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Site Validation Report

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momentum Environmental

Site Validation Report

8 Nobeline Drive, Rolleston, Canterbury

August 2026

Quality Control and Certification Sheet

Document Control				
Report Title		Site Validation Report		
Site Address		8 Nobeline Drive, Rolleston, Canterbury	**Project Number**	942
Client		Yoursection FR2 Ltd		
Rev.	**Date**	**Version**	**Author**	
1	24/07/2026	Final	Fran Hobkirk	
2	04/08/2026	Final – Amended to indicate sampling of Lot 320 will be completed following subdivision earthworks to inform disposal options.	Fran Hobkirk	

Certification			
Author		**Reviewer and Certifier**	
Name	Fran Hobkirk	**Name**	Hollie Griffith
Signature		**Signature**	
Title	Senior Environmental Scientist	**Title**	Director/Senior Environmental Scientist
Years' experience	9	**Years' experience**	10
Certification		**Certification**	

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1. Executive Summary

The subject of this report is a rural lot with street address 8 Nobeline Drive, Rolleston, Canterbury. The site is part of a wider proposed residential subdivision. As such an assessment under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NESCS) has been undertaken. It is also noted 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.

Previous investigations by Momentum Environmental Ltd (MEL) in February 2025 identified a risk of contamination around a former stockyard that could have included a livestock race on the western corner of the site. The presence of a livestock dip or spray race falls under Hazardous Activities and Industries List (HAIL) activity A8. No other potential sources of contamination were identified on the site. Soil sampling then confirmed that an area of dieldrin contamination exceeding the applicable soil guideline values (SGVs) was present within the former stockyard area. The report recommended that the contaminated soils be remediated prior to development of the site for residential use. A Remediation Action Plan (RAP) was produced to support remediation of the contaminated area by excavation and off-site disposal of the contaminated soils.

Remediation of the dieldrin contaminated soils was undertaken by excavation with off-site disposal to an authorised facility in June and July 2026. Validation samples were taken from the walls and base of the excavated area. The validation sample results were all below 'residential 10% produce' SGVS. A total of 107.04 tonnes of material was disposed of at Canterbury EnviroSolutions Ltd's Taiko facility between 23 June and 07 July 2026.

The remediation actions have successfully remediated the contaminated area at the site. The site is considered suitable for residential use with no further investigations required. Dieldrin was detected in all but one validation sample. Therefore, during any future earthworks, any material requiring off-site disposal from this area is unlikely to qualify for disposal as cleanfill material. It is recommended that soils from Lot 320 and the surrounding road berm area are kept separate from other site soils to prevent cross-contamination. Lot 320 requires approximately 300mm of filling to achieve required final levels. This will be achieved by stripping the topsoil, filling with cleanfill and then replacing the topsoil. The mixing that will occur when the topsoil is stripped and replaced will likely dilute the dieldrin contamination. Sampling following these earthworks will be undertaken to determine appropriate disposal options for soils from Lot 320 that may require off-site disposal in the future.

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). 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 site.
- 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.
- 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 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 of this report is a rural lot with street address 8 Nobeline Drive, Rolleston, Canterbury, from herein referred to as the 'site'. The site is legally described as Lot 14 DP 483709 and has a total area of approximately 4.0435ha.

Figure 1 – Location Plan

5. Site Description

5.1 Environmental Setting

Table 1 – Environmental Setting	
Topography	The site is generally flat land.
Geology	The ECan GIS database describes the soils at the site as a combination of Templeton moderately deep silt, Templeton deep silt and Eyre shallow silt. Nearby bore logs indicate that topsoils are underlain by layers of clay, sandy gravel, clayey gravel and gravel.
Soil Trace Elements	According to the ECan GIS database, natural concentrations of trace elements for the site are those of the 'Regional, Recent' soil group.
Groundwater	The site lies over the unconfined and semiconfined gravel aquifer system. Groundwater levels recorded on nearby bore logs are between 12.8m and 13.7m deep. The direction of groundwater flow is generally south-easterly. The site is not located within a community drinking water protection zone. There are two domestic water supply wells within 100m of the site.
Surface Water	According to ECan's GIS there are no surface water features on or within 200m of the site.

5.2 Site Layout and Current Site Uses

The site is a pastoral paddock. There are no buildings or structures on the site. Trees have recently been removed from the south-west end of the site.

5.3 Surrounding Land Uses

Land to the north is currently under development for residential use. The land to the south, beyond Lincoln Rolleston Road, has a residential use. The land to the south-east has a rural residential use.

6. Proposed Site Use

It is proposed to subdivide the site and the neighbouring property for residential use. This will involve subdivision of the site, change of use of the land and soil disturbance and disposal of soils off-site. A copy of the proposed subdivision plan is included in **Appendix A**.

7. Summary of Previous Investigations

Momentum Environmental Ltd produced a combined Preliminary Site Investigation (PSI), Detailed Site Investigation (DSI) and Remediation Action Plan (RAP) report in February 2025.

The preliminary portion of the investigation identified a possible Hazardous Activities and Industries List (HAIL) activity on the western corner of the site and determined there may be a risk to human health from contaminated soils. The identified HAIL activity was:

- Potential heavy metal and/or organochlorine pesticide (OCP) contamination within a former stockyard which may have included a livestock dip or spray race (HAIL A8).

Soil sampling was undertaken on 31 January 2025. The proposed use for the former stockyard area is partly residential and partly road. Therefore, the 'residential 10% produce' soil guideline values (SGVs) were applied to the proposed residential area and the 'commercial / industrial outdoor

worker' SGV to the proposed road area. The laboratory results confirmed an area of dieldrin contamination exceeding the applicable SGVs was present within the former stockyard. The dieldrin concentrations that exceeded the applicable SGVs ranged from 5.3mg/kg to 230mg/kg. Other OCP compounds were also present but dieldrin was the most significant contaminant. The affected area measured approximately 240m^2.

It was recommended that the identified contaminated area be remediated. While multiple options were available, in terms of practicality and consenting requirements, excavation and off-site disposal to an approved facility was likely the preferred methodology. The Remediation Action Plan was written to support this method. Kate Valley Landfill or Canterbury EnviroSolutions Ltd's facilities in Temuka or Taiko were deemed likely to be able to accept the contaminated soils.

