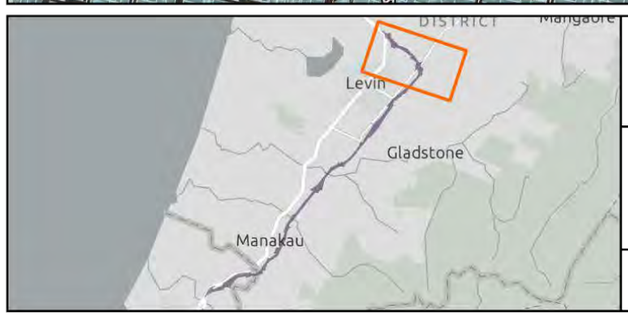
Ō2NL Council known HAIL sites



Stantec

Ōtaki to north of Levin HAIL Sites

Zone 1: SH1 to SH57

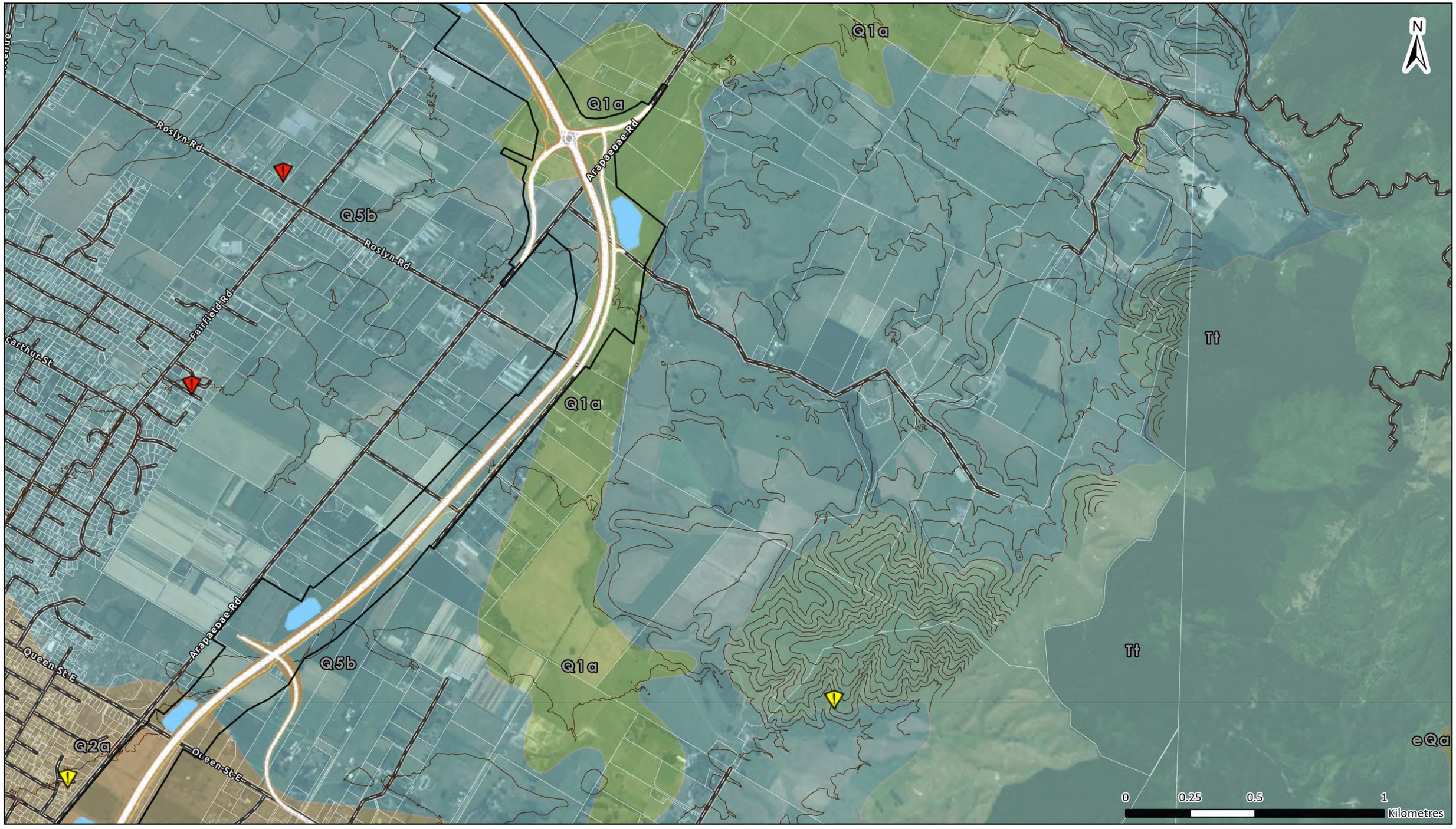
WAKA KOTAHI NZ TRANSPORT AGENCY

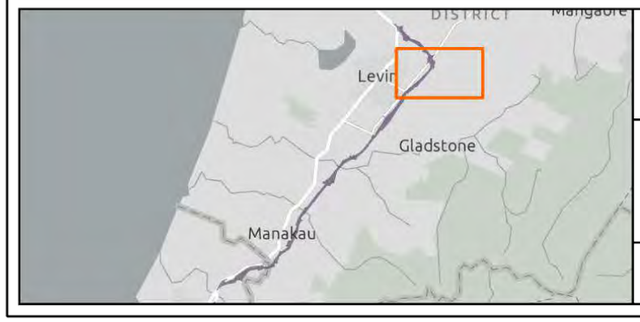
Data Sources: Stantec, Land Information New Zealand
Basemap Service Credits: Eagle Technology, LINZ, StatsNZ, NIWA, Natural Earth, © OpenStreetMap contributors., LINZ, Stats NZ, Eagle Technology, Esri, HERE, Garmin, FAO, METI/NASA, USGS
Coordinate System: NZGD 2000 New Zealand Transverse Mercator

Author: rmcpherson, Stantec (2022)
Project Code: 310203848
Export Date: 2022-03-04 1:34 PM

HAIL Site
- Confirmed contamination
- Unknown or suspected contamination
- Managed or remediated contamination

O2NL Proposed Designation
10m Contours
River / Stream
Property Parcels
Roads





Stantec

Ōtaki to north of Levin HAIL Sites

Zone 2: SH57 to Queen St

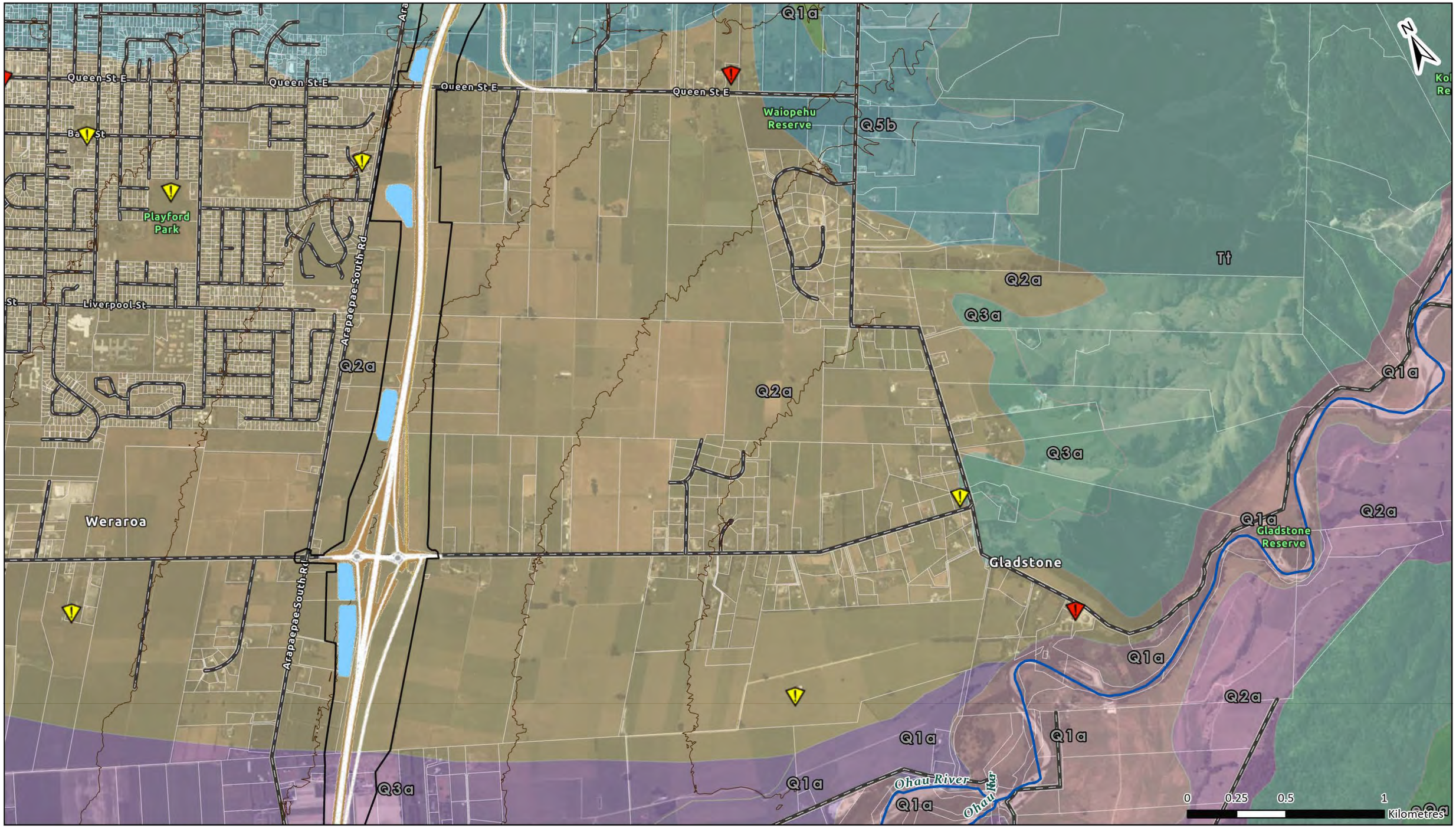
WAKA KOTAHI NZ TRANSPORT AGENCY

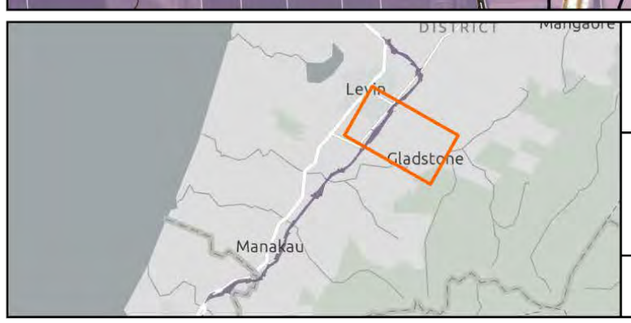
Data Sources: Stantec, Land Information New Zealand
Basemap Service Credits: Eagle Technology, LINZ, StatsNZ, NIWA, Natural Earth, © OpenStreetMap contributors., LINZ, Stats NZ, Eagle Technology, Esri, HERE, Garmin, FAO, METI/NASA, USGS
Coordinate System: NZGD 2000 New Zealand Transverse Mercator

Author: rmcpherson, Stantec (2022)
Project Code: 310203848
Export Date: 2022-03-04 1:34 PM

HAIL Site
- Confirmed contamination
- Unknown or suspected contamination
- Managed or remediated contamination

O2NL Proposed Designation
10m Contours
River / Stream
Property Parcels
Roads





Stantec

Ōtaki to north of Levin HAIL Sites

Zone 3: Queen St to Lutz Property Boundary

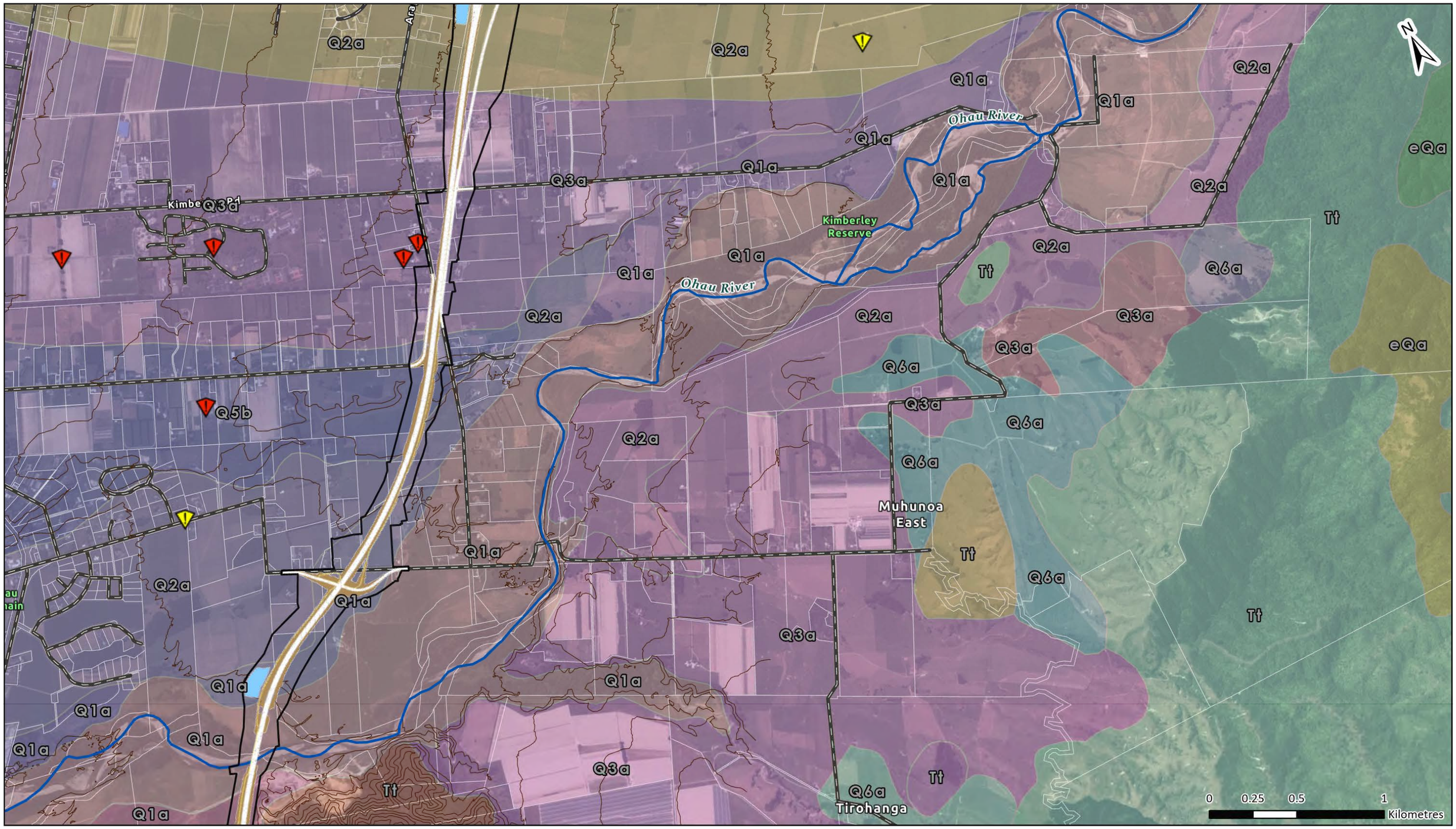
WAKA KOTAHI NZ TRANSPORT AGENCY

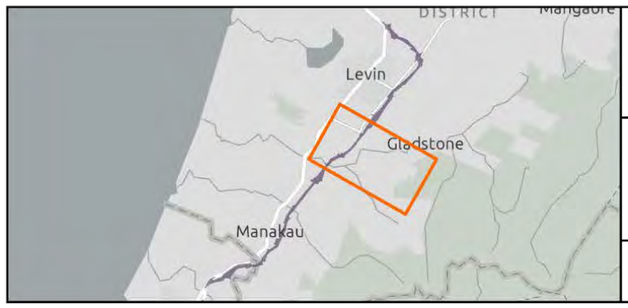
Data Sources: Stantec, Land Information New Zealand
Basemap Service Credits: Eagle Technology, LINZ, StatsNZ, NIWA, Natural Earth, © OpenStreetMap contributors., LINZ, Stats NZ, Eagle Technology, Esri, HERE, Garmin, FAO, METI/NASA, USGS
Coordinate System: NZGD 2000 New Zealand Transverse Mercator

