122	112	93	81	27	13	72	300	86	185	>10,000	>10,000	NES	20.30	>10,000	>10,000	500
Lead	mg/kg	12.5	17.8	25	39	36	34	17.3	12.2	29	**240**	30	31	210	880	NES	40.96	160	880	500
Nickel	mg/kg	8	8	9	10	9	8	8	7	9	9	9	9	400	1,200	NEPM	20.70	400	600	2,000
Zinc	mg/kg	87	126	165	220	183	174	123	86	198	310	180	187	7,400	30,000	NEPM	93.94	7400	14,000	1,800

Indicates result exceeds 'Residential 10% Produce' SGV
Indicates result exceeds 'Recreational' SGV / Burwood Landfill WAC
Indicates result exceeds Hororata Managed Fill WAC
Indicates result exceeds Wheatsheaf Quarry WAC
Indicates result exceeds Cleanfill WAC

VALIDATION SAMPLING FOLLOWING STOCKPILE REMOVAL (07 October 2025)

	Sample Name:	SPV1	SPV2	SPV3	Soil Guideline Values					
Soil Results	Depth:	base	base	base	Residential 10% Produce	Commercial/ Outdoor Worker	Reference	Ecological Receptors	Reference	Background[1]
	Lab Number:	3949363.1	3949363.2	3949363.3						
Heavy Metals										
Arsenic	mg/kg	4	4	5	20	70	NES	210	ANZWQ	12.58
Cadmium	mg/kg	< 0.10	< 0.10	0.13	3	1,300	NES	30	ANZWQ	0.19
Chromium	mg/kg	13	13	13	460	6,300	NES	1110	ANZWQ	22.70
Copper	mg/kg	5	6	14	>10,000	>10,000	NES	810	ANZWQ	20.30
Lead	mg/kg	14.6	14.6	15.1	210	3,300	NES	660	ANZWQ	40.96
Nickel	mg/kg	9	9	9	400	6,000	NEPM	156	ANZWQ	20.70
Zinc	mg/kg	54	56	118	7,400	400,000	NEPM	1230	ANZWQ	93.94

Indicates result exceeds 'Residential 10% Produce' SGV
Indicates result exceeds Ecological Guideline Values
Indicates result exceeds Background

References:

NES - National Environmental Standard for Assessing and Managing Contaminants in Soils, MfE

NEPM - National Environmental Protection Measures 2013, Australia

[1] Concentrations for 'Regional, Recent' soil group commonly used as acceptance criteria by Cleanfill Facilities from Background concentrations in Canterbury soils, Tonkin and Taylor, July 2007

Notes:

Assumes soil pH of 5 for Cadmium.

Appendix E – Laboratory Reports

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Certificate of Analysis

Client:	Momentum Environmental Limited	**Lab No:**	3949363 SPv1
Contact:	Fran Hobkirk	**Date Received:**	30-Jul-2025
	C/- Momentum Environmental Limited	**Date Reported:**	04-Aug-2025
	19 Robertsons Road	**Quote No:**	72157
	Kirwee 7671	**Order No:**	
		Client Reference:	678 - 178 Lincoln Rolleston Road etc
		Submitted By:	Fran Hobkirk

Sample Type: Soil

	Sample Name:	VS1 29-Jul-2025 10:29 am	VS2 29-Jul-2025 10:30 am	VS3 29-Jul-2025 10:32 am	VS4 29-Jul-2025 10:33 am	VS5 29-Jul-2025 10:27 am
	Lab Number:	3949363.1	3949363.2	3949363.3	3949363.4	3949363.5
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	11	4	5	6	3
Total Recoverable Cadmium	mg/kg dry wt	0.34	0.14	0.15	0.20	< 0.10
Total Recoverable Chromium	mg/kg dry wt	18	13	12	12	10
Total Recoverable Copper	mg/kg dry wt	20	5	7	8	3
Total Recoverable Lead	mg/kg dry wt	12.2	10.7	11.7	11.3	9.4
Total Recoverable Nickel	mg/kg dry wt	8	8	8	7	7
Total Recoverable Zinc	mg/kg dry wt	137	48	57	66	32