A copy of the DSI Sample Location Plan showing the area requiring remediation is included in **Appendix B**.

8. Summary of Remedial Works and Site Validation Investigation

8.1 Summary of Remedial Works

Remediation of the identified dieldrin contaminated area began in late June 2026. MEL attended site to conduct validation sampling on 20 June 2026 and determined that only part of the area identified as requiring remediation had been excavated. Two delineation samples (D1 and D2) were collected to potentially reduce the additional area requiring excavation. Three validation samples were collected to assess whether the depth and extent of the excavation towards the Nobeline Drive boundary was sufficient.

The results of the delineation samples and initial validation samples showed no exceedances of the 'residential 10% produce' SGVs for dieldrin. The remaining area requiring excavation was then marked out by a MEL staff member based on the delineation sample locations and the current extent of the excavated area. The additional excavation was completed in early July 2026. The final excavated area measures approximately 8 x 22m and slopes in depth from 50mm at the south-east end to 450mm at the north-west end (adjacent to Nobeline Drive, where the DSI identified exceedances of the applicable SGVs at 250mm depth).

A MEL staff member returned to site on 08 July 2026 to undertake validation sampling of the excavated area. The final validation sample results indicated that the remediation was successful, and no further excavation was required.

A total of 107.04 tonnes of material was disposed of at Canterbury EnviroSolutions Ltd's Taiko facility between 23 June and 07 July 2026. Disposal dockets are included in **Appendix C**.

Photo 1 – Excavated area (20.6.26)

Photo 2 – Excavated area (08.7.26)

8.2 Summary of Site Validation Investigation

The site validation investigation was undertaken on 20 June and 08 July 2026.

On 20 June 2026, two delineation samples (D1 and D2) were collected to potentially reduce the additional area requiring excavation. Location D1 was placed halfway between DSI sample locations SS12 and SS2 and sampled at 250mm depth as this was the depth where contamination exceeded the applicable 'commercial/industrial outdoor worker' SGV for dieldrin at location SS12. Location D2 was placed halfway between DSI sample locations SS4 and SS5 and sampled at 50mm depth as this was the depth where contamination exceeded the applicable 'residential 10% produce' SGV for dieldrin at location SS4. Three validation samples were taken from the base and walls of the excavated area around DSI sample location SS1 to assess whether the depth and extent of the excavation towards the Nobeline Drive and Lincoln Rolleston Road boundaries was sufficient.

On 08 July 2026, after additional excavation to remove the contamination identified at DSI sample locations SS4 and SS12, fourteen validation samples (including a duplicate) were collected from the walls and base of the excavated area to assess whether the remediation was successful.

All samples were submitted to the laboratory for OCP analysis.

A Validation Sample Location Plan is included in **Appendix D**. The excavated area is also shown on the Subdivision Plan in **Appendix A**.

8.3 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 outdoor worker' land use scenario has been applied to proposed road areas and as a proxy for workers involved in disturbing soils activities. It is noted that the extent of the road area has altered slightly since the time of the 2025 PSI/DSI investigation.

OCP concentrations will also be assessed against the expected background levels for soils as published in *Ambient Concentrations of Selected Organochlorine in Soils*, Buckland, Ellis and Salter, 1998.

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.

9. Site Validation Investigation

9.1 Evaluation of Results

The delineation sample results were below 'residential 10% produce' SGVs. This showed that the area requiring excavation extended approximately halfway between SS12 to SS2 and SS4 to SS5.

None of the validation sample results exceed 'residential 10% produce' (or the higher 'commercial/industrial outdoor worker' SGVs). Dieldrin was detected in all but one validation sample, the remaining dieldrin concentrations ranged from below the laboratory limit of detection to 2.1mg/kg. Endrin was detected in two validation samples. All other OCP results were below the laboratory limits of detection.

Tables of Laboratory Validation Results are attached in **Appendix E** and the Laboratory Report is attached in **Appendix F**.

9.2 Results of Field & Laboratory Quality Assurance and Quality Control

No quality control issues were identified during sampling. The Relative Percentage Differences (RPD) for the duplicate sample pair (VS5 and Dup1) were 0-28% which are within acceptable ranges indicating no quality-control issues.

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.

10. Summary of Resource Consent and Conditions

Subdivision and land use resource consents RC255546 and RC255547 were granted by Selwyn District Council on 2 December 2025.

The resource consents contained several general conditions relating to the remediation of contaminated soils, including the requirement to remediate contaminated material in accordance with the approved Remediation Action Plan, 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 and ECan following completion of works. The remediation was carried out in general accordance with the consent conditions. 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" (CLMG#1) and is considered to have met the relevant conditions of consent.

11. Conclusion

Previous investigations identified an area of dieldrin contamination within a former sheepyard that likely contained a livestock dip. The dieldrin concentrations exceeded applicable guideline values for the proposed uses of the site and it was recommended that the contaminated soils be remediated prior to redevelopment of the site.

Remediation of the dieldrin contaminated soils was undertaken by excavation with off-site disposal to an authorised facility in June and July 2026. Validation samples were taken from the walls and base of the excavated area. The validation sample results were all below 'residential 10% produce' SGVS. A total of 107.04 tonnes of material was disposed of at Canterbury EnviroSolutions Ltd's Taiko facility between 23 June and 07 July 2026.

The remediation actions have successfully remediated the contaminated area at the site. The site is considered suitable for residential use with no further investigations required. Dieldrin was detected in all but one validation sample. Therefore, during any future earthworks, any material requiring off-site disposal from this area is unlikely to qualify for disposal as cleanfill material. It is recommended that soils from Lot 320 and the surrounding road berm area are kept separate from other site soils to prevent cross-contamination. Lot 320 requires approximately 300mm of filling to achieve required final levels. This will be achieved by stripping the topsoil, filling with cleanfill and then replacing the topsoil. The mixing that will occur when the topsoil is stripped and replaced will likely dilute the dieldrin contamination. Sampling following these earthworks will be undertaken to determine appropriate disposal options for soils from Lot 320 that may require offsite disposal in the future.

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.