Author: rmcpherson, Stantec (2022)
Project Code: 310203848
Export Date: 2022-03-04 1:34 PM

HAIL Site
- Confirmed contamination
- Unknown or suspected contamination
- Managed or remediated contamination

O2NL Proposed Designation
10m Contours
River / Stream
Property Parcels
Roads





Stantec

Ōtaki to north of Levin HAIL Sites

Zone 4: Lutz Property Boundary to Ohau River

WAKA KOTAHI NZ TRANSPORT AGENCY

Data Sources: Stantec, Land Information New Zealand
Basemap Service Credits: Eagle Technology, LINZ, StatsNZ, NIWA, Natural Earth, © OpenStreetMap contributors., LINZ, Stats NZ, Eagle Technology, Esri, HERE, Garmin, FAO, METI/NASA, USGS
Coordinate System: NZGD 2000 New Zealand Transverse Mercator

Author: rmcpherson, Stantec (2022)
Project Code: 310203848
Export Date: 2022-03-04 1:34 PM

HAIL Site
- Confirmed contamination
- Unknown or suspected contamination
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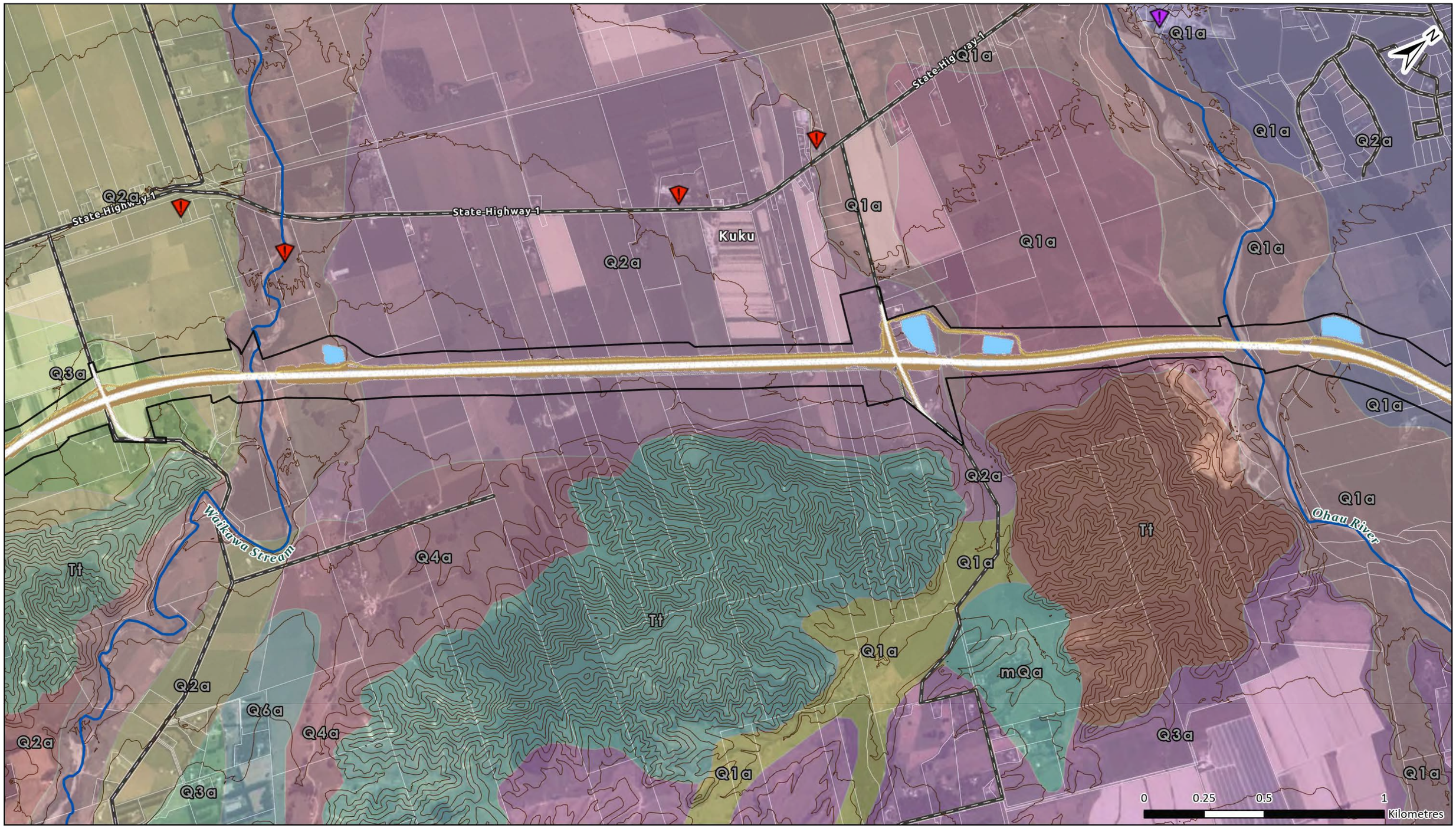
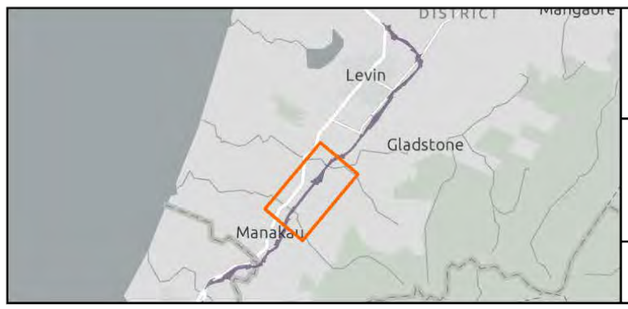
O2NL Proposed Designation
10m Contours
River / Stream
Property Parcels
Roads





Stantec

Ōtaki to north of Levin HAIL Sites

Zone 5: Ohau River to North Manukau Road

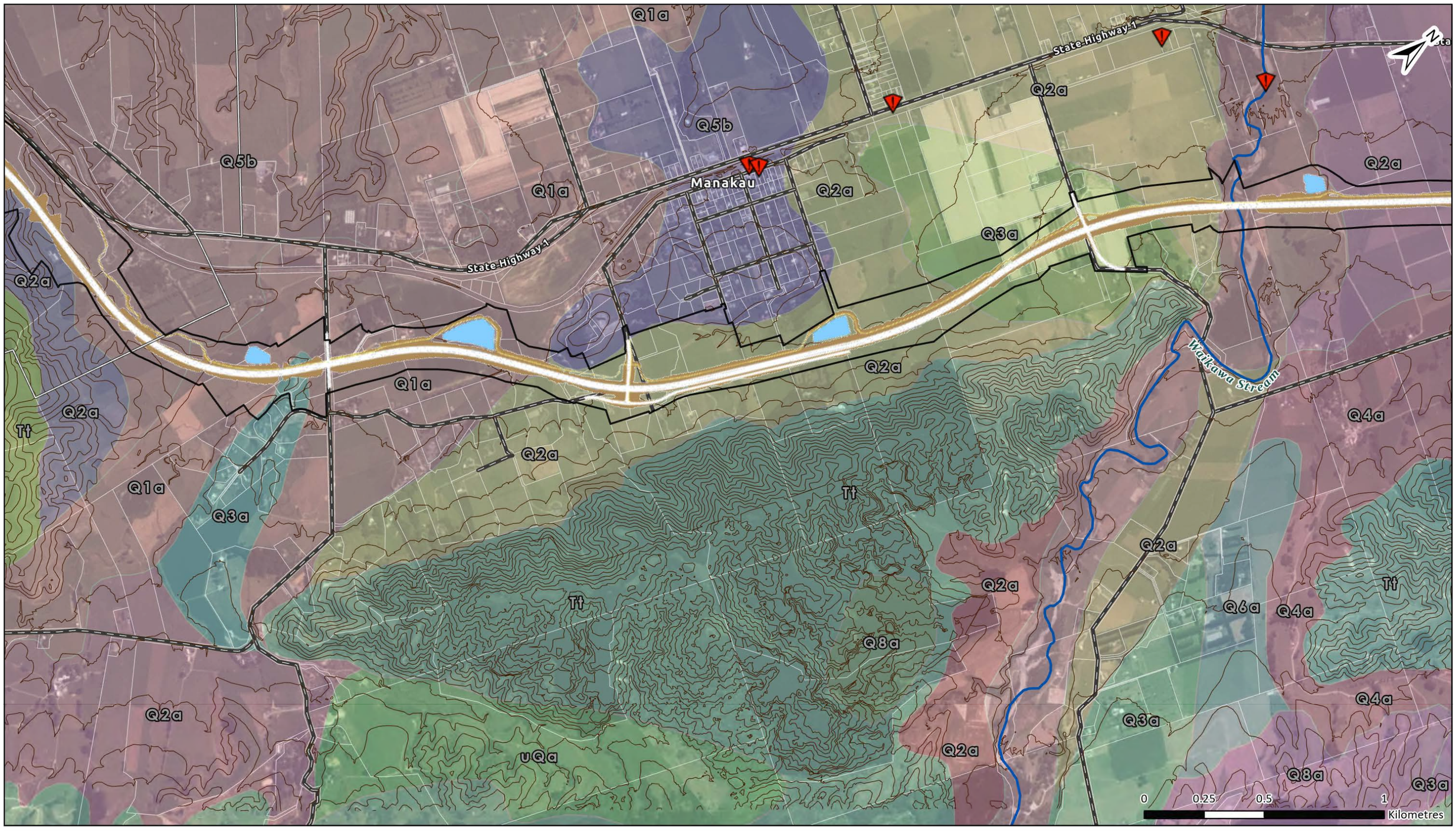
WAKA KOTAHI NZ TRANSPORT AGENCY

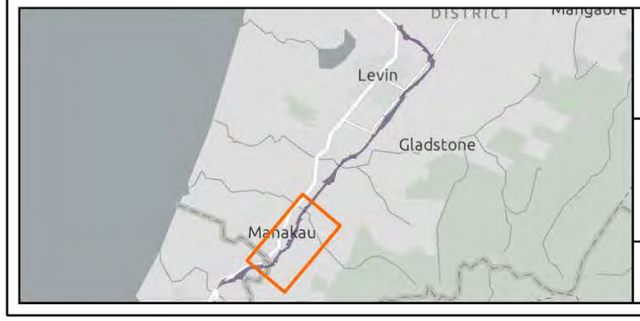
Data Sources: Stantec, Land Information New Zealand
Basemap Service Credits: Eagle Technology, LINZ, StatsNZ, NIWA, Natural Earth, © OpenStreetMap contributors., LINZ, Stats NZ, Eagle Technology, Esri, HERE, Garmin, FAO, METI/NASA, USGS
Coordinate System: NZGD 2000 New Zealand Transverse Mercator

Author: rmcpherson, Stantec (2022)
Project Code: 310203848
Export Date: 2022-03-04 1:34 PM

HAIL Site
- Confirmed contamination
- Unknown or suspected contamination
- Managed or remediated contamination

O2NL Proposed Designation
10m Contours
River / Stream
Property Parcels
Roads





Stantec

Ōtaki to north of Levin HAIL Sites

Zone 6: North Manukau Road to Regional Boundary

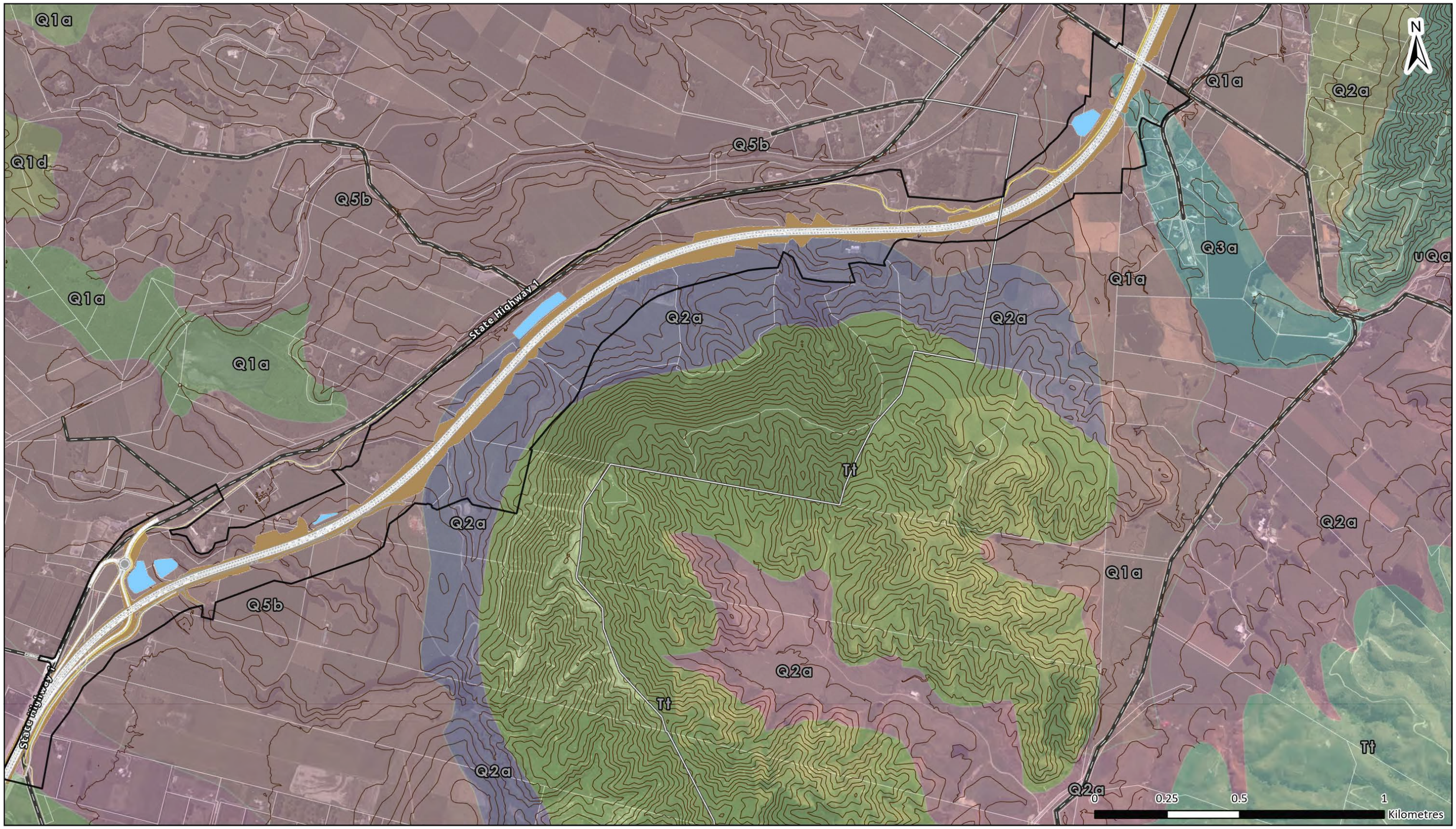
WAKA KOTAHI NZ TRANSPORT AGENCY

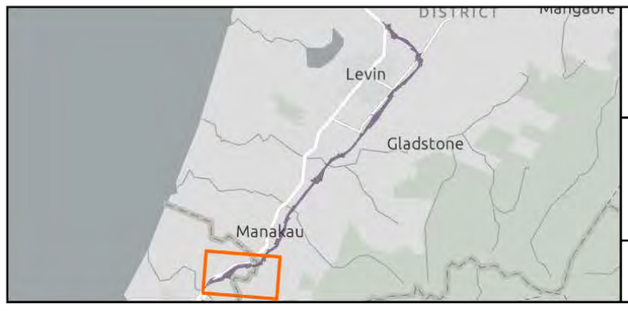
Data Sources: Stantec, Land Information New Zealand
Basemap Service Credits: Eagle Technology, LINZ, StatsNZ, NIWA, Natural Earth, © OpenStreetMap contributors., LINZ, Stats NZ, Eagle Technology, Esri, HERE, Garmin, FAO, METI/NASA, USGS
Coordinate System: NZGD 2000 New Zealand Transverse Mercator