	Sample Name:	VS6 29-Jul-2025 2:26 pm	VS7 29-Jul-2025 2:27 pm	VS8 29-Jul-2025 2:28 pm	VS9 29-Jul-2025 2:29 pm	VS10 29-Jul-2025 2:32 pm
	Lab Number:	3949363.6	3949363.7	3949363.8	3949363.9	3949363.10
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	5	4	5	13	10
Total Recoverable Cadmium	mg/kg dry wt	0.19	0.19	0.27	0.44	0.45
Total Recoverable Chromium	mg/kg dry wt	12	12	13	16	14
Total Recoverable Copper	mg/kg dry wt	18	14	37	40	25
Total Recoverable Lead	mg/kg dry wt	16.0	15.3	19.2	19.1	21
Total Recoverable Nickel	mg/kg dry wt	8	8	8	9	8
Total Recoverable Zinc	mg/kg dry wt	122	110	158	144	109

	Sample Name:	VS11 29-Jul-2025 2:33 pm	VS12 29-Jul-2025 2:48 pm	VS13 29-Jul-2025 2:50 pm	VS14 29-Jul-2025 2:51 pm	VS15 29-Jul-2025 2:42 pm
	Lab Number:	3949363.11	3949363.12	3949363.13	3949363.14	3949363.15
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	12	7	14	8	6
Total Recoverable Cadmium	mg/kg dry wt	0.27	0.17	0.22	0.14	0.22
Total Recoverable Chromium	mg/kg dry wt	14	13	15	13	13
Total Recoverable Copper	mg/kg dry wt	21	12	23	13	24
Total Recoverable Lead	mg/kg dry wt	21	15.1	16.5	15.0	17.2
Total Recoverable Nickel	mg/kg dry wt	8	8	8	8	9
Total Recoverable Zinc	mg/kg dry wt	84	62	104	72	101

	Sample Name:	VS16 29-Jul-2025 2:39 pm	VS17 29-Jul-2025 2:40 pm	VS18 29-Jul-2025 2:44 pm	VS19 29-Jul-2025 2:45 pm	VS20 29-Jul-2025 2:46 pm
	Lab Number:	3949363.16	3949363.17	3949363.18	3949363.19	3949363.20
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	5	4	7	13	12
Total Recoverable Cadmium	mg/kg dry wt	0.10	0.13	0.18	0.25	< 0.10
Total Recoverable Chromium	mg/kg dry wt	12	12	13	15	21
Total Recoverable Copper	mg/kg dry wt	53	13	19	26	5
Total Recoverable Lead	mg/kg dry wt	16.6	17.2	18.3	17.9	12.3

Sample Type: Soil						
Sample Name:		VS16 29-Jul-2025 2:39 pm	VS17 29-Jul-2025 2:40 pm	VS18 29-Jul-2025 2:44 pm	VS19 29-Jul-2025 2:45 pm	VS20 29-Jul-2025 2:46 pm
Lab Number:		3949363.16	3949363.17	3949363.18	3949363.19	3949363.20
Heavy Metals, Screen Level						
Total Recoverable Nickel	mg/kg dry wt	8	8	9	9	8
Total Recoverable Zinc	mg/kg dry wt	155	91	78	84	45

Sample Name:		SP1 30-Jul-2025 9:06 am	SP2 30-Jul-2025 9:08 am	SP3 30-Jul-2025 9:18 am	SP4 30-Jul-2025 9:00 am	SP5 30-Jul-2025 9:23 am
Lab Number:		3949363.21	3949363.22	3949363.23	3949363.24	3949363.25
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	6	13	20	27	24
Total Recoverable Cadmium	mg/kg dry wt	0.18	0.29	0.50	0.77	0.73
Total Recoverable Chromium	mg/kg dry wt	13	16	20	25	22
Total Recoverable Copper	mg/kg dry wt	13	37	122	112	93
Total Recoverable Lead	mg/kg dry wt	12.5	17.8	25	39	36
Total Recoverable Nickel	mg/kg dry wt	8	8	9	10	9
Total Recoverable Zinc	mg/kg dry wt	87	126	165	220	183