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Appendix A – Subdivision Plan

This drawing remains the property of Capture Land Limited and may not be reproduced or amended without written permission. No liability shall be accepted for unauthorised use of this drawing.

NOTES:

1. Refer to Site Validation Report completed by Momentum Environmental for all details regarding contamination and site validation.
2. Area depicted on plan has been provided by Ongrade Drainage and Excavation.

CLIENT

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PROJECT

8 NOBELINE DRIVE & 202 LINCOLN ROLLESTON ROAD, ROLLESTON

CAPTURE Land Development Consultants

	DATE	REVISION DETAILS	ISSUED
A	28/07/26	FOR INFORMATION	DG

DRAWING STATUS

INFORMATION ONLY

DRAWING TITLE

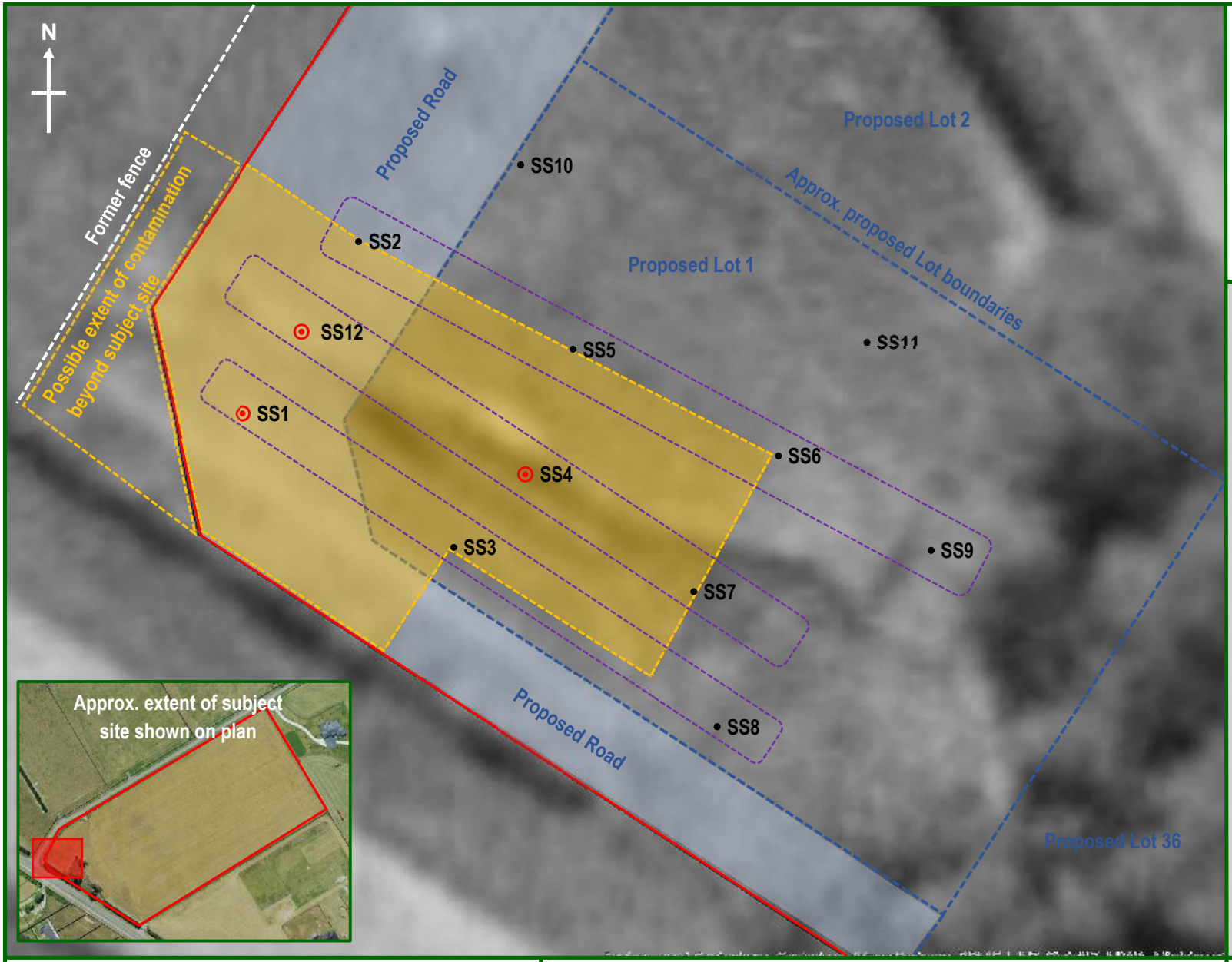
SITE CONTAMINATION PLAN

PROJECT NO	SCALE	PLOT SIZE
1272	1:1500	A3

DRAWING NO	REVISION
1272-DR-C-1401	A

1272-DR-C-1401 Site Contamination Plan.dwg

Appendix B – DSI Sample Location Plan



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LEGEND

• SS1	Soil sample location
⊙ SS1	Soil sample location exceeds 'commercial/industrial' and/or 'residential 10% produce' SGV for dieldrin
	Composite sample groups
	Approximate area requiring remediation

Plan image – 1974 aerial sourced from Canterbury Maps

PLAN MUST BE PRINTED IN COLOUR

Graphic scale is approximate only

0 3 6 9 12 15m

Date: 26 February 2025 **Drawing No:** 942/1

8 Nobeline Drive, Rolleston

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 – Disposal Documentation

Nobeline Dr to Taiko

PROTRANZ

Generated: Jul 16, 2026 4:16 PM | 5 records

Filters: 4 active

Job #	Date	Project Code	Project Name	Client	Product	Quantity	Unit	Source	Destination	Truck	Docket No.	Docket Photo
50000-317	2026-07-07	50000	Tip Trucks	Various	Contaminated Material	11.24	Tonnes	Leggett Road	Taiko	RPF261	6512	D-1
50000-312	2026-07-06	50000	Tip Trucks	Various	Contaminated Material	29.06	Tonnes	8 Nobeline Dr, Rolleston	Taiko	PKJ54	6507	D-1
50000-302	2026-06-30	50000	Tip Trucks	Various	Contaminated Material	12.36	Tonnes	Leggett Road	Taiko	RPF261	6401	D-1
50000-293	2026-06-24	50000	Tip Trucks	Various	Contaminated Material	29.20	Tonnes	8 Nobeline Dr, Rolleston	Taiko	QLQ663	6329	D-1
50000-292	2026-06-23	50000	Tip Trucks	Various	Contaminated Material	25.18	Tonnes	8 Nobeline Dr, Rolleston	Taiko	QLQ663	6317	D-1