Author: rmcpherson, Stantec (2022)
Project Code: 310203848
Export Date: 2022-03-04 1:34 PM

HAIL Site
- Confirmed contamination
- Unknown or suspected contamination
- Managed or remediated contamination

O2NL Proposed Designation
10m Contours
River / Stream
Property Parcels
Roads





Stantec

Ōtaki to north of Levin HAIL Sites

Zone 7: Regional Boundary to SH1

WAKA KOTAHI NZ TRANSPORT AGENCY

Data Sources: Stantec, Land Information New Zealand
Basemap Service Credits: Eagle Technology, LINZ, StatsNZ, NIWA, Natural Earth, © OpenStreetMap contributors., LINZ, Stats NZ, Eagle Technology, Esri, HERE, Garmin, FAO, METI/NASA, USGS
Coordinate System: NZGD 2000 New Zealand Transverse Mercator

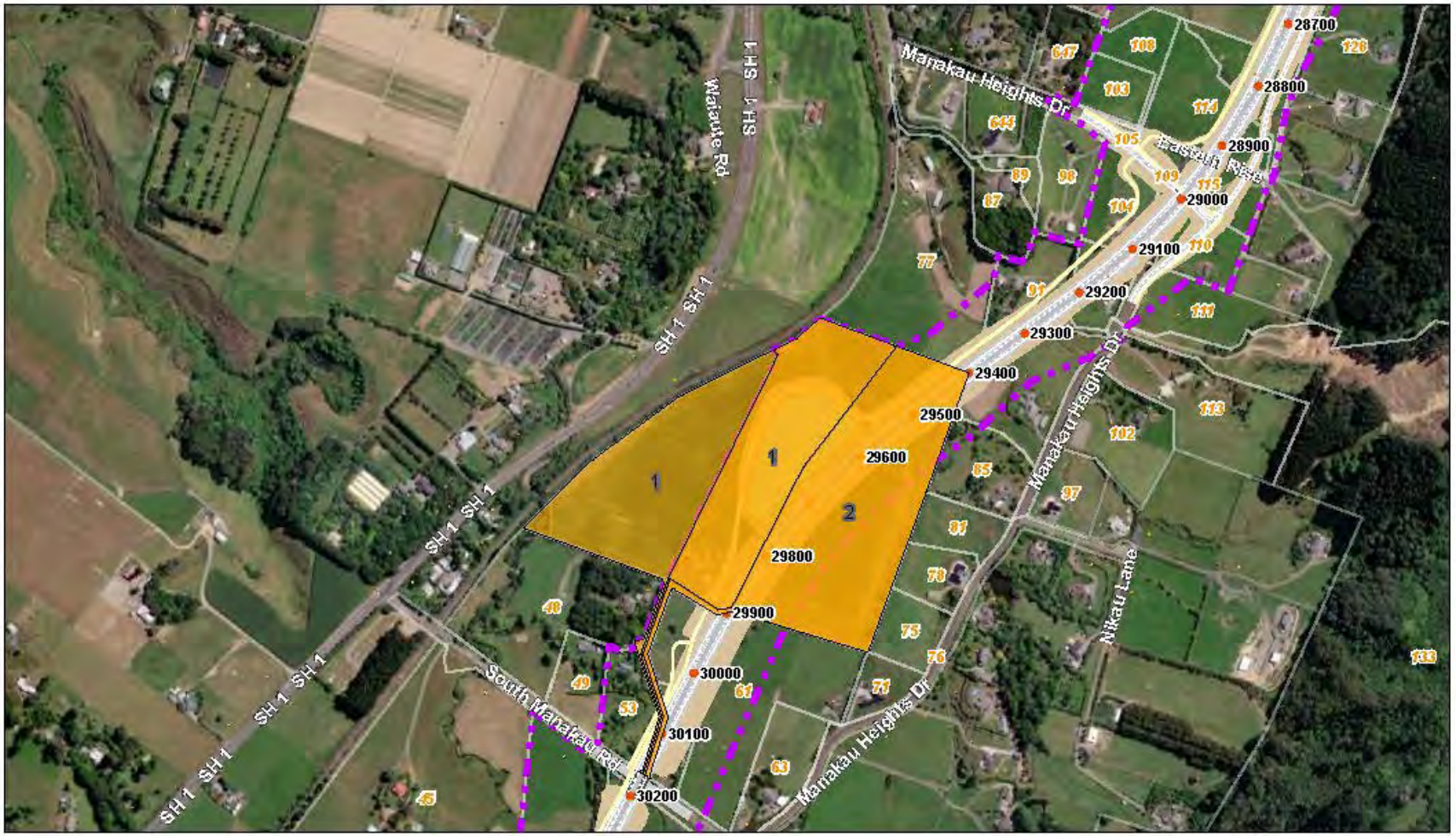
Author: rmcpherson, Stantec (2022)
Project Code: 310203848
Export Date: 2022-03-04 1:34 PM

HAIL Site
- Confirmed contamination
- Unknown or suspected contamination
- Managed or remediated contamination

O2NL Proposed Designation
10m Contours
River / Stream
Property Parcels
Roads

Additional HAIL sites identified as part of PSI

O2NL HAIL site



7/14/2022

Hail Sites Sublist
Proposed Designation
Chainage
Street Address
Proposed Centreline
Road Markings
Shared Use Path
Bridges
Road Surface
Ponds
Earthworks
World Imagery
Low Resolution 15m Imagery
High Resolution 60cm Imagery
High Resolution 30cm Imagery
Citations

1:10,000
0 0.05 0.1 0.2 mi
0 0.1 0.2 0.4 km
Maxar

O2NL HAIL Sites

10/12/2022

- Culvert Endpoints
- Bridge or Culvert Inlet (for C200x)
- Culverts
- Hail Sites Sublist
- Proposed Designation
- Road Markings
- Shared Use Path
- Bridges
- Road Surface
- Ponds
- Earthworks
- World Imagery
- Low Resolution 15m Imagery
- High Resolution 60cm Imagery
- High Resolution 30cm Imagery
- Citations
- 2.4m Resolution Metadata

1:10,000

0 0.07 0.15 0.3 mi

0 0.15 0.3 0.6 km

Maxar

O2nL HAIL site

7/14/2022

- Hail Sites Sublist
- Proposed Designation
- Constraints Data - Contaminated Sites
- Confirmed
- Chainage
- Street Address
- Proposed Centreline
- Road Markings
- Shared Use Path
- Bridges
- Road Surface
- Ponds
- Earthworks
- World Imagery
- Low Resolution 15m Imagery
- High Resolution 60cm Imagery

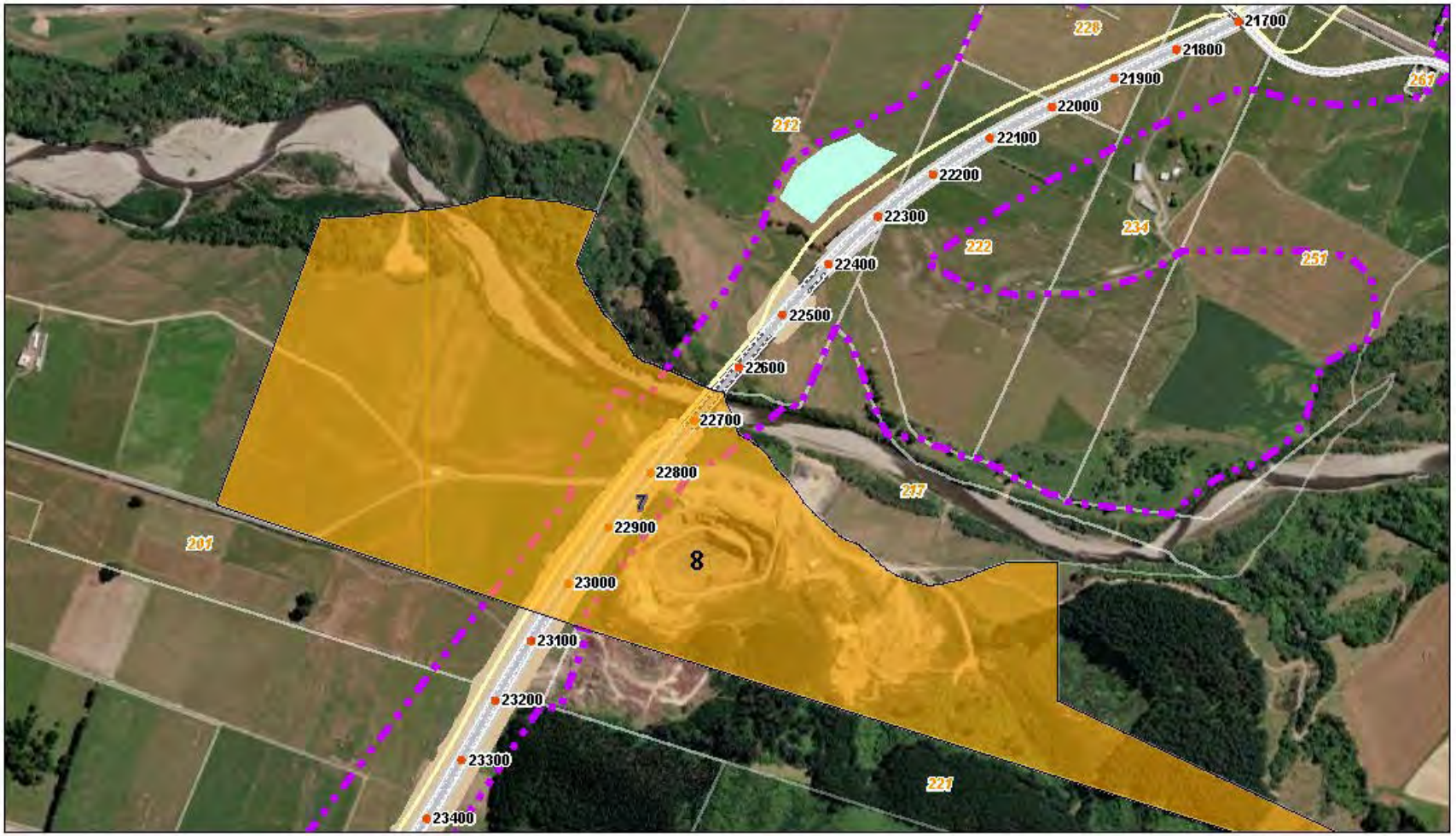
1:10,000

0 0.05 0.1 0.2 mi

0 0.1 0.2 0.4 km

Maxar

O2NL HAIL site



7/14/2022

Hail Sites Sublist
Proposed Designation
Chainage
Street Address
Proposed Centreline
Road Markings
Shared Use Path
Bridges
Road Surface
Ponds
Earthworks
World Imagery
Low Resolution 15m Imagery
High Resolution 60cm Imagery
High Resolution 30cm Imagery
Citations

1:10,000

0 0.05 0.1 0.2 mi

0 0.1 0.2 0.4 km

Maxar

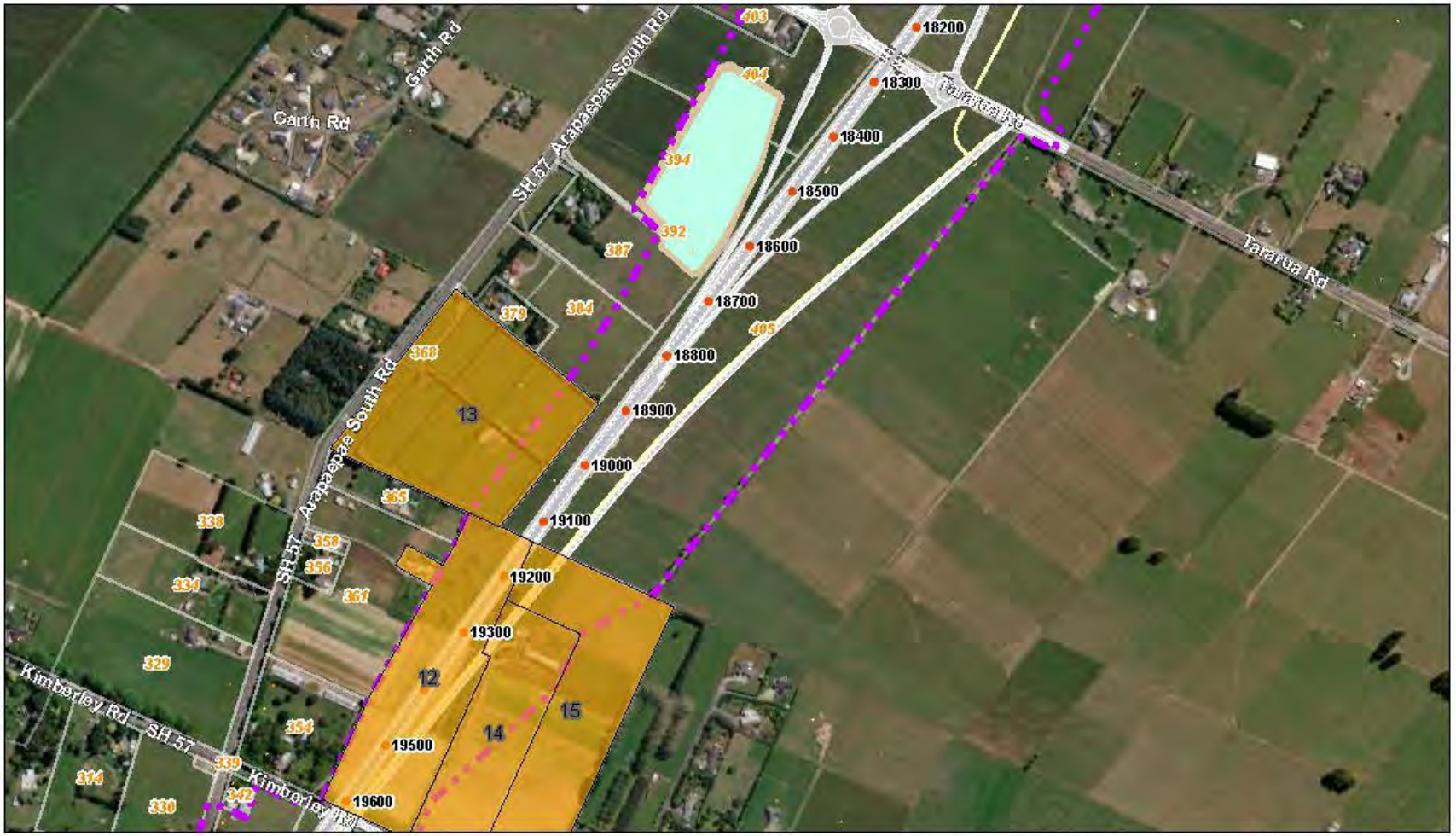
O2NL HAIL site

7/14/2022

Hail Sites Sublist
Proposed Designation
Constraints Data - Contaminated Sites
Confirmed
Chainage
Street Address
Proposed Centreline
Road Markings
Road User Markings
Shared Use Path
Road Surface
Earthworks
World Imagery
Low Resolution 15m Imagery
High Resolution 60cm Imagery
High Resolution 30cm Imagery