Sample Name:		SP6 30-Jul-2025 9:25 am	SP7 30-Jul-2025 9:16 am	SP8 30-Jul-2025 9:15 am	SP9 30-Jul-2025 9:27 am	SP10 30-Jul-2025 9:28 am
Lab Number:		3949363.26	3949363.27	3949363.28	3949363.29	3949363.30
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	24	10	5	25	28
Total Recoverable Cadmium	mg/kg dry wt	0.54	0.27	0.14	1.11	0.75
Total Recoverable Chromium	mg/kg dry wt	18	15	11	23	25
Total Recoverable Copper	mg/kg dry wt	81	27	13	72	300
Total Recoverable Lead	mg/kg dry wt	34	17.3	12.2	29	240
Total Recoverable Nickel	mg/kg dry wt	8	8	7	9	9
Total Recoverable Zinc	mg/kg dry wt	174	123	86	198	310

Sample Name:		SP11 30-Jul-2025 9:30 am	SP12 30-Jul-2025 9:32 am
Lab Number:		3949363.31	3949363.32
Heavy Metals, Screen Level			
Total Recoverable Arsenic	mg/kg dry wt	20	22
Total Recoverable Cadmium	mg/kg dry wt	0.64	0.57
Total Recoverable Chromium	mg/kg dry wt	20	22
Total Recoverable Copper	mg/kg dry wt	86	185
Total Recoverable Lead	mg/kg dry wt	30	31
Total Recoverable Nickel	mg/kg dry wt	9	9
Total Recoverable Zinc	mg/kg dry wt	180	187

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-32
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required. US EPA 200.2 (modified), APHA 3125 B: Online Edition.	0.10 - 4 mg/kg dry wt	1-32

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 31-Jul-2025 and 04-Aug-2025. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.

Yu-Hsuan (Coco) Hsueh BSc (Tech)
Client Services Manager - Environmental

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Certificate of Analysis

Client:	Momentum Environmental Limited	**Lab No:**	4002655 SPv1
Contact:	Fran Hobkirk	**Date Received:**	07-Oct-2025
	C/- Momentum Environmental Limited	**Date Reported:**	10-Oct-2025
	19 Robertsons Road	**Quote No:**	72157
	Kirwee 7671	**Order No:**	
		Client Reference:	678-148 Lincoln Rolleston Rd
		Submitted By:	Hollie Griffith

Sample Type: Soil

		Sample Name:	SPV1 07-Oct-2025 10:30 am	SPV2 07-Oct-2025 10:32 am	SPV3 07-Oct-2025 10:34 am
		Lab Number:	4002655.1	4002655.2	4002655.3
Heavy Metals, Screen Level					
Total Recoverable Arsenic	mg/kg dry wt		4	4	5
Total Recoverable Cadmium	mg/kg dry wt		< 0.10	< 0.10	0.13
Total Recoverable Chromium	mg/kg dry wt		13	13	13
Total Recoverable Copper	mg/kg dry wt		5	6	14
Total Recoverable Lead	mg/kg dry wt		14.6	14.6	15.1
Total Recoverable Nickel	mg/kg dry wt		9	9	9
Total Recoverable Zinc	mg/kg dry wt		54	56	118

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-3
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required. US EPA 200.2 (modified), APHA 3125 B: Online Edition.	0.10 - 4 mg/kg dry wt	1-3

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 08-Oct-2025 and 10-Oct-2025. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

Ara Heron BSc (Tech)
Client Services Manager - Environmental