Total: 5 items | 107.04 units

ENVIROSOLUTIONS

TAIKO LANDFILL

Ticket No. 6329

Po Number: 50000

Customer: Protranz Earthmoving Limited

Rego: QLQ663

Time In: 24/06/2026 07:23:16

Weight In: 48,460 kg

Weight In Deck 1: 22,300 kg

Weight In Deck 2: 26,160 kg

Weight Type: STORED TARE WEIGH

Job #: 50000

Site: TAIKO

Product: CESL#00775-Medium level soil

Gross: 48,460 kg

Tare: 19,260 kg

Net: 29,200 kg

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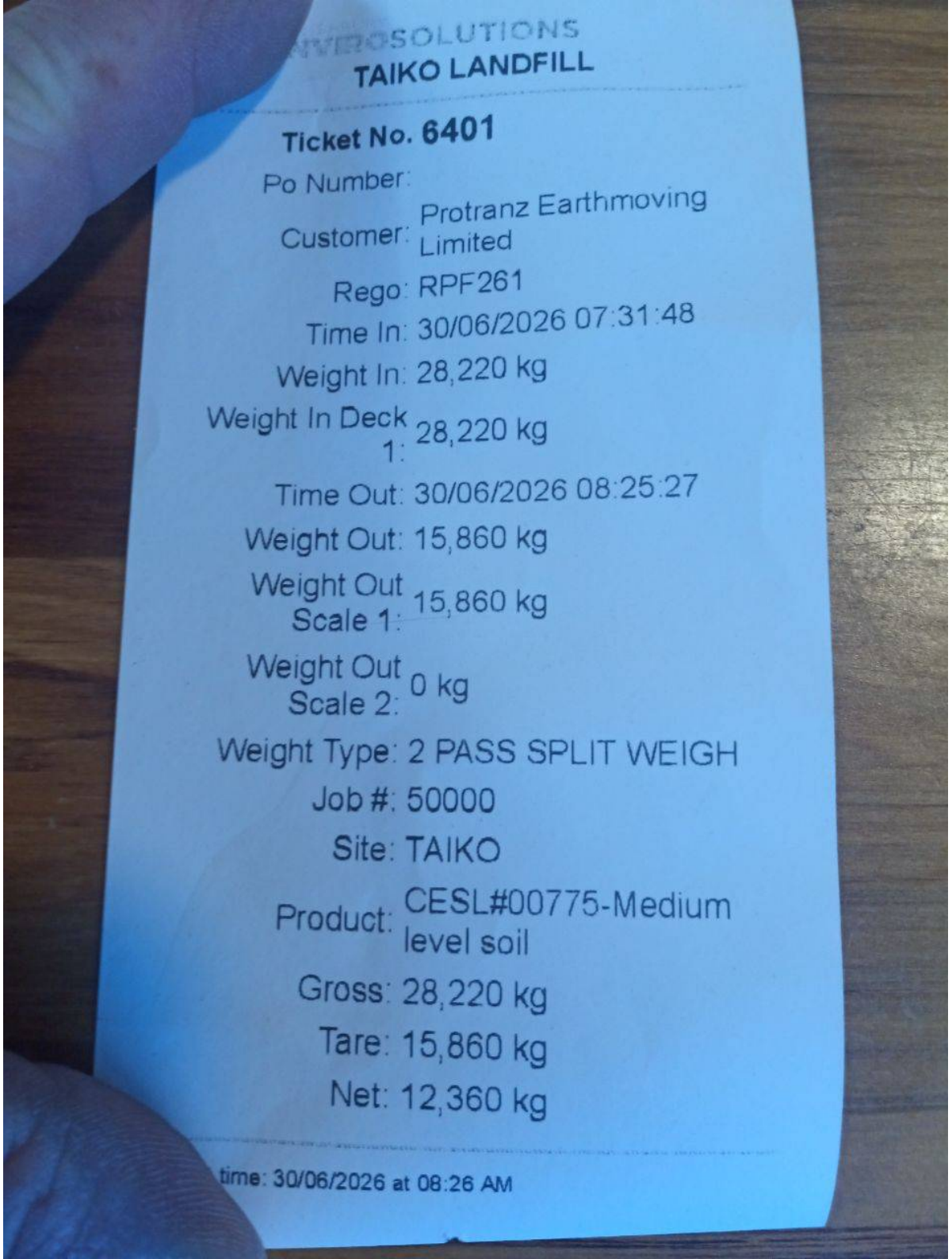

ENVIROSOLUTIONS

TAIKO LANDFILL

Ticket No. 6401

Po Number:	
Customer:	Protranz Earthmoving Limited
Rego:	RPF261
Time In:	30/06/2026 07:31:48
Weight In:	28,220 kg
Weight In Deck 1:	28,220 kg
Time Out:	30/06/2026 08:25:27
Weight Out:	15,860 kg
Weight Out Scale 1:	15,860 kg
Weight Out Scale 2:	0 kg
Weight Type:	2 PASS SPLIT WEIGH
Job #:	50000
Site:	TAIKO
Product:	CESL#00775-Medium level soil
Gross:	28,220 kg
Tare:	15,860 kg
Net:	12,360 kg

time: 30/06/2026 at 08:26 AM

ENVIROSOLUTIONS

TAIKO LANDFILL

Ticket No. 6507

Po Number:	50000
Customer:	Protranz Earthmoving Limited
Rego:	PKJ54
Time In:	06/07/2026 11:02:45
Weight In:	48,460 kg
Weight In Deck 1:	22,880 kg
Weight In Deck 2:	25,580 kg
Weight Type:	STORED TARE WEIGH
Job #:	50000
Site:	TAIKO
Product:	CESL#00775-Medium level soil
Gross:	48,460 kg
Tare:	19,400 kg
Net:	29,060 kg