1:10,000
0 0.05 0.1 0.2 mi
0 0.1 0.2 0.4 km
Maxar

O2NL HAIL site



7/14/2022

Hail Sites Sublist	Proposed Centreline	Bridges	World Imagery
Proposed Designation	Road Markings	Road Surface	Low Resolution 15m Imagery
Chainage	Road User Markings	Ponds	High Resolution 60cm Imagery
Street Address	Shared Use Path	Earthworks	High Resolution 30cm Imagery

1:10,000

0 0.05 0.1 0.2 mi

0 0.1 0.2 0.4 km

Maxar

O2NL HAIL site

7/14/2022

- Hail Sites Sublist
- Proposed Designation
- Constraints Data - Contaminated Sites
- Unknown / suspected
- Chainage
- Street Address
- Proposed Centreline
- Road Markings
- Road User Markings
- Shared Use Path
- Bridges
- Road Surface
- Ponds
- Earthworks
- World Imagery
- Low Resolution 15m Imagery

1:10,000

0 0.05 0.1 0.2 mi

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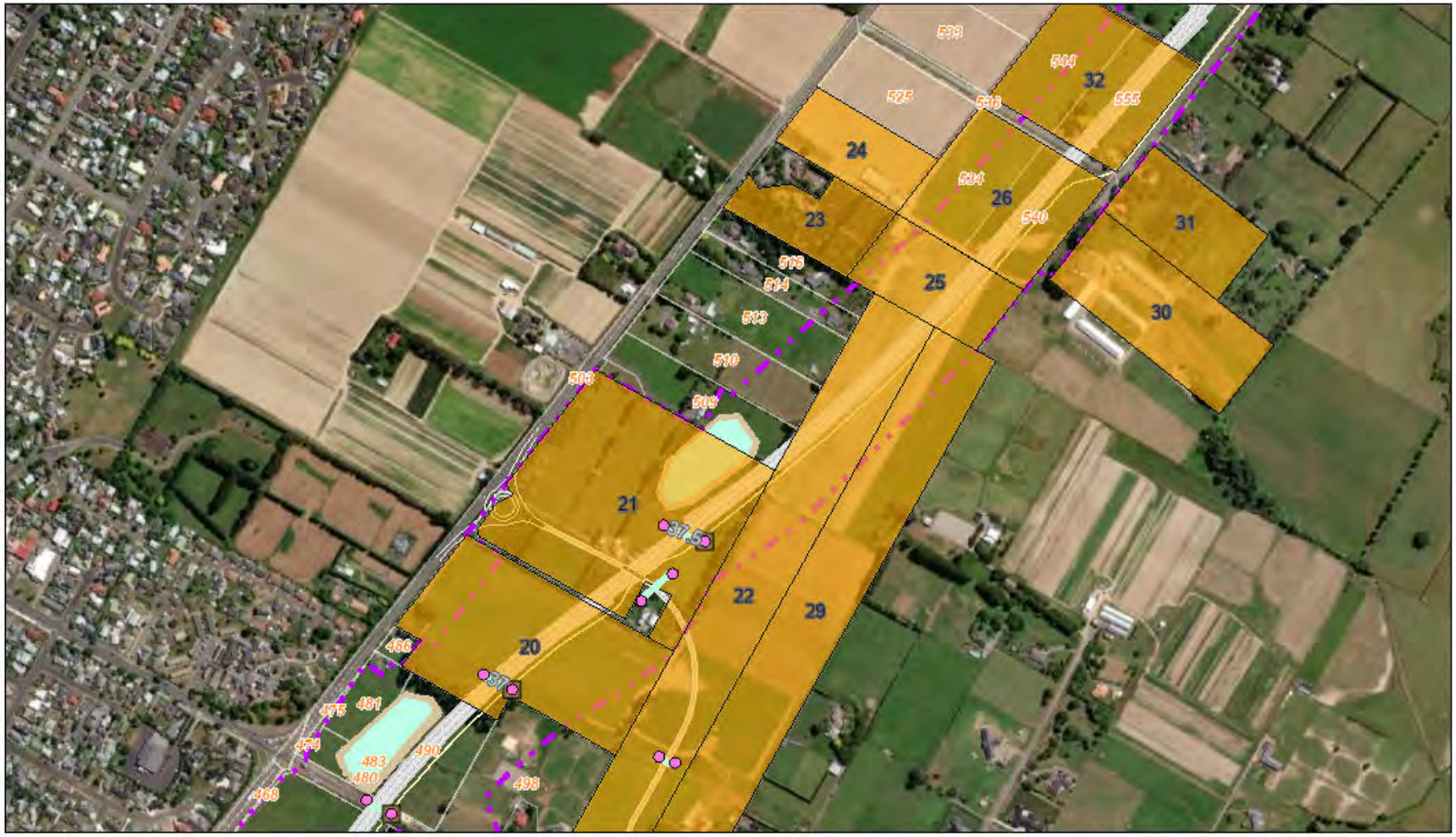
Maxar

O2NL HAIL Sites



O2NL HAIL site

7/14/2022

Hail Sites Sublist	Proposed Centreline	Road Surface	Low Resolution 15m Imagery
Proposed Designation	Road Markings	Ponds	High Resolution 60cm Imagery
Chainage	Road User Markings	Earthworks	High Resolution 30cm Imagery
Street Address	Shared Use Path	World Imagery	Citations

1:10,000

0 0.05 0.1 0.2 mi

0 0.1 0.2 0.4 km

Maxar

O2NL HAIL Sites

10/12/2022

- Culvert Endpoints
- Bridge or Culvert Inlet (for C200x)
- Culverts
- Hail Sites Sublist
- Proposed Designation
- Road Markings
- Shared Use Path
- Road Surface
- Ponds
- Earthworks
- World Imagery
- Low Resolution 15m Imagery
- High Resolution 60cm Imagery
- High Resolution 30cm Imagery
- Citations
- 2.4m Resolution Metadata

1:10,000

0 0.07 0.15 0.3 mi

0 0.15 0.3 0.6 km

Maxar

O2NL HAIL Sites

10/12/2022

- Culvert Endpoints
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- Culverts
- Hail Sites Sublist
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- High Resolution 30cm Imagery
- Citations
- 2.4m Resolution Metadata

1:10,000

0 0.07 0.15 0.3 mi

0 0.15 0.3 0.6 km

Maxar

Appendix D Ō2NL HAIL site assessment

HAIL SITE Map ID	Address	Risk	Historical land use of concern	Possible Contaminants	Horizons SAHS	Stantec-Ref-ID	Activity - HAIL	Contamination Status	Area (ha)	1939-42	1961-1965	1966 - 1969	1970 - 1979	1999 - 2000	2010-2011	2015-2016	Google earth image	Drone footage March 2021	Drone image 2021
1	45 South Manakau Road	Low Risk - market garden established post 2000	Market Garden / horticultural	Pesticides and Heavy Metals	Not Identified	57 & 64	A10 Market Garden	Unverified Land use noted on project property information as current	5.02	farm land	limited image suggests farmland	farm land	farm land	farm land	southern part of field ploughed in strips multiple crops visible	southern part of field ploughed in strips vegetation limited	lush green crop over entire area	no drone image	
2	49 South Manakau Road	Low Risk - market garden established post 2000	Market Garden / horticultural	Pesticides and Heavy Metals	Not Identified	70	A10 Market Garden	Unverified Land use noted on project property information as current	3.45	Farmland - low depression observed	limited image suggests farmland	farm land	farm land	farm land	southern part of field ploughed in strips multiple crops visible	southern part of field ploughed in strips vegetation limited	lush green crop over entire area	rows of single crop visible	
3	58 North Manakau Road, Manakau	Low Risk - market garden established post 2000	Market Garden / horticultural	Pesticides and Heavy Metals	Not Identified	137	A10 Market Garden	Unverified Land use noted on project property information as current	3.17	farm land	farm land	farm land	farm land	windbreaks established but no sign of orchards	field ploughed in strips indicating multiple crops	Market Garden / horticulture field ploughed in strips with various crops visible	field ploughed in strips indicating multiple crops	multiple crops visible	
4	51 North Manakau Road, Manakau	Low Risk - market garden established post 2000	Market Garden / horticultural	Pesticides and Heavy Metals	Not Identified	142	A10 Market Garden	Unverified Land use noted on project property information as current	2.86	farm land	farm land	farm land	farm land	farm land	field ploughed in strips indicating multiple crops	ploughed field	lush green single crop visible	Field planted in strips	
5	703 State Highway 1, Manakau	Medium Risk - market garden established in the 1970's	Market Garden / horticultural	Pesticides and Heavy Metals	Not Identified	169	A10 Market Garden	Unverified Land use noted on project property information as current	15.14	farm land	limited image suggests farmland	farm land	Area divided into two main paddocks but looks to be part of site 173	field ploughed in strips could indicated multiple crops	various grass / crop in each paddock	lush green single crop visible	field ploughed in strips indicating multiple crops	Field planted in strips	
6	695-703 State Highway 1,	Medium Risk - market garden established in the 1970's	Market Garden / horticultural	Pesticides and Heavy Metals	Not Identified	173	A10 Market Garden	Unverified Land use noted on project property information as current	13.85	farm land / paddock / livestock observed	limited image suggests farmland	limited image suggests farmland	1978 Large area of multiple crops extended on both sides of the SH - market garden more defined on western side of SH	field ploughed in strips indicating multiple crops	field ploughed in strips indicating multiple crops	field ploughed in strips indicating multiple crops	field ploughed in strips indicating multiple crops	Field planted in strips	
7	559 State Highway 1, Manakau	High Risk as waste material observed by geologist during site investigation. Soil contaminants tested low	Landfill site - General waste	TPH, PAH, heavy metals and asbestos.	Not Identified	209	G3 or G5	Verified field sampling has been undertaken		part of the river channel	no image	no image	vegetated area next to the river	grassed paddock	grassed paddock	grassed paddock some disturbed ground	grassed paddock	grassed paddock	
8	559 State Highway 1, Manakau	Low - Medium Risk - subject to confirming quantity of any fuel, or hazardous substance stored on site	Quarry / fuel storage	TPH/BTEX and PAH,	Not Identified	209	E7 mining industries (excluding gravel extraction)	Unverified		No Quarry observed	no image	no image	quarrying operations have commenced	Quarry at 1/2 extents	Quarry at current extents	Quarry at current extents	Quarry	Quarry	
9	416 Arapaepae South Road, Levin	Medium Risk - no imagery available to determine if established in the 1970's	Market Garden / horticultural	Pesticides and Heavy Metals	Not Identified	298	A10 Market Garden	Unverified Land use noted on project property information as current	3.28	farm land	no image	no image	Low resolution image shows multiple crops and small fields in the area unclear what is being grown.	field ploughed in strips indicating multiple crops	Market Garden / horticulture field ploughed in strips with various crops visible	Market Garden / horticulture field ploughed in strips with various crops visible	Market Garden / horticulture field ploughed in strips with various crops visible	Market Garden / multiple crops visible	
10	380-386 Arapaepae Road Levin Rural 5571	Low Risk - Outside designation and downgradient of works	Fuel Storage Tanks - Hydrocarbon	TPH/BTEX and PAH,	700653	311	A17	Verified history hazardous industry/act		farmland	no image	no image	Low resolution image unclear but indicates single property	Tress established on 1/2 the site	single property surrounded by tress with swimming pool	single property	single property	single property	
11	378 Arapaepae Road Levin Rural 5571	Low Risk - Outside designation and downgradient of works	Fuel Storage Tanks - Hydrocarbon	TPH/BTEX and PAH,	700652	326	A17	Verified history hazardous industry/act		single property surrounded by farmland	no image	no image	Low resolution image unclear but indicates single property	single property surrounded by farmland	single property surrounded by farmland and other houses	single property surrounded by farmland and other houses	single property surrounded by farmland and other houses	single property surrounded by farmland and other houses	
12	232 Kimberley Road, Levin	Medium Risk - no imagery available to determine if established in the 1970's	Market Garden / horticultural	Pesticides and Heavy Metals	Not Identified	367	A10 Market Garden	Unverified Land use noted on project property information as current	1.67	farm land no buildings	no image	no image	Low resolution image shows multiple crops and small fields in the area unclear what is being grown.	field ploughed in strips indicating multiple crops	field ploughed in strips could indicated multiple crops	field ploughed in strips could indicated multiple crops	field ploughed in strips could indicated multiple crops	Market Garden / multiple crops visible	
13	273 Arapaepae South Road, Levin	Low Risk - Outside the footprint of the new road and downgradient of works	Possible Orchard / Vines	Pesticides and Heavy Metals	Not Identified	373	A10 Orchard	Unverified Land use noted on project property information as current	6.92	farm land / livestock observed	no image	no image	Low resolution image shows single crop	wind sheltered paddocks with crops visible	vines, berries, trees at edge of designation	vines, berries, trees at edge of designation	vines, berries, trees at edge of designation	vines, berries, trees at edge of designation	
14	237 Kimberley Road, Levin	Low - Medium Risk - only a small part of the site to be disturbed	Market Garden / horticultural	Pesticides and Heavy Metals	Not Identified	374	A10 Market Garden	Unverified Land use noted on project property information as current		farm land	no image	no image	Low resolution image shows multiple crops and small fields in the area unclear what is being grown.	property with orchard trees and farm building to the northern end	property with orchard trees and farm building to the northern end and ploughed field to the south	property with land cleared to the north multiple crops to the south	property with grass paddock to the north, multiple crops to the south	Part of fields is site ID 381 Market Garden / multiple crops visible	
15	259 Kimberley Road, Levin	Low - Medium Risk - only a small part of the site to be disturbed	Market Garden / horticultural	Pesticides and Heavy Metals	Not Identified	381	A10 Market Garden	Unverified Land use noted on project property information as current	5.48	farm land	no image	no image	Low resolution image shows multiple crops and small fields in the area unclear what is being grown.	orchard trees and paddock to the northern end, field to the south	orchard trees and paddock to the northern end, ploughed field to the south	land cleared to the north multiple crops to the south	Grass paddock to the north, multiple crops to the south	Part of fields is site ID 374 Market Garden / multiple crops visible	
16	1-7 Heatherlea East Road, Levin	Low Risk - Orchard established post 2000	Orchard / fruit trees	Pesticides and Heavy Metals	Not Identified	446	A10 Orchard	Unverified Land use noted on project property information as current		farm land / livestock observed	farm land / livestock observed	farm land	farm land	farm paddocks with multiple dwellings and treelines established	trees / bushes / vines in south west corner. Rest of site farmland with livestock observed	trees / bushes / vines in south west corner with netting observed over tress. Rest of site farmland	Blueberries noted in property road sign	bushes seem to have thinned	
17	12-16 Heatherlea East Road, Levin	Low - Medium Risk - Trees / bushes established post 2000. Possible risk of farm dump being encountered	Possible farm dump and small private orchard	Pesticides, Heavy Metals TPH, PAH, and asbestos.	Not Identified	453	A10 Orchard possible G5	Unverified		Property and field. Patch of disturbed soil observed may indicate a historical building location, or farm dump!	Property and fields. Patch of disturbed soil observed in 1940 has reduced in size	Property and fields. Small patch of disturbed soil remains	Property and fields. Small patch of disturbed soil remains	Property and paddocks / fields. Disturbed area no longer visible.	Property and paddocks fields recently cut for hay/silage. Small stand of bushes / tress to north west corner	Property and paddocks fields. Small stand of bushes / tress to north west corner	bushes observed from road side on Heatherlea East Road, Multiple crops observed from SH1	field ploughed in strips could indicated multiple crops. Small stand of bushes / tress to north east corner	
18	148/138 SH1 Levin Foxton	Low Risk - market garden established post 1980	Market Garden / horticultural	Pesticides and Heavy Metals	Not Identified	459	A10 Market Garden	Unverified Land use noted on project property information as current	7.90	farm land	farm land	limited image suggests farmland	farm land	Paddocks ploughed in different orientations suggesting variation in crops	field ploughed in strips could indicated multiple crops.	multiple crops observed	ploughed field	Market Garden / multiple rows of crops visible	