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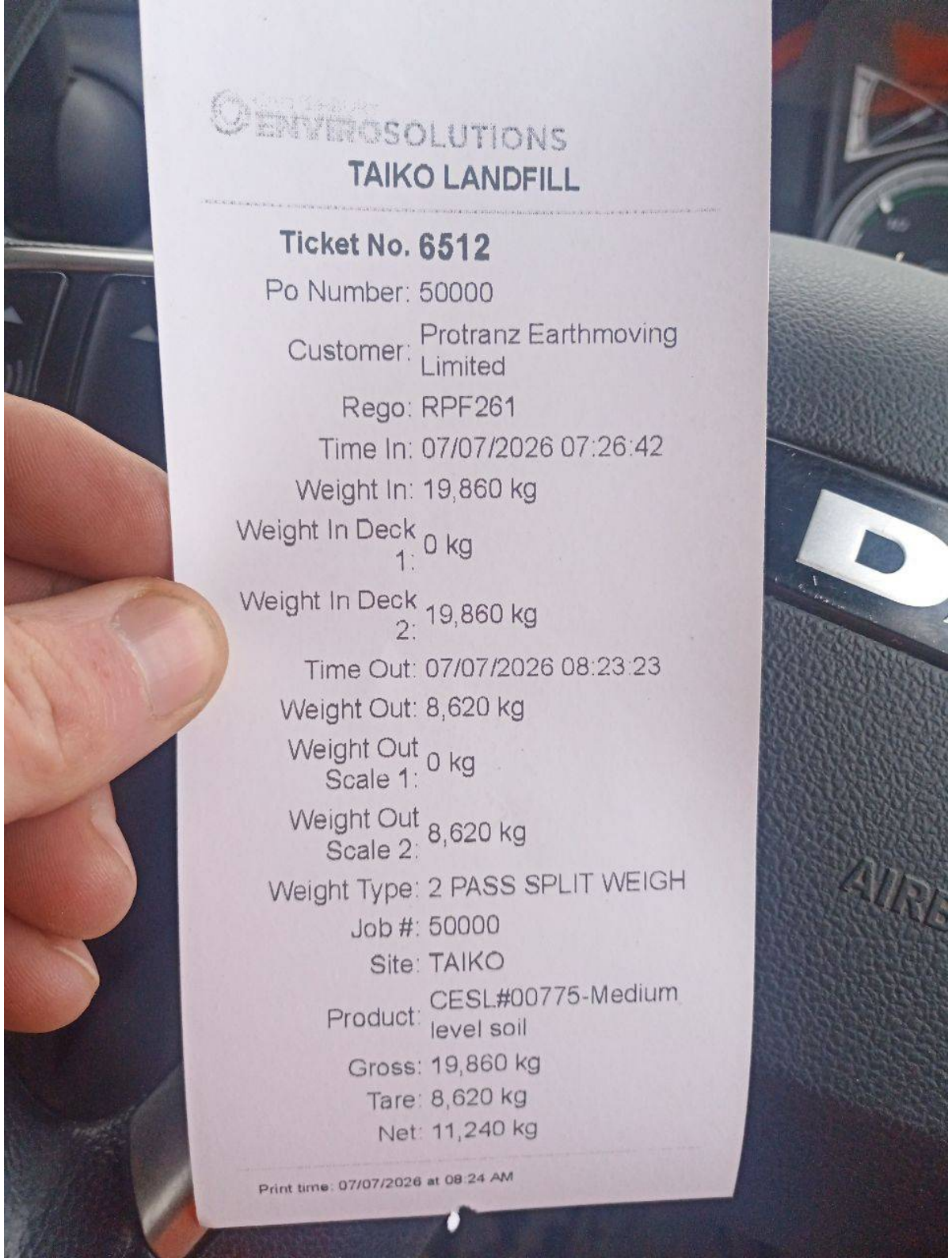

ENVIROSOLUTIONS

TAIKO LANDFILL

Ticket No. 6512

Po Number:	50000
Customer:	Protranz Earthmoving Limited
Rego:	RPF261
Time In:	07/07/2026 07:26:42
Weight In:	19,860 kg
Weight In Deck 1:	0 kg
Weight In Deck 2:	19,860 kg
Time Out:	07/07/2026 08:23:23
Weight Out:	8,620 kg
Weight Out Scale 1:	0 kg
Weight Out Scale 2:	8,620 kg
Weight Type:	2 PASS SPLIT WEIGH
Job #:	50000
Site:	TAIKO
Product:	CESL#00775-Medium level soil
Gross:	19,860 kg
Tare:	8,620 kg
Net:	11,240 kg