HAIL SITE Map ID	Address	Risk	Historical land use of concern	Possible Contaminants	Horizons SAHS	Stantec-Ref-ID	Activity - HAIL	Contamination Status	Area (ha)	1939-42	1961-1965	1966 - 1969	1970 - 1979	1999 - 2000	2010-2011	2015-2016	Google earth image	Drone footage March 2021	Drone image 2021
19	32 Heatherlea East Road	Low Risk - market garden established post 2000	Market Garden / horticultural	Pesticides and Heavy Metals	Not Identified	461	A10 Market Garden	Unverified Land use noted on project property information as current	1.89	farm land	farm land	farm land	farm land, large paddocks observed	Property and paddocks /fields.	northern end field ploughed in strips could indicated multiple crops. Southern end grazing or scrub	field ploughed in strips could indicated multiple crops.	ploughed field to the north with multiple crops. Scrub area to the south	scrub area and paddock to the south. Single crop to the north	
20	34 Arapaepae Road, SH57 Levin	Medium Risk - Imagery shows multiple fields and crops established in the 1970's	Market Garden / horticultural	Pesticides and Heavy Metals	Not Identified	499	A10 Market Garden	Unverified Land use noted on project property information as current	4.60	farm land	no image	no image	Low resolution image shows multiple crops being grown in this area unclear where property boundaries finish	ploughed field	ploughed field	ploughed field	Grassed field observed from road side	lush green crop observed	
21	50 Arapaepae Road, Levin	Medium Risk - Imagery shows multiple fields and crops established in the 1970's	Orchard / fruit trees	Pesticides and Heavy Metals	Not Identified	506	A10 Orchard	Unverified Land use noted on project property information as current		farm land	no image	no image	Low resolution image shows multiple crops being grown in this area unclear where property boundaries finish	Orchard trees	Orchard trees	historical orchard trees patchy	Apples, blueberries, dried fruit and feijoas noted on road sign	historical orchard trees patchy	
22	1051 Queen Street East, Levin	Medium Risk - Imagery shows multiple fields and crops established in the 1970's	Market Garden / horticultural	Pesticides and Heavy Metals	Not Identified	511	A10 Market Garden	Unverified Land use noted on project property information as current	4.77	farm land	no image	no image	Low resolution image shows multiple crops being grown in this area unclear where property boundaries finish	ploughed field	ploughed field	various crops in paddocks	ploughed fields	Market Garden / multiple rows of crops visible	
23	108 Arapaepae Road, Levin	Low Risk - Outside the designation and downgradient. No works proposed	Orchard / fruit trees	Pesticides and Heavy Metals	Not Identified	517	A10 Orchard	Unverified		Property and paddock with small stand of trees at the east corner	no image	no image	Low resolution image shows house and surrounding gardens. Unable to determine if fruit trees are established	Orchard bushes / trees	Orchard bushes / trees at various stages	Orchard bushes / trees	Orchard bushes / trees observed from the road. Property advertised as a B&B	Orchard bushes / trees	
24	116 SH57 Arapaepae Rd, Levin	Low Risk - Outside the designation and downgradient. No works proposed	Market Garden / horticultural	Pesticides and Heavy Metals	Not Identified	522	A10 Market Garden	Unverified Land use noted on project property information as current	4.08	farm land	no image	no image	Low resolution image shows ploughed field	field planted in strips	ploughed field	lush green crop	single crop observed from road side	ploughed field	
25	116 SH57 Arapaepae Rd, Levin 40 Waihou Road, Levin	Low Risk - market garden established post 2000	Market Garden / horticultural	Pesticides and Heavy Metals	Not Identified	531	A10 Market Garden	Unverified Land use noted on project property information as current	1.70	farm land	no image	no image	Low resolution image shows ploughed field	farm land	ploughed field	lush green crop	ploughed field	single crop observed	
26	116 SH57 Arapaepae Rd, LEVIN SHANNON	Low Risk - market garden established post 2000	Market Garden / horticultural	Pesticides and Heavy Metals	Not Identified	534	A10 Market Garden	Unverified Land use noted on project property information as current	4.08	farm land / livestock observed	no image	no image	Low resolution image shows ploughed field	farm land	ploughed field	farm land	single crop observed to be recently planted	ploughed field	
27	278 Heatherlea East Rd	Low Risk - Trees / bushes established post 1980.	Orchard / fruit trees	Pesticides and Heavy Metals	Not Identified	583	A10 Orchard	Unverified		farm land	no image	no image	Low resolution image shows site part of wider farmland	Orchard with alignment covering SW portion of the site	tree have been removed and returned to paddocks	farm land / livestock observed	farm land	farm land	
28	101 Waihou Road, Levin	Medium Risk - no clear imagery available to determine if established in the 1970's	Polly tunnels next to Valleyview Poultry Limited	Asbestos, Pesticides and Heavy Metals. Other contaminants Pathogens, nutrients, EOC's, viruses may be present depending on historical use of poultry waste on the site.	Not Identified	586	A10 Glass houses	Unverified		farm land / livestock observed	no image	no image	Low resolution image shows neighbouring poultry farm. Polly tunnels not clearly visible	multiple polly tunnels and rounded tunnels observed, uncertain of use.	multiple polly tunnels and rounded tunnels observed, uncertain of use.	polly tunnels in various states of repair	polly tunnels in various states of repair. Rounded tunnels also observed, uncertain of use.	polly tunnels and tunnels in various states of repair	
29	1051 Queen Street East, Levin	Low Risk - only a small part of the site next to Queen St E to be disturbed. Various crops elsewhere on the property established post 2000	Market Garden / horticultural	Pesticides and Heavy Metals	Not Identified	615	A10 Market Garden	Unverified Land use noted on Property information	9.20	farm land	no image	no image	Low resolution image shows multiple crops being grown in the area unclear what is being grown. Area where road intersects looks to be part of property garden	ploughed fields	ploughed fields	ploughed field with variation in crops	Part of fields ID 511 ploughed field with variation in crops, House and farm buildings observed	limited drone imagery	
30	40 Waihou Road, Levin	Low Risk - Outside designation	Valleyview Poultry / Next to alignment	Pathogens, Heavy Metals, nutrients, EOC's, viruses	Not Identified	638	0	Unverified		farm land	no image	no image	Property with single poultry building present	poultry buildings present	two poultry buildings present	two poultry buildings present	two poultry buildings present	limited drone imagery	
31	42 Waihou Road, Levin	Low Risk - Outside designation. Orchard established in the 1970's	Orchard / fruit trees	Pesticides and Heavy Metals	Not Identified	0 / 572	A10 Orchard	Unverified		farm land	no image	no image	Trees / bushes planted in rows	Trees / bushes planted in rows	trees / bushes more sparse	trees more sparse surrounding multiple dwellings	trees more sparse surrounding multiple dwellings	limited drone imagery	
32	45 Waihou Road, Levin	Low Risk - market garden established post 2000	Market Garden / horticultural	Pesticides and Heavy Metals	Not Identified	544	A10 Market Garden	Unverified		farm land	no image	no image	Low resolution image	ploughed field	ploughed field	ploughed field with variation in crops	ploughed field with variation in crops	ploughed field	
33	26 Arapaepae South Road Levin 5510	Low Risk - Outside designation and downgradient of works	Landfill site - General waste	TPH, PAH, heavy metals and asbestos.	700518	no ID	G3	Unverified history hazardous industry/act		low lying excavated area visible	no image	no image	grassed field, surrounding land being developed for housing	area filled in and house constructed on the site. Surrounding area built up with housing	single property	single property	second property established on the site and additional surrounding housing	no drone image	
34	861 State Highway 1 Levin Rural 5570	Low Risk - Outside material supply site boundary and downgradient of works	Landfill site - General waste	TPH, PAH, heavy metals and asbestos.	700692	no ID	G3	Verified history hazardous industry/act		Farmland / river terrace	Farmland / river terrace	River floodplain and terrace	River floodplain and terrace	River meander has moved, river terraces are vegetated	River meander has continued to move, river terraces remain vegetated new access and building observed beside the river	Vegetation continues to mature along the river	no change	no drone image	
35	887 State Highway 1 Levin Rural 5570	Low Risk - Outside material supply site boundary and downgradient of works	Landfill site - General waste	TPH, PAH, heavy metals and asbestos.	700060	no ID	G3	Council records note no identified Contamination		land disturbed close to SH 1	Area of previous disturbance grassed over, surrounding area farmland	New area of disturbed soil now visible to the east of the property near the river could indicate disposal area	Disturbed soil to the east of SH1 near the river still visible could indicate disposal area	Area of previous disturbance now vegetated	Buildings now observed near areas of previous disturbance	Vegetation continues to mature, additional dwelling now observed in the area. Surrounding land farmland	vegetation along river well established	Limited image. River, trees and vegetation and several houses / outbuildings	

Appendix E Council Records on known HAIL sites next to the Project designation

Account	Document Precis	Address	Property Title	Status	Contaminants	Horizons SAHS	Horizon File No	Activity - HAIL	Current Status	Tank Removed?
505.2012.00000087.001	Arapaepae road small dump - Landfill site	26 Arapaepae South Road Levin 5510	Lot: 1 DP: 322349	Current	Landfill sites - General waste	700518	ERM 0501AC	G3	Unverified history hazardous industry/act	No
505.2012.00000066.001	The Properties of Ransfield - 891 State Highway 1 Levin South - Old refuse landfill site - Manakau - near Waikawa Stream	891 State Highway 1 Levin Rural 5570	Pln: 4D12A2B	Current	Landfill sites - General waste	700692	ERM 0501CL	G3	Verified history hazardous industry/act	No
505.2012.00000031.001	Brian John Cox - Storage Tanks and drum storage - underground fuel tank in shed - back entrance to house	380-386 Arapaepae Road Levin Rural 5571	Lot: 4 DP: 25093	Current	Fuel Storage Tanks - Hydrocarbon	700653	ERM 0501AV	A17	Verified history hazardous industry/act	No
505.2012.00000020.001	Waikawa Stream Manakau - Landfill site	887 State Highway 1 Levin Rural 5570	Pt: MANAWATU KUKUTAUAKI 4E3 2A1D	Current	Landfill sites - General waste	700060	ERM 0501P	G3	No idenitfied Contamination	No
505.2012.00000030.001	Paul C Ireland 378 Arapaepae South Road Levin - Storage tanks and drum storage - above ground fuel storage tanks	378 Arapaepae Road Levin Rural 5571	Lot: 2 DP: 427531	Current	Fuel Storage Tanks - Hydrocarbon	700652	ERM 0501AU	A17	Verified history hazardous industry/act	No

Ewen Robertson

From: Glenn London
Sent: Monday, September 09, 2002 9:07 AM
To: Ewen Robertson
Subject: FW: Manakau Dump Site Excavation - hard copy to follow

-----Original Message-----
From: Alan Cowie [mailto:acowie@xtra.co.nz]
Sent: Sunday, September 08, 2002 11:46 AM
To: PearceA@LandcareResearch.co.nz
Cc: help@horizons.govt.nz; greet@paradise.net.nz; rod.donald@parliament.govt.nz; helen.clark@parliament.govt.nz; richard@raukawa.iwi.nz
Subject: Manakau Dump Site Excavation

Attention - Andy Pearce - Landcare NZ
Ewen Robertson - Horizon MW
Richard Orzecki - Te Runanga O Raukawa
Caroline Greig, Green Party Aoteroa NZ
Rod Donald, Green Party Aoteroa NZ
Helen Clark - Labour NZ

I am trying to obtain information and assistance regarding the potential hazards of site excavation of an uncontrolled county dump that was closed in the mid - late 1980's. The site in question is located in Manakau, south of Levin. Prior to closing, this dump site was basically used as a general dump as well as an easy alternative for the dumping of a wide variety of substances that in the 1980's would not have been tolerated in the controlled tips of Otaki or Levin . When this site was closed by the Horowhenua District Council it was not properly capped by normal standards of the day. To my knowledge and according to information from Horizon it was capped with effluent from septic tanks. Subsequent to its closure the purchaser of the site planted the entire area in Pinus Radiata. Recently the property changed hands and the purchaser has proposed to turn the area into a Game and Bird Park, Accommodation etc. It appears that the council has given approval for these activities which in my mind was a good idea for the development of the area. By happen chance I visited the site last week and to my surprise I found that diggers had removed a majority of the trees, excavated ponds, and cleared off areas including the top of original tip face. As a layman and a person who was quite familiar with the layout of the original dump I was quite surprised to find excavation happening within 10 metres or so of the Waikawa Stream and with 20 metres or so of the tip face. In many ways I feel that New Zealanders have been deluding themselves with our "clean green image" - to me it's still a society of "out of sight, out of mind" - I have spent many years of my working life in Europe, the Middle East, Asia, and the Americas. Somehow we fit in the middle - I've seen the bad where economic issues overpower the environment (Asia) and I've seen where the economic changes overpower the environment (Middle East). I contacted Horizon MW and was absolutely bedazzled by Barry Goodwin of Horizon MWs response to this work being done on this former tip site. I scratched my head for while and wondered what century I was in. Whilst I am not against development, I believe that any project must be properly managed and the risks and returns must be carefully balanced. My expertise is not in the area of land management. I am a Contract Project Manager. I have recently returned from Saudi Arabia working for IBM on a project considerably larger than the size of New Zealands GNP. I understand risks and I understand the management of those risks. To a degree I understand the risks of the work undertaken on this site but I do not see the management by the Horowhenua District Council or Horizon MW. As an individual, I assess these risks on my own judgment as a layman, an awareness of knowledge gleaned from my father, and the opinion of my father and discussions with him, who for many years was New Zealands Chief Pedologist for DSIR. Whilst I have 7 figure sums to invest in this country, my believes based on my observation of these local authorities, I am loathe to invest in a region with such short sighted views. Whilst we all take risks, I believe that they should be carefully managed. I believe that development is good, but only properly managed that gives a good cost benefit to the community - this requires assessment - I don't believe a cavalier attitude with diggers excavating anaerobic mud from near the base of a tip site within the flood zone of the Waikawa stream represents good management - with Horizon MWs blessing - based on a visual assessment. In any case, in view of Horizon MWs lazzaire faire attitude I will action this further if necessary by private legal and scientific assessment. In any case I look forward to your assistance and feedback. For your information I am copying this email to other interested parties.

Alan Cowie

10/09/2002

03 September 2002

EM 08 06
I/0/HOR
BLG:FAC

Mr P Burlace
C/- 51 Stephens Crescent
PALMERSTON NORTH

Dear Sir

OLD RUBBISH TIP, WAIKAWA RIVER

This confirms the matters we discussed today relating to your development of land around the old rubbish tip site, adjacent to the Waikawa River.

At the time of my inspection, I noted that the capping of the rubbish tip appeared to range from very thin to almost non-existent in places.

Our records show that the Waikawa River has actively eroded the toe of the tip during the mid 1990's and may have removed all cover from that area.

The variety of materials within the tip have not been identified, but you should essume that material in the body of the tip is relatively uncompacted and may contain material that will produce noxious or toxic gases as the material breaks down.

There is also the likelihood that leachates will move through the material in the tip and out into the adjacent river gravels.

If you wish to undertake an analysis of the tip material and stability, I suggest you contact Montgomery Watson Harza of 118 Fitzherbert Avenue, Palmerston North (06-357 4034), who have considerable experience in this area. Such a report may be valuable in relation to possible future liability.

To ensure stability of the tip area, I suggest the following:

- The depth of capping over the fill should be increased by another 3-400mm of compacted clay and topsoil.
- No further excavation of the riverbank or terrace on the immediate upstream toe of the tip (i.e. no further excavation beyond the existing upstream excavation limit);
- No stormwater to be discharged onto the tip capping, and no septic tank effluent soakage to take place within the body or capping of the fill; and
- You may wish to work with the Scheme Manager of the Ohau-Manakau Scheme to install some subsidised protection works on the upstream toe of the tip area to protect against possible future erosion of the toe. Planting of the berm area between the toe of the tip and the river channel with native trees and shrubs will help to avoid erosion. (Contact details of the Scheme Manager – John Foxall at **horizons.mw**: Phone 06-350-1772 or 025 230 6602.).

A copy of our letter to the Horowhenua District Council relating to the subdivision of the Miles block accompanies this letter for your records.

If you have any further queries, please contact me. I will continue to monitor the tip area while development progresses.

Yours faithfully

B L Goodwin
RESOURCE OFFICER

Encl Copy of Horowhenua District Council letter

horizons.mw
Your Regional Council

MEMORANDUM

FILE: EM 08 06

DATE: 16 September 2002

TO: E Robertson

FROM: B Goodwin

SUBJECT: **RUBBISH TIP, WAIKAWA RIVER**

Ewen

In response to the rather upset e-mail from Alan Cowie.

Mr Cowie rang me on Tuesday 3 September following my inspection of the Burlace native wildlife development site. My inspection was in response to the complaint from Ms Gordon handed to me by you the previous day.

I advised Mr Cowie that the activities being undertaken by Mr Burlace fall within the Permitted Activity criteria of the Beds of River & Lakes Plan (i.e. vegetation removal and excavation within a berm area). I also advised Mr Cowie that Mr Burlace had been advised of the existence of the old rubbish tip, a very small portion of which is actually on Burlace's land.

I advised him that the Horowhenua District Council had given the neighbour, Miles, consent to subdivide their property adjacent to Burlace's, and that the recommendation with the subdivision included transfer of the whole of the old tip site to Burlace.

At the time of my inspection, vegetation had been removed from the old tip cap on Burlace's property, with the balance under grass on the neighbouring property. The capping on the tip is very thin, and some solid rubbish was visible on the surface in Burlace's. (I do not believe it has been unearthed by excavation of the capping, but is a result of inadequate capping). The Burlace excavation did not cut into the capping, but removed the vegetation layer.

Mr Burlace has been advised that the tip site is likely to be relatively unconsolidated, that the materials dumped there have not been identified, and that the tip is likely to produce gases and leachates as material breaks down. He was also advised that the Waikawa River has actively eroded the toe of the tip in the past.

I have made the following suggestions to Mr Burlace:

- that he employ the services of MWH to undertake a check on the tip site for stability and likely content;
- that he will need to increase the compacted depth of capping over the tip by another 3 – 400 mm;
- that there should be no excavation of the berm area upstream of the site, that no stormwater or septic tank effluent be discharged onto or into the tip site; and
- that he work with the Scheme Manager of the Ohau-Manakau Scheme to protect the toe of the tip from the risk of erosion by the river.

A copy of my letter to Mr Burlace, dated 3 September, accompanies this memo for your information. With the exception of the recommendation to protect the toe of the tip site, *all* this information was given to Mr Cowie during our phone conversation of 3 September. The

information was reiterated several times, as Mr Cowie appeared not to want to hear that we were looking after the situation, but preferred to be "amazed" that we would allow such activities "unchecked".

It is to be noted here that the excavation he speaks of has taken place over a small area of berm, several metres away from the toe of the tip, and from the active channel of the river.

An uncleared riparian margin approximately 8 – 10 metres in width has been maintained alongside the active channel of the river.

Excavation, as opposed to vegetation removal, has been limited to the clearing of weed (mainly alligator weed) and accumulated silt from three areas within the berm where a previous channel alignment had cut into the gravel of the berm. Further excavation to cut a channel parallel to the river leading a sizeable flow of water down through these ponds to a lower pond adjacent to Ms Gordon's (and the cause of her complaint), where excess water would flow to the river. The clearance of this lower pond has reduced levels in Ms Gordon's ponds by approximately 200 mm, but I would expect the water levels to recover when the lower pond refills. (Mr Burlace has offered to deepen Ms Gordon's ponds to ensure a good water supply if this does not occur).

Mr Cowie expresses concern that the development is not being "properly managed", and states that his area of expertise is not in land management. This is quite apparent, as he appears to be quite unwilling to accept any assurances from me that we are monitoring the situation, and that both horizons and Mr Burlace are well aware of the old tip and the problems that may be associated with such a site.

In my view, Mr Burlace has taken a responsible approach to the project, and has been on site most of the time work has been in progress. He has sought such information as the previous owner has been able to supply, and has not hesitated to seek further advice from horizons.

Mr Burlace is the (NZ expatriate) owner of several overseas businesses, and includes among his previous experience the development of a similar project for a native bird reserve in Bali, Indonesia. I am satisfied from my dealings with Mr Burlace that he intends to manage the project in a responsible manner. I am also satisfied that we have all the necessary tools available to ensure this happens.

B L Goodwin
Resource Officer

RESULTS EM14 01 P

xx closed landfills were identified in the Manawatu Wanganui Region.

The confirmation of the existence (by records or inspection) of 4 of the landfills could not be done.

IDENTIFIED AND CHARACTERISED LANDFILLS:

Horowhenua District

Manakau

General Information

Map Reference: S25: 26983-60537

Location: Turn off east of State Highway 1, 1.9 km north of Manakau 200m south of the Waikawa stream. Take second left (going north), down a private road. The landfill is on the right in a garden, at end of the private road (past house and bird coups and through the gardens).

Date Closed:

Alternative Waste Disposal:

Recent Weather: Dry, no rain for a week.

info limited, based off map ref. given.

Landfill Details

Community Served by old landfill: Manakau

Size (area) and Type of Landfill: 80 m^3. – prefer dimensions ~~max~~ y x z.

Cover Details: Site soils were used. The cover was not spread evenly. There were many mounds. * combination of lack of compaction & cover maybe cf. just cover.

Amount of Refuse:

Surveyed by

Site Description

Soil Type: Silt

Present Landuse: Flower garden growing on it. - really.

Restrictions to and Evidence of Continued Dumping: On private land, and reasonably isolated from access from general public.

Adjacent Landuse: Gardens (incorporate into Present landuse).

Landfill Area Covered in Vegetation: 95%

Ponding: None Observed (incorporate this into landform contour)

Landform Contour: The landfill was generally flat (apart from the mounds). The mounds had a grade of about 3:1, and were about one metre high. There were many natural channels on the landfill. eg. no evidence of ponding observed

Environmental Effects

Discharges to land or water: none observed

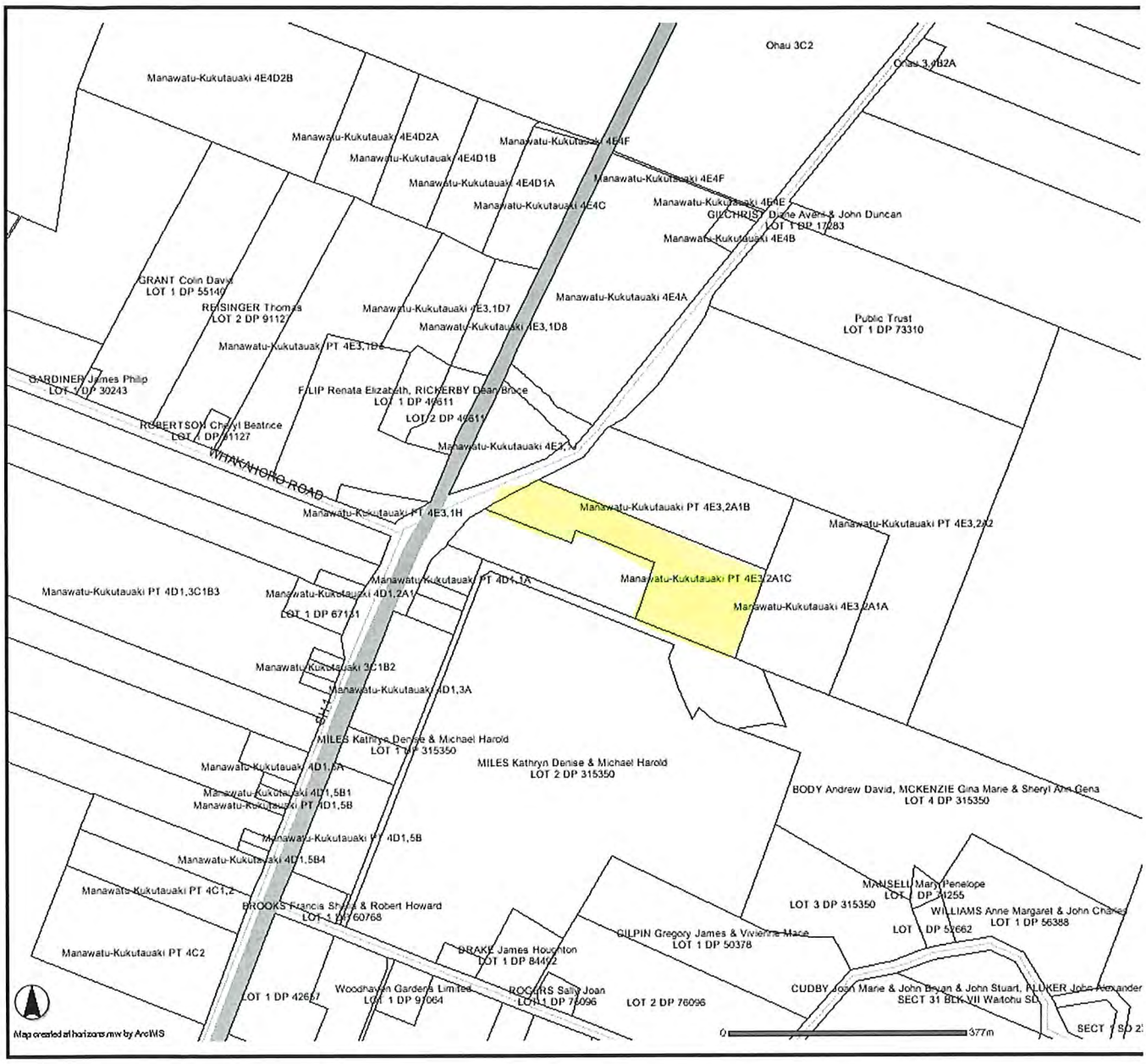
Proximity and Quality of Receiving Water: The Waikawa stream was about 200m away. There was also a garden pond constructed about 15m from the landfill

Air Discharges: None detected

Natural Hazards: The landfill was more or less on the Waikawa flood plain, but there was a stop bank. There still may be a possibility of flooding.

Environmental Protection Measures Taken: None observed

General Comments


Ohau 3C2
Ohau 3B2A
Manawatu-Kukutauaki 4E4D2B
Manawatu-Kukutauaki 4E4D2A
Manawatu-Kukutauaki 4E4F
Manawatu-Kukutauaki 4E4D1B
Manawatu-Kukutauaki 4E4D1A
Manawatu-Kukutauaki 4E4F
Manawatu-Kukutauaki 4E4C
Manawatu-Kukutauaki 4E4E
GILCHRIST Diane Averil & John Duncan
LOT 1 DP 17283
Manawatu-Kukutauaki 4E4B
GRANT Colin David
LOT 1 DP 55140
REISINGER Thomas
LOT 2 DP 9112
Manawatu-Kukutauaki 4E3,1D7
Manawatu-Kukutauaki 4E4A
Manawatu-Kukutauaki 4E3,1D8
Public Trust
LOT 1 DP 73310
Manawatu-Kukutauaki PT 4E3,1D6
GARDINER James Philip
LOT 1 DP 30243
FLIP Renata Elizabeth, RICHERBY Dean Bruce
LOT 1 DP 46611
LOT 2 DP 46611
ROBERTSON Cheryl Beatrice
LOT 1 DP 31127
Manawatu-Kukutauaki 4E3,1
WHAKAHORO ROAD
Manawatu-Kukutauaki PT 4E3,1H
Manawatu-Kukutauaki PT 4E3,2A1B
Manawatu-Kukutauaki PT 4E3,2A2
Manawatu-Kukutauaki PT 4D1,3C1B3
Manawatu-Kukutauaki PT 4D1,1A
Manawatu-Kukutauaki 4D1,2A1
LOT 1 DP 67131
Manawatu-Kukutauaki PT 4E3,2A1C
Manawatu-Kukutauaki 4E3,2A1A
Manawatu-Kukutauaki 3C1B2
Manawatu-Kukutauaki 4D1,3A
SH1
MILES Kathryn Denise & Michael Harold
LOT 1 DP 315350
MILES Kathryn Denise & Michael Harold
LOT 2 DP 315350
Manawatu-Kukutauaki 4D1,5A
Manawatu-Kukutauaki 4D1,5B1
Manawatu-Kukutauaki PT 4D1,5B
BODY Andrew David, MCKENZIE Gina Marie & Sheryl Ann Gena
LOT 4 DP 315350
Manawatu-Kukutauaki PT 4D1,5B
Manawatu-Kukutauaki 4D1,5B4
MANSELL Mary Penelope
LOT 1 DP 31255
Manawatu-Kukutauaki PT 4C1,2
BROOKS Francis Shane & Robert Howard
LOT 1 DP 60768
LOT 3 DP 315350
WILLIAMS Anne Margaret & John Charles
LOT 1 DP 56388
LOT 1 DP 52662
GILPIN Gregory James & Vivienne Mace
LOT 1 DP 50378
Manawatu-Kukutauaki PT 4C2
DRAKE James Houghton
LOT 1 DP 84402
LOT 1 DP 42667
Woodhaven Gardens Limited
LOT 1 DP 97064
ROGERS Sally Joan
LOT 1 DP 76096
LOT 2 DP 76096
CUDBY Josh Marie & John Bryan & John Stuart, FLUKER John Alexander
SECT 31 BLK VII Waiohu SD
SECT 1 SD 2
Map created at horizons.mw by ArcIMS
0
377m

Manakau (map Ref)

Manaratu - Kukutauaki
PT 4E3, 2A1C
4.2441 Ha.

SCANNED
11/08/2021
11313

horizons regional council

MEMORANDUM

FILE: ERM 5 01P

DATE: 4 November 2009

TO: File

FROM: Leigh Christensen

SUBJECT: **CHANGE OF PROPERTY CLASSIFICATION – SAHS 700060**

- File was checked on the 2 November 2009
- Original property has been subdivided.
- The property north and over the stream from the landfill is now under a separate title - legal description Pt Manawatu-Kukutauaki 4E3,2A1B.
- As this property does not contain the landfill it is now not considered a Contaminated or Hail site
- Letter sent to Isaac McIntyre of HDC stating that this site is now not considered a Contaminated or Hail site.
- Email sent to Nathan Batchelor of HRC to change Legal Description on SAHS database

L P Christensen

Leigh Christensen
ENVIRONMENTAL PROTECTION OFFICER

Updated by L. Christensen in SAHS on 26.11.09.