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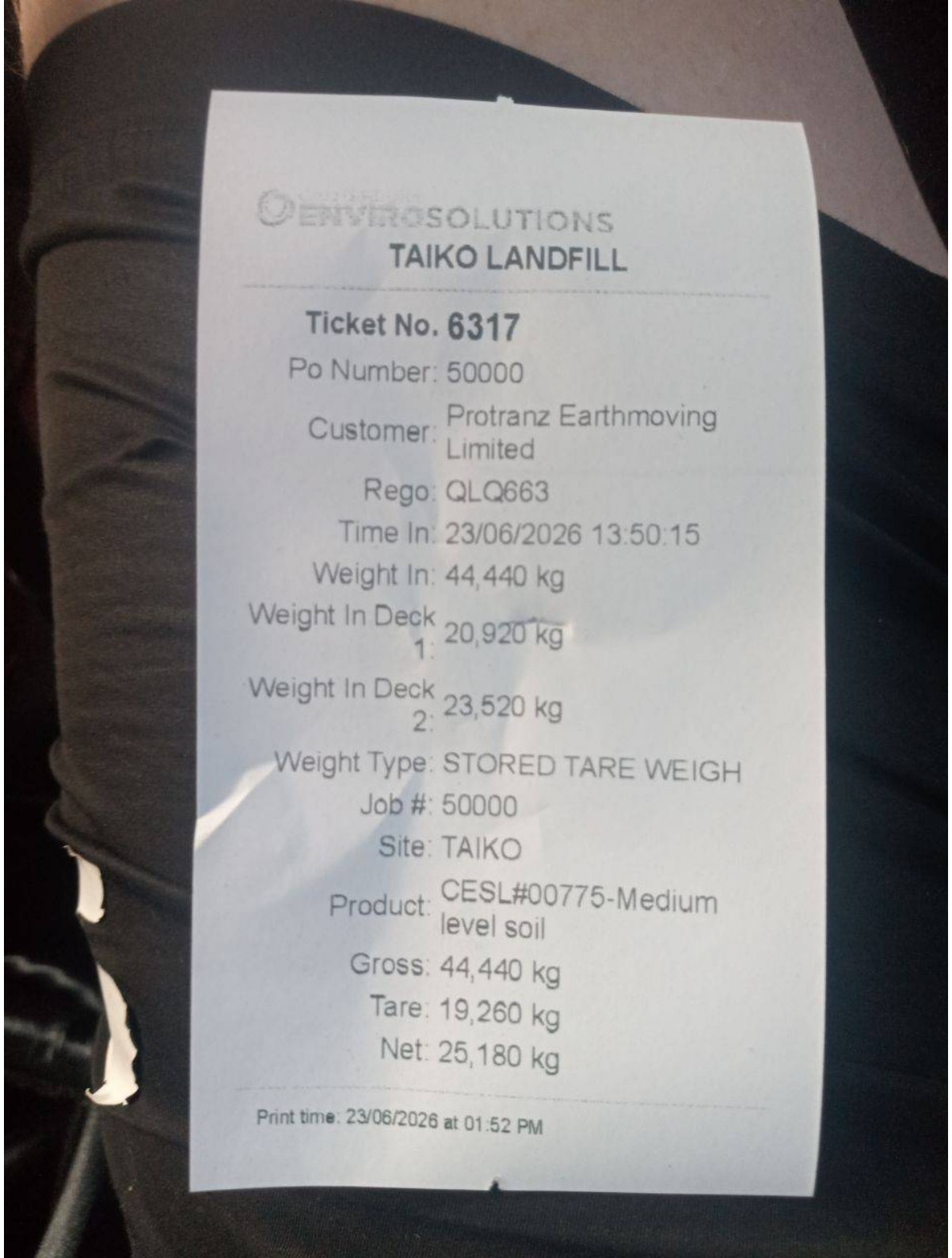

ENVIROSOLUTIONS

TAIKO LANDFILL

Ticket No. 6317

Po Number:	50000
Customer:	Protranz Earthmoving Limited
Rego:	QLQ663
Time In:	23/06/2026 13:50:15
Weight In:	44,440 kg
Weight In Deck 1:	20,920 kg
Weight In Deck 2:	23,520 kg
Weight Type:	STORED TARE WEIGH
Job #:	50000
Site:	TAIKO
Product:	CESL#00775-Medium level soil
Gross:	44,440 kg
Tare:	19,260 kg
Net:	25,180 kg

Print time: 23/06/2026 at 01:52 PM

Appendix D – Validation Sample Location Plan

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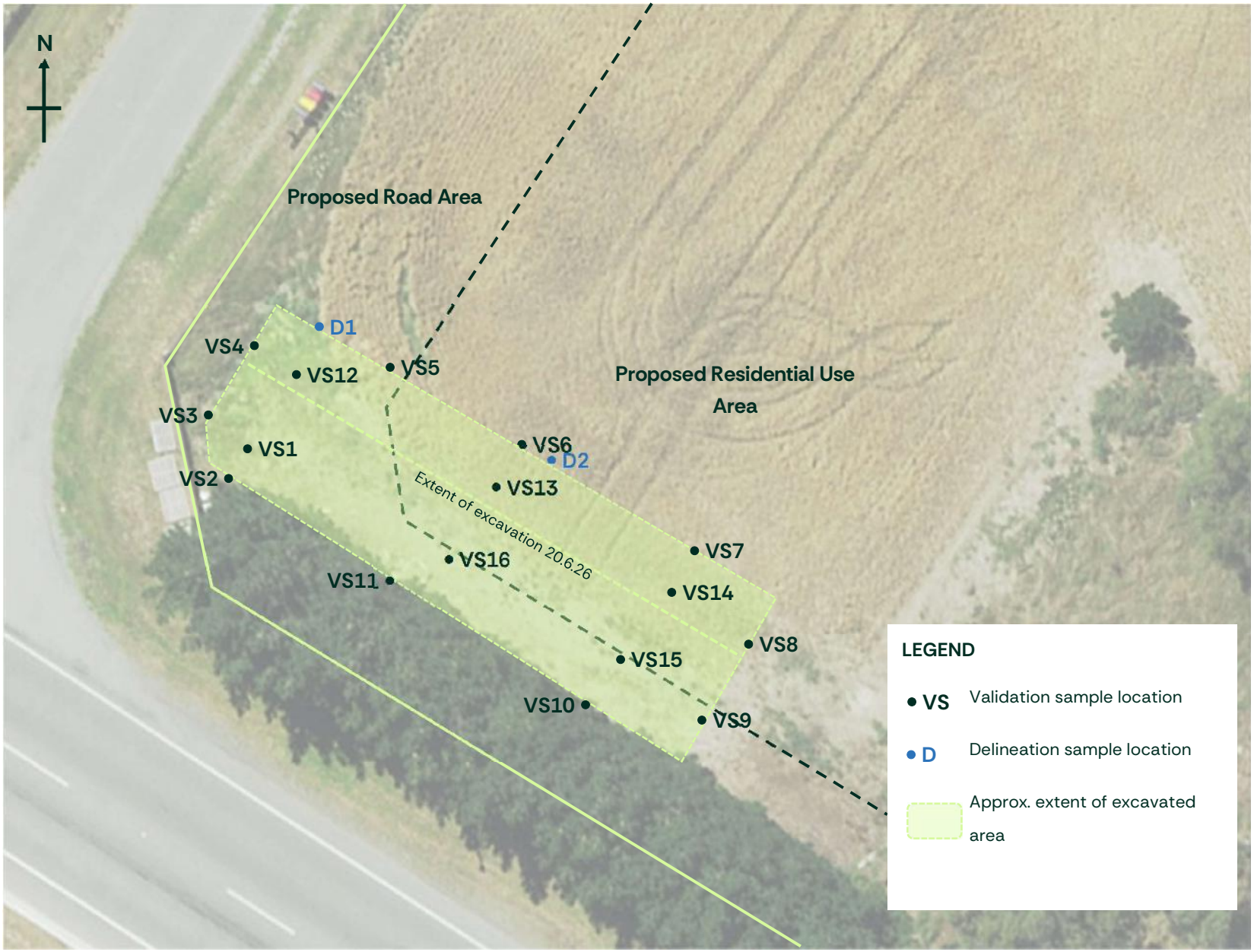
Notes:

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

PLAN MUST BE PRINTED IN COLOUR



Graphic scale is approximate only

0 3 6 9 12 15m

Validation Sample Location Plan
8 Nobeline Drive, Rolleston

Date: 23 July 2026
Drawing No: 942/2

Appendix E – Tables of Laboratory Results

Table of Laboratory Validation Results - 8 Nobeline Drive, Rolleston, Canterbury

Date of sampling: 20 June & 08 July 2026

	Sample Name:	D1	D2	VS1	VS2	VS3	VS4	VS5	DUP1	VS6	RPD	Soil Guideline Values			
Soil Results	Depth:	0-50mm	250mm	Base (450mm)	Wall (250mm)	Wall (250mm)	Wall (0-450mm)	Wall (0-450mm)	Wall (0-450mm)	Wall (0-300mm)	VS5 & DUP1	Residential 10% Produce	Commercial/ Outdoor Worker	Reference	Background[2]
	Lab Number:	4251940.4	4251940.5	4251940.1	4251940.2	4251940.3	4261008.1	4261008.2	4261008.15	4261008.3					
Organochlorine Pesticides (OCPs) in soil															
Aldrin	mg/kg dry wt	< 0.011	< 0.013	< 0.012	< 0.012	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	0%	2.6	160	NES	-
Total DDT	mg/kg dry wt	< 0.07	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	0%	70	1,000	NES	0.43 [2]
Dieldrin	mg/kg dry wt	0.042	0.25	0.37	1.45	2.1	0.06	0.103	0.136	0.062	28%	2.6	160	NES	-
Endrin	mg/kg dry wt	< 0.011	< 0.013	< 0.012	0.015	0.018	< 0.013	< 0.013	< 0.013	< 0.013	0%	1.9	25	USEPA	-
Endrin ketone	mg/kg dry wt	< 0.011	< 0.013	< 0.012	< 0.012	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	0%	-	-	-	-

	Sample Name:	VS7	VS8	VS9	VS10	VS11	VS12	VS13	VS14	VS15	VS16	Soil Guideline Values			
Soil Results	Depth:	Wall (0-100mm)	Wall (0-50mm)	Wall (0-50mm)	Wall (0-100mm)	Wall (0-300mm)	Base (450mm)	Base (250mm)	Base (100mm)	Base (100mm)	Base (250mm)	Residential 10% Produce	Commercial/ Outdoor Worker	Reference	Background[2]
	Lab Number:	4261008.4	4261008.5	4261008.6	4261008.7	4261008.8	4261008.9	4261008.10	4261008.11	4261008.12	4261008.13				
Organochlorine Pesticides (OCPs) in soil															
Aldrin	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.013	< 0.014	< 0.012	< 0.014	< 0.013	< 0.013	< 0.013	2.6	160	NES	-
Total DDT	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.09	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	70	1,000	NES	0.43 [2]
Dieldrin	mg/kg dry wt	0.196	0.81	0.52	0.097	0.68	0.23	0.064	< 0.013	0.43	0.093	2.6	160	NES	-
Endrin	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.013	< 0.014	< 0.012	< 0.014	< 0.013	< 0.013	< 0.013	1.9	25	USEPA	-
Endrin ketone	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.013	< 0.014	< 0.012	< 0.014	< 0.013	< 0.013	< 0.013	-	-	-	-

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

Notes:

This table does not represent the full analytical results, please refer to the laboratory reports for full details.

References:

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

USEPA - US EPA Regional Screening Levels, https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables, Nov 2024

[2] Concentrations for 'Christchurch Metropolitan' soils from Ambient Concentrations of Selected Organochlorine in Soils, Buckland, Ellis and Salter 1998

Appendix F – Laboratory Reports

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

0508 HILL LAB (44 555 22)
+64 7 858 2000
mail@hill-labs.co.nz
www.hill-labs.co.nz

Certificate of Analysis

Client:	Momentum Environmental Limited	**Lab No:**	4251940 SPv1
Contact:	Fran Hobkirk	**Date Received:**	26-Jun-2026
	C/- Momentum Environmental Limited	**Date Reported:**	01-Jul-2026
	5 Maurice Street	**Quote No:**	72157
	Lincoln 7608	**Order No:**	
		Client Reference:	942 - 8 Nobeline Drive
		Submitted By:	Fran Hobkirk

Sample Type: Soil

Sample Name:		VS1 20-Jun-2026 9:52 am	VS2 20-Jun-2026 10:00 am	VS3 20-Jun-2026 10:02 am	D1 20-Jun-2026 10:05 am	D2 20-Jun-2026 10:07 am
Lab Number:		4251940.1	4251940.2	4251940.3	4251940.4	4251940.5
Individual Tests						
Dry Matter	g/100g as rcvd	82	84	82	90	80
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.011	< 0.013
alpha-BHC	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.011	< 0.013
beta-BHC	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.011	< 0.013
delta-BHC	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.011	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.011	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.011	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.011	< 0.013
2,4'-DDD	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.011	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.012	0.014	< 0.012	< 0.011	< 0.013
2,4'-DDE	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.011	< 0.013
4,4'-DDE	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.011	< 0.013
2,4'-DDT	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.011	< 0.013
4,4'-DDT	mg/kg dry wt	< 0.012	0.020	< 0.012	< 0.011	< 0.013
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.07	< 0.08
Dieldrin	mg/kg dry wt	0.37	1.45	2.1	0.042	0.25
Endosulfan I	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.011	< 0.013
Endosulfan II	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.011	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.011	< 0.013
Endrin	mg/kg dry wt	< 0.012	0.015	0.018	< 0.011	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.011	< 0.013
Endrin ketone	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.011	< 0.013
Heptachlor	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.011	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.011	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.011	< 0.013
Methoxychlor	mg/kg dry wt	< 0.012	< 0.012	< 0.012	< 0.011	< 0.013