4 November 2009

FILE COPY

horizons
regional council

Private Bag 11025
Manawatu Mail Centre
Palmerston North 4442

P 06 952 2800
F 06 952 2929

www.horizons.govt.nz

Isaac McIntyre
C/- Horowhenua District Council
Private Bag 4002
LEVIN 5540

ERM 5 01P
LPC:JHC

10621

Dear Isaac

SAHS 700060: 861 STATE HIGHWAY 1, OHAU – LEGAL DESCRIPTION MANAWATU-KUKUTAUAKI 4E3 PT 2A1B

Regarding the property located at 861 State Highway 1, Ohau, which is currently owned by Timothy John and Robyn Avis Ralton, this property was part of a larger property that contained a landfill which was classified as a HAIL site on our Contaminated Site database.

As the original property was subdivided and the Ralton's now own the northern part, which does not contain a landfill, we do not consider their property to be a Contaminated or HAIL Site and therefore we will amend our database to reflect this.

If you have any questions or concerns please contact me on freephone 0508 800 800.

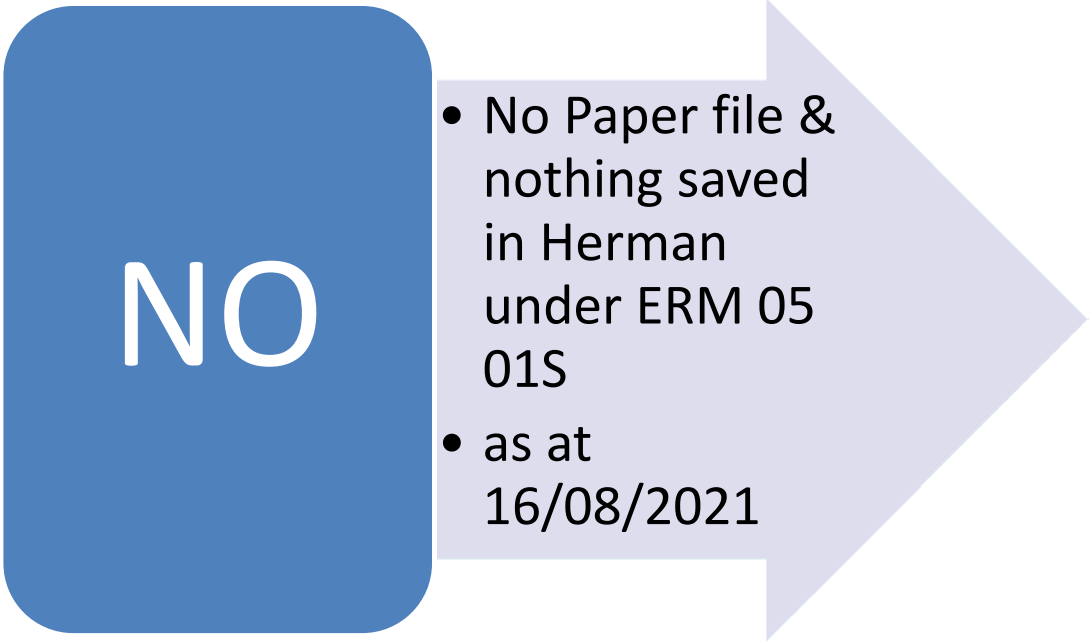
Yours sincerely

Leigh Christensen
ENVIRONMENTAL PROTECTION OFFICER

Contaminated Site Enquiry

Date Requested	16/08/2021
Old File Number	EM 14 01S- Scanned
New File Number	ERM 05 01S
Site Name	BC Resources Incident Number 15342
Site Address	39 Chester Street, Levin

Information found



From: HAIL
To: Gibbs, Emma
Cc: hail.enquiries@horizons.govt.nz
Subject: Re: [Request ID :##55176##] HAIL Info Request | Kirkcaldie Grove, Levin, Horowhenua District.
Date: Tuesday, April 5, 2022 3:39:55 PM

Hi,

I have checked Horizons Regional Council Site's Associated with Hazardous Substances (SAHS) database and I can advise that none of the properties on Kirkcaldie Grove, Levin, are recorded on our SAHS database.

I would recommend that you check with Horowhenua District Council as they may have records relating to the aforementioned properties.

Yours faithfully

Pita Kinaston | Team Leader Consent Monitoring

Horizons Regional Council | 11-15 Victoria Avenue | Palmerston North 4410

0508 800 800 | DD: 06 9522841 | Mobile: 021 2277448 |

From: Gibbs, Emma <Emma.Gibbs@stantec.com>
Sent: Thursday, 5 May 2022 4:28 pm
To: Customer Services - Public <CustomerServices@horowhenua.govt.nz>
Cc: Halder, Kathryn <Kathryn.Halder@stantec.com>
Subject: RE: [Request ID :##55178##] HAIL Info Request | 378 Arapaepae South Road, Levin, Horowhenua District.

Hi Leigh,

I thought I would send you a bit more detail on the sites we are requesting additional information on.

We are requiring the below information for a Preliminary site investigation report we are undertaking so any information regarding the below would be much appreciated.

The site with SahsID-700653:This is a confirmed HAIL site with fuel storage tanks.

- Does the team have any photos of these fuel tanks?
- What is the approx. volume of the tank(s)
- And where on the property are these tanks located?

The site with SahsID-700518: This is a suspected landfill site.

- What information does Council have on file to suspect a landfill was present at this site?
- Any additional info on this would be great.

The site with SahsID-700692: This is a confirmed landfill site

- What information does council have on file that confirms this site was / is a landfill site?
- Any information on size, location, photographs, what type of waste, is it lined / unlined would be great.

The site with SahsID-700060: this is a confirmed landfill site

- What information does council have on file that confirms this site was / is a landfill site?
- Any information on size, location, photographs, what type of waste, is it lined / unlined would be great.

Kind regards,

Emma Gibbs
MSc (Hons)
Senior Environmental Scientist
Direct: +64 3 281 7574
Mobile: +64 27 381 7845
Stantec New Zealand
Hazeldean Business Park
Level 2, 2 Hazeldean Road
P O Box 13-052
Christchurch 8141, New Zealand

From: Customer Services - Public <CustomerServices@horowhenua.govt.nz>
Sent: Tuesday, May 3, 2022 3:11 PM
To: Gibbs, Emma <Emma.Gibbs@stantec.com>
Subject: RE: [Request ID :##55178##] HAIL Info Request | 378 Arapaepae South Road, Levin, Horowhenua District.

Hi Emma,

Thank you for your response, sorry you haven't heard back yet

Our Team have a very heavy work load at the moment and are taking longer than usual to get back to people. I will check the request went through properly and I would hope they get back to you soon.

Kind regards

Leigh

Customer Experience
| Whakawhanaunga Kiritaki

Waea Mahi | (06) 366 0999

126 Oxford Street, Levin
Private Bag 4002, Levin 5540

From: Gibbs, Emma <Emma.Gibbs@stantec.com>
Sent: Tuesday, 3 May 2022 2:27 pm
To: Customer Services - Public <CustomerServices@horowhenua.govt.nz>
Subject: RE: [Request ID :##55178##] HAIL Info Request | 378 Arapaepae South Road, Levin, Horowhenua District.

Hi Leigh,

I have not had a response on the below as yet.

Are you able to let me know where this one is at please?

Cheers

Emma

From: Customer Services - Public <CustomerServices@horowhenua.govt.nz>
Sent: Friday, April 8, 2022 4:54 PM
To: Gibbs, Emma <Emma.Gibbs@stantec.com>
Subject: RE: [Request ID :##55178##] HAIL Info Request | 378 Arapaepae South Road, Levin, Horowhenua District.

Hi Emma,

Thank you for your email.

I have put your request through tour team , to be actioned.
Your Customer Reference number is 204161.

If you have any more questions, feel free to get in touch.

Kind regards

Leigh

Customer Experience
| Whakawhanaunga Kiritaki

Waea Mahi | (06) 366 0999

126 Oxford Street, Levin
Private Bag 4002, Levin 5540

From: HAIL <Hail.Enquiries@horizons.govt.nz>
Sent: Tuesday, April 5, 2022 4:27 PM
To: Gibbs, Emma <Emma.Gibbs@stantec.com>
Cc: hail.enquiries@horizons.govt.nz
Subject: Re: [Request ID :##55178##] HAIL Info Request | 378 Arapaepae South Road, Levin, Horowhenua District.

Hi,

I have checked Horizons Regional Council Site's Associated with Hazardous Substances (SAHS) database and I can advise that 378 Arapaepae South Road is recorded on our SAHS database.

The information on record is;

Sahs ID	700652
File No	ERM 05 01AU
Date Created	10/08/2012
File Name	PC IRELAND 378 ARAPAEPAE SOUTH ROAD LEVIN
Classification	02. Verified Hail. No Site Investigation
Hail	A 17 (A=Chemical manufacture, application and bulk storage; 17= Storage tanks or drums for fuel, chemicals or liquid waste)
Potential Contaminants	Fuel Storage Tanks - Hydrocarbons
Letter Comments	Received from Horowhenua District Council May 2012. This site is on their contaminated sites register. Fuel tanks (above ground)
Location Comment	Approximate location sourced from valuation number.
Territorial Authority	HOROWHENUA DISTRICT
Easting	1792868
Northing	5496709

I would recommend that you check with Horowhenua District Council as they may also have records relating to the aforementioned property.

Yours faithfully

Pita Kinaston | Team Leader Consent Monitoring

Horizons Regional Council | 11-15 Victoria Avenue | Palmerston North 4410

0508 800 800 | DD: 06 9522841 | Mobile: 021 2277448 |

From:	HAIL
To:	Gibbs, Emma
Cc:	hail.enquiries@horizons.govt.nz
Subject:	Re: [Request ID :##55187##] HAIL Info Request | 861 State Highway 1, Manakau, 5573
Date:	Tuesday, April 5, 2022 4:56:30 PM
Attachments:	ERM0501_P 20020902 Manakau Dump Site Excavation.pdf ERM0501_P 20020903 Old Rubbish Tip Waikawa River.pdf ERM0501_P 20020916 Rubbish Tip Waikawa River.pdf ERM0501_P 20041104 Identified _ Characterised Landfills.pdf ERM0501_P 20091104 Change of Property Classification SAHS 700060.pdf ERM0501_P 20210811 Waikawa Stream .docx

---

Hi,

I have checked Horizons Regional Council Site's Associated with Hazardous Substances (SAHS) database and I can advise that 861 State Highway 1, Manakau, is recorded on our SAHS database.

The information summary is as follows;

Sahs ID	700060
File No	ERM 05 01P
Date Created	02/12/2004
File Name	WAIKAWA STREAM MANAKAU
Classification	06. Verified Hail. At Or Below Background Levels
Hail	G3 - Landfill sites
Potential Contaminants	Landfill sites -
Letter Comments	Information on site limited; valuation number, area, zoning based off map reference. 26/11/09. Classification changed from 'Unverified of Hazardous Industry or Activity' to 'No Identified Contamination'.
Location Comment	
Territorial Authority	HOROWHENUA DISTRICT
Easting	1788243
Northing	5492266

I have also attached the further information held by Horizons.

I would recommend that you check with Horowhenua District Council as they may also have records relating to the aforementioned property.

Yours faithfully

Pita Kinaston | Team Leader Consent Monitoring

Horizons Regional Council | 11-15 Victoria Avenue | Palmerston North 4410

0508 800 800 | DD: 06 9522841 | Mobile: 021 2277448 |

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Appendix F Historical Aerial Images

This information is included within the Project GIS mapping and access can be requested.

Appendix G File Note

Stantec

FILE NOTE

DATE 20 May 2021
JOB No. 310203848

PROJECT O2NL

SUBJECT Site Investigation

FOR INFORMATION OF

FOR ACTION BY

THIS NOTE RECORDS:
- ☐ MEETING
- ☐ PHONECALL
- ☑ THOUGHT/IDEA
- ☐

☑ WITH
☐ ABOUT

☐ CLIENT
☑ CONTRACTOR
☐ SUPPLIER ☐

BETWEEN Roy Ching
AND Quarry Manager
TIME 9.00am

Detail:

TP235 - Ohau Quarry
20-5-2021

TP encountered household refuse (mattresses, pipes, fabric) along with green waste (stumps, cut branches) from ~1m to ~2m. Refuse was covered in gravelly clay FILL.

Discussion with Quarry Manager on site

Quarry manager mentioned that historic refuse was dumped here, likely when customers came to fill there trailers from the quarry.

He pointed out an area approximately extending out 20m in each direction where the refuse would likely be dumped however could not be certain.

INITIALS

Appendix H Contamination Assessment at the South Bank of the Ohau River

Ōtaki to North of Levin Project - Contamination Assessment at the South Bank of the Ōhau River

PREPARED FOR Waka Kotahi NZ Transport Agency |
June 2021

We design with community in mind

Stantec

Revision Schedule

Rev No.	Date	Description	Signature or Typed Name (documentation on file)		
			Prepared by	Checked and reviewed by	Approved by
0	22/06/2021	Draft for internal review	Julia O'Brien	Paul Heveldt	
1	25/06/2021	Final	Julia O'Brien	Paul Heveldt	Jon England

Quality Statement

This document has been prepared for the benefit of Waka Kotahi NZ Transport Agency. No liability is accepted by this company or any employee or sub-consultant of this company with respect to its use by any other person.

This disclaimer shall apply notwithstanding that the report may be made available to Waka Kotahi NZ Transport Agency and other persons for an application for permission or approval to fulfil a legal requirement.

PROJECT MANAGER	PROJECT TECHNICAL LEAD
Jon England	Paul Heveldt

PREPARED BY

Julia O'Brien  22 / 06 / 2021

CHECKED & REVIEWED BY

Paul Heveldt  22 / 06 / 2021

APPROVED FOR ISSUE BY

Jon England  25 / 06 / 2021

WELLINGTON
Stantec Building, Level 15, 10 Brandon Street, Wellington, 6011
PO Box 13-052, Armagh, Christchurch 8141
TEL +64 4 381 6700

STATUS Final | Project No 310203848

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1.0 INTRODUCTION

The Ōtaki to North of Levin project (Ō2NL; the project) is the northernmost section of the Wellington Northern Corridor and will improve the safety and resilience of the transport network connecting Ōtaki and Levin, and the wider region.

As of March 2021, Waka Kotahi NZ Transport Agency (Waka Kotahi) has selected a refined draft alignment for the project (Figure 1-1). On behalf of Waka Kotahi, Stantec is progressing with engineering designs and optioneering, including understanding environmental and social effects, and how these can be avoided, minimised or mitigated. As part of this, ground investigations have been undertaken and these investigations, prompted by anecdotal evidence, have identified an area of land that will be developed within the proposed road corridor alignment as potentially having been used as a landfill. This site is located at 559 State Highway 1, Ōhau (Figure 1-2), on the south bank of the Ōhau River.

As part of these ground investigations, the potential presence of contaminated soil related to the possible historic landfill has been assessed by intensive soil sampling and laboratory analysis for contaminants likely to be associated with landfill material. The findings of this investigation will determine the risks posed by any identified contamination, the precautionary measures that should be taken regarding health & safety in handling such excavated soil during construction, and the most suitable disposal location for any surplus soil.