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
Organochlorine Pesticides Screening in Soil	Sonication extraction, GC-ECD analysis. Tested on as received sample. In-house based on US EPA 8081.	0.010 - 0.06 mg/kg dry wt	1-5

This Laboratory is accredited by International Accreditation New Zealand (IANZ), which represents New Zealand in the International Laboratory Accreditation Cooperation (ILAC). Through the ILAC Mutual Recognition Arrangement (ILAC-MRA) this accreditation is internationally recognised.
The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked * or any comments and interpretations, which are not accredited.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	1-5

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

Testing was completed between 30-Jun-2026 and 01-Jul-2026. 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.

Ara Heron BSc (Tech)
Client Services Manager - Environmental

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

0508 HILL LAB (44 555 22)
+64 7 858 2000
mail@hill-labs.co.nz
www.hill-labs.co.nz

Certificate of Analysis

Client:	Momentum Environmental Limited	**Lab No:**	4261008 SPv1
Contact:	Fran Hobkirk	**Date Received:**	08-Jul-2026
	C/- Momentum Environmental Limited	**Date Reported:**	15-Jul-2026
	5 Maurice Street	**Quote No:**	72157
	Lincoln 7608	**Order No:**	
		Client Reference:	942 - 8 Nobeline Drive
		Submitted By:	Fran Hobkirk

Sample Type: Soil

Sample Name:		VS4 08-Jul-2026 9:00 am	VS5 08-Jul-2026 9:03 am	VS6 08-Jul-2026 9:05 am	VS7 08-Jul-2026 9:08 am	VS8 08-Jul-2026 9:10 am
Lab Number:		4261008.1	4261008.2	4261008.3	4261008.4	4261008.5
Individual Tests						
Dry Matter	g/100g as rcvd	77	77	75	77	75
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014
alpha-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014
beta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014
delta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014
4,4'-DDE	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014
2,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014
4,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Dieldrin	mg/kg dry wt	0.060	0.103	0.062	0.196	0.81
Endosulfan I	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014
Endosulfan II	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014
Endrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014
Endrin ketone	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014
Heptachlor	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014
Methoxychlor	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014

Sample Name:		VS9 08-Jul-2026 9:12 am	VS10 08-Jul-2026 9:15 am	VS11 08-Jul-2026 9:18 am	VS12 08-Jul-2026 9:40 am	VS13 08-Jul-2026 9:48 am
Lab Number:		4261008.6	4261008.7	4261008.8	4261008.9	4261008.10
Individual Tests						
Dry Matter	g/100g as rcvd	74	78	71	82	74
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.012	< 0.014
alpha-BHC	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.012	< 0.014
beta-BHC	mg/kg dry wt	0.015	< 0.013	< 0.014	< 0.012	< 0.014
delta-BHC	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.012	< 0.014

This Laboratory is accredited by International Accreditation New Zealand (IANZ), which represents New Zealand in the International Laboratory Accreditation Cooperation (ILAC). Through the ILAC Mutual Recognition Arrangement (ILAC-MRA) this accreditation is internationally recognised.
The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked * or any comments and interpretations, which are not accredited.

Sample Type: Soil						
Sample Name:		VS9 08-Jul-2026 9:12 am	VS10 08-Jul-2026 9:15 am	VS11 08-Jul-2026 9:18 am	VS12 08-Jul-2026 9:40 am	VS13 08-Jul-2026 9:48 am
Lab Number:		4261008.6	4261008.7	4261008.8	4261008.9	4261008.10
Organochlorine Pesticides Screening in Soil						
gamma-BHC (Lindane)	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.012	< 0.014
cis-Chlordane	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.012	< 0.014
trans-Chlordane	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.012	< 0.014
2,4'-DDD	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.012	< 0.014
4,4'-DDD	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.012	< 0.014
2,4'-DDE	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.012	< 0.014
4,4'-DDE	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.012	< 0.014
2,4'-DDT	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.012	< 0.014
4,4'-DDT	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.012	< 0.014
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.09	< 0.08	< 0.08
Dieldrin	mg/kg dry wt	0.52	0.097	0.68	0.23	0.064
Endosulfan I	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.012	< 0.014
Endosulfan II	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.012	< 0.014
Endosulfan sulphate	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.012	< 0.014
Endrin	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.012	< 0.014
Endrin aldehyde	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.012	< 0.014
Endrin ketone	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.012	< 0.014
Heptachlor	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.012	< 0.014
Heptachlor epoxide	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.012	< 0.014
Hexachlorobenzene	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.012	< 0.014
Methoxychlor	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.012	< 0.014

Sample Name:		VS14 08-Jul-2026 9:42 am	VS15 08-Jul-2026 9:44 am	VS16 08-Jul-2026 9:46 am	DUP1 08-Jul-2026 9:01 am
Lab Number:		4261008.11	4261008.12	4261008.13	4261008.15
Individual Tests					
Dry Matter	g/100g as rcvd	78	77	77	77
Organochlorine Pesticides Screening in Soil					
Aldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013
alpha-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013
beta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013
delta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013
4,4'-DDE	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013
2,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013
4,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08
Dieldrin	mg/kg dry wt	< 0.013	0.43	0.093	0.136
Endosulfan I	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013
Endosulfan II	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013
Endrin	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013
Endrin ketone	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013
Heptachlor	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013
Methoxychlor	mg/kg dry wt	< 0.013	< 0.013	< 0.013	< 0.013

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**
Organochlorine Pesticides Screening in Soil	Sonication extraction, GC-ECD analysis. Tested on as received sample. In-house based on US EPA 8081.	0.010 - 0.06 mg/kg dry wt	1-13, 15
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	1-13, 15

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

Testing was completed between 13-Jul-2026 and 15-Jul-2026. 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.

Martin Cowell - BSc
Client Services Manager - Environmental