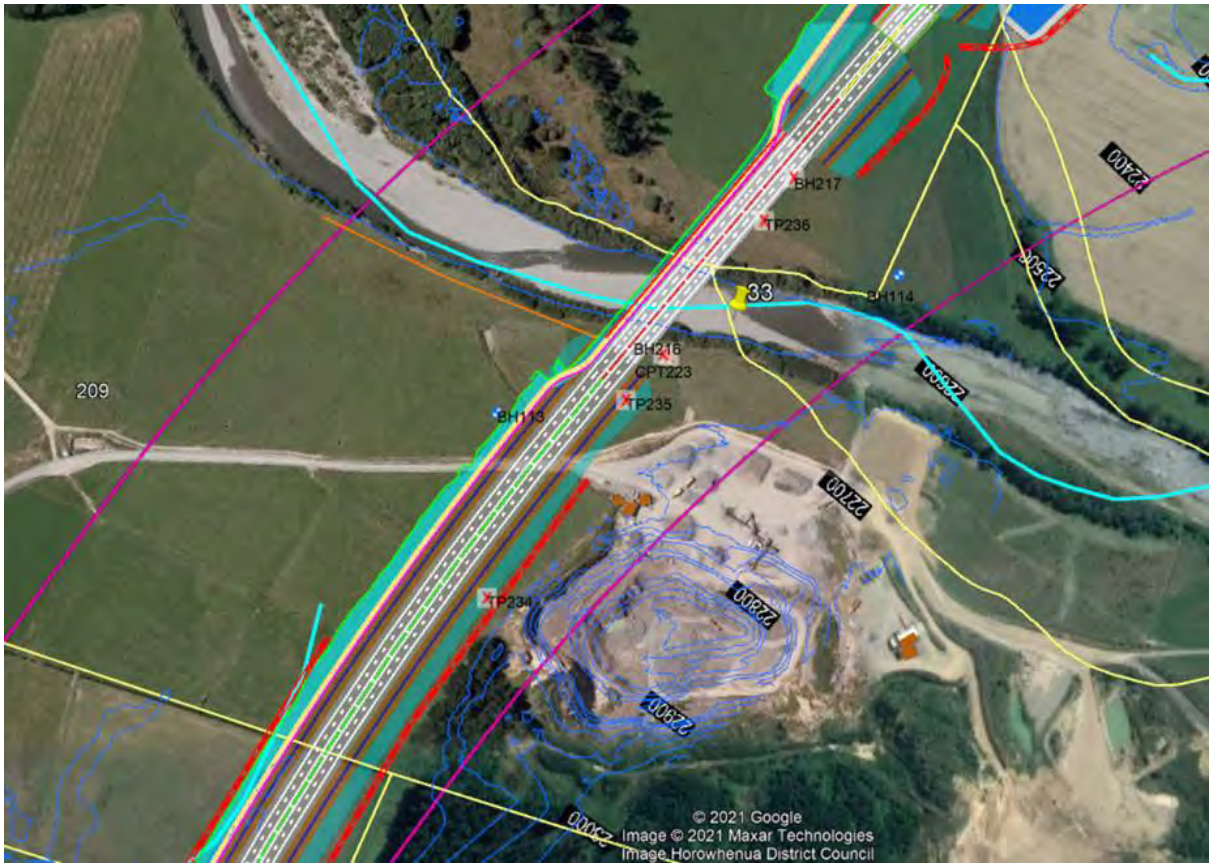

Figure 1-1 Depiction of where the draft alignment for the project intercepts with the potential historical landfill suspected near the south bank of the Ōhau River

Figure 1-2 Location of sampling sites on the south bank of the Ōhau River

1.1 SITE LOCATION

The site of this investigation is located approximately 8km south of Levin and is situated immediately adjacent to Webb's quarry on farmland, as shown in the view above. The Ōhau River is to the north of the sample sites, with the individual sites being between 10 m and 100 m away from the river. There were five sampling locations, as seen in Figure 1-3. These sample locations reflect the form of the Ō2NL proposed bridge approach on the south side of the Ōhau River.

Figure 1-3 Locations of individual samples

2.0 SAMPLING METHODLOGY

Soil samples were taken at five locations over a total of three days. The details are:

- Site ORSL_1 was sampled on 14 June 2021 at 0.4 m, 2 m, and 3.5 m depth
- Site ORSL_2 was sampled on 14 June 2021 at 0.5 m, 2 m, and 3.5 m depth
- Site TP235 was sampled on 20 May 2021 at 0.5 m and 3.6 m depth
- Site TP235B was sampled on 20 May at 0.5 m and 2.5 m depth
- Site TP234 was sampled on 19 May 2021 at 0.5 m and 3.5 m depth

A total of 12 individual soil samples were obtained from the five locations.

Due to time constraints on site, samples at sites TP234, TP235, and TP235B were taken by a geotechnical engineer. Clean plastic bags were used to store the soil samples and clean disposable gloves were used to take each sample. The soil samples were dropped off at Stantec's Wellington office and a Stantec environmental scientist transferred the soil into the appropriate laboratory containers while wearing clean disposable gloves when handling each sample. The samples were then placed in a chilly bin with ice packs and taken to R J Hill Laboratories for analysis.

For sites ORSL_1 and ORSL_2, a Stantec environmental scientist took the samples. Prior to taking the samples at each location, the environmental scientist cleaned the drill with Decon90. After taking the soil samples, the samples were stored in a chilly bin with ice packs and taken directly to R J Hill Laboratories for analysis.

The only refuse identified while sampling was at:

- TP235 between 1.5 m and 2.5 m depth. The material observed included fence posts, a metal pipe, potentially a mattress, plastic, and bits of wire.

  ORSL_2 at 0.5 m depth. One sheet of black plastic was observed at this site.

As rubbish was only identified at TP234 and ORSL_2 in limited quantities, it is assumed these are small deposits of domestic dumped rubbish, rather than being indicative of a landfill.

Photographs were taken while sampling and can be found in Table 2-1 below.

Table 2-1 Photos of soil sampling

Left image: Clean drill before sampling ORSL1

Middle image: Paddock where all samples except TP234 were taken. This is on farmland beside Webb's quarry

Right image: Webb's quarry beside sampling sites

Left image: Site ORSL_1 at 0.4 m depth. The soil is similar in colour throughout.

Middle image: Site ORSL_1 at 2 m depth shows a darkening of the soil indicating the presence of disposed material.

Right image: Site ORSL_1 at 3.5 m depth shows a darker soil than the earlier depths and indicates the potential presence of disposed material.



Left image: Site ORSL_2 at 0.5 m depth shows similar soil throughout suggesting it has not been disturbed previously.

Middle image: Plastic sheet found at site ORSL_2 at 0.5 m depth

Right image: Site ORSL_2 at 2 m depth shows similar soil throughout.



Left image: Site ORSL_2 at 3.5 m depth. No rubbish is seen in the drill flights and the soil is similar throughout suggesting it has not been disturbed.

Middle image: Site TP234 showing no evidence of rubbish. The soil is similar throughout.

Right image: Site TP235 showing rubbish found.


Left image: Site TP235 showing a sudden change in soil colour indicating there may have been disturbance at some point in time.

Right image: Site TP235B shows no indication of rubbish, however the change in soil colour may indicate imported material.

3.0 RESULTS AND DISCUSSION

The analytical results that were above the laboratory detection limits are shown in Table 3-1. The complete set of the analytical results is provided in Appendix A.

The results have been compared to the following guidelines:

- National Environmental Standard for assessing and managing contaminants in soil to protect human health (MfE, April 2012) (NESCS). The category of commercial/industrial outdoor worker (unpaved) was used.
- Determination of Common Pollutant Background Soil Concentrations for the Wellington Region (GWRC, August 2003). The category of soil type 1 was used.
- Module 2: Hazardous Waste Guidelines Landfill Waste Acceptance Criteria and Landfill Classification (MfE, May 2004). Both guidelines for class A and class B landfills were used.

Asbestos was also tested for “presence/absence” in all samples; no asbestos was detected.

None of the concentrations of analysed contaminants exceeded the NESCS criteria for a commercial/industrial landuse or the landfill acceptance criteria for a Class A landfill. However, as shown in Table 3-1, several contaminant concentrations exceeded the acceptance criteria for Class B and the Wellington background concentrations for soil type 1.

The exceedances of the Class B landfill criteria mean that any soil to be disposed off site should be disposed of to a Class A landfill. It is important to note that the MfE guidelines for landfill acceptance criteria provide only a guideline and prior to disposal of any soil offsite, the results should be compared to the specific landfill’s acceptance criteria.

Please note, any implications of the sample results with respect to possible consent requirements of the NESCS have not been assessed in this report.

Table 3-1 Analytical results for soil samples

	Wellington background concentration (Soil type 1)[1]	Landfill acceptance criteria (Class B)	ORSL_1_0.4m	ORSL_1_2m	ORSL_1_3.5m	ORSL_2_0.5m	ORL_2_2m	ORSL_2_3.5m	TP235B_0.5m	TP235B_2.5m	TP235_0.5m	T235_3.6m	TP234_0.5m	TP234_3.5m
Total Recoverable Arsenic (mg/kg)	<2 - 7	**10**	5	**17**	5	5	5	3	4	4	4	4	4	4
Total Recoverable Cadmium (mg/kg)	<0.1 - 0.1	**2**	0.11	0.34	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Total Recoverable Chromium* (mg/kg)	7 - 12	**10**	**19**	**24**	**14**	**14**	**14**	**12**	**16**	**13**	**14**	**15**	**14**	**16**
Total Recoverable Copper (mg/kg)	4 - 10	**10**	**15**	**18**	**11**	10	**11**	9	**18**	10	**11**	10	10	8
Total Recoverable Lead (mg/kg)	4.5 - 180	**10**	**81**	**24**	**26**	**14.7**	**17.6**	**13**	**26**	**15.6**	**22**	**16.3**	**15.3**	**12.5**
Total Recoverable Nickel (mg/kg)	4 - 9	**20**	15	12	13	14	15	13	17	13	10	13	13	13
Total Recoverable Zinc (mg/kg)	28 - 79	**20**	**98**	**94**	**80**	**61**	**63**	**53**	**77**	**57**	**57**	**67**	**60**	**50**
Benzo[a]anthracene (mg/kg)			0.012	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Benzo[a]pyrene (BAP) (mg/kg)	<0.002 - 0.08		0.016	0.015	BDL	BDL	BDL	BDL	BDL	BDL	0.012	BDL	BDL	BDL

[1] Determination of Common Pollutant Background Soil Concentrations for the Wellington Region (GWRC, August 2003)

	Wellington background concentration (Soil type 1)[1]	Landfill acceptance criteria (Class B)	ORSL_1_0.4m	ORSL_1_2m	ORSL_1_3.5m	ORSL_2_0.5m	ORL_2_2m	ORSL_2_3.5m	TP235B_0.5m	TP235B_2.5m	TP235_0.5m	T235_3.6m	TP234_0.5m	TP234_3.5m
Benzo[b]fluoranthene + Benzo[j]fluoranthene (mg/kg)			0.018	0.016	BDL	BDL	BDL	BDL	BDL	BDL	0.014	BDL	BDL	BDL
Chrysene (mg/kg)			0.013	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Fluoranthene (mg/kg)	<0.002 - 0.14		0.019	0.019	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Phenanthrene (mg/kg)	<0.002 - 0.07		0.013	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Pyrene (mg/kg)	<0.002 - 0.12		0.022	0.022	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
C15 - C36 (mg/kg)			79	139	54	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Total hydrocarbons (C7 - C36) (mg/kg)			81	139	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Please note:

*Chromium is compared against VI in the guidelines

BDL means Below Detection Limit

4.0 CONCLUSIONS AND RECOMMENDATIONS

Twelve soil samples were taken over three days at a site on the south bank of the Ōhau River on the proposed alignment of the Ōtaki to North of Levin project to determine if a landfill is present at this location and, if so, the implications of this for project health & safety and disposal of surplus excavated soil.

While the sampling and analysis did not identify any contamination associated with landfill material, small quantities of what appeared to be recently discarded household waste were found. This appears to be a limited area of historic fly tipping on the ground surface.

It is concluded that there is no historic landfill in this location and excavated soil can be disposed of at a Class A landfill.

It is recommended that a site management plan is used to ensure the safe handling of the soil. Due to the exceedances of Wellington background levels for soil type 1, it is also recommended that further considerations are made to determine if a consent is required under the NESCS for disturbance of soil and the off-site disposal of any surplus soil, to carry out the proposed Ō2NL project works at this location.

Appendix

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Appendix A LABORATORY ANALYTICAL RESULTS

Hill Laboratories
TRIED, TESTED AND TRUSTED

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

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

Certificate of Analysis

Client:	Stantec New Zealand	**Lab No:**	2617956 SPv1
Contact:	Julia O'Brien	**Date Received:**	21-May-2021
	C/- Stantec New Zealand	**Date Reported:**	27-May-2021
	PO Box 13052	**Quote No:**	111545
	Armagh	**Order No:**	
	Christchurch 8141	**Client Reference:**	
		Submitted By:	Julia O'Brien

Sample Type: Soil

Sample Name:		T235_3.6m 20-May-2021 9:00 am	TP235B_0.5m 20-May-2021 9:45 am	TP235_0.5m 20-May-2021 8:20 am	TP231_0.5m 19-May-2021 2:50 pm	TP234_3.5m 19-May-2021 3:20 pm
Lab Number:		2617956.1	2617956.2	2617956.3	2617956.4	2617956.5
Individual Tests						
Dry Matter	g/100g as rcvd	94	87	87	84	92
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	4	4	4	4	4
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	15	16	14	14	16
Total Recoverable Copper	mg/kg dry wt	10	18	11	10	8
Total Recoverable Lead	mg/kg dry wt	16.3	26	22	15.3	12.5
Total Recoverable Nickel	mg/kg dry wt	13	17	10	13	13
Total Recoverable Zinc	mg/kg dry wt	67	77	57	60	50
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1-Methylnaphthalene	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.012	< 0.011
2-Methylnaphthalene	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.012	< 0.011
Acenaphthylene	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.012	< 0.011
Acenaphthene	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.012	< 0.011
Anthracene	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.012	< 0.011
Benzo[a]anthracene	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.012	< 0.011
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.011	< 0.012	0.012	< 0.012	< 0.011
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.011	< 0.012	0.014	< 0.012	< 0.011
Benzo[e]pyrene	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.012	< 0.011
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.012	< 0.011
Benzo[k]fluoranthene	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.012	< 0.011
Chrysene	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.012	< 0.011
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.012	< 0.011
Fluoranthene	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.012	< 0.011
Fluorene	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.012	< 0.011
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.012	< 0.011
Naphthalene	mg/kg dry wt	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Perylene	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.012	< 0.011
Phenanthrene	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.012	< 0.011
Pyrene	mg/kg dry wt	< 0.011	< 0.012	< 0.012	< 0.012	< 0.011

Sample Type: Soil						
Sample Name:		T235_3.6m 20-May-2021 9:00 am	TP235B_0.5m 20-May-2021 9:45 am	TP235_0.5m 20-May-2021 8:20 am	TP231_0.5m 19-May-2021 2:50 pm	TP234_3.5m 19-May-2021 3:20 pm
Lab Number:		2617956.1	2617956.2	2617956.3	2617956.4	2617956.5
Haloethers in SVOC Soil Samples by GC-MS						
Bis(2-chloroethoxy) methane	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroethyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroisopropyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4-Bromophenyl phenyl ether	mg/kg dry wt	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
4-Chlorophenyl phenyl ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
2,4-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,6-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Nitrobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
N-Nitrosodi-n-propylamine	mg/kg dry wt	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Aldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
alpha-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
beta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
delta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
gamma-BHC (Lindane)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDD	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDE	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDT	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dieldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Endosulfan I	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Endosulfan II	mg/kg dry wt	< 2	< 2	< 2	< 2	< 2
Endosulfan sulphate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Endrin	mg/kg dry wt	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Endrin ketone	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Heptachlor	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Heptachlor epoxide	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Acenaphthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[k]fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1&2-Chloronaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
2-Methylnaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3

Sample Type: Soil						
Sample Name:		T235_3.6m 20-May-2021 9:00 am	TP235B_0.5m 20-May-2021 9:45 am	TP235_0.5m 20-May-2021 8:20 am	TP231_0.5m 19-May-2021 2:50 pm	TP234_3.5m 19-May-2021 3:20 pm
Lab Number:		2617956.1	2617956.2	2617956.3	2617956.4	2617956.5
Phenols in SVOC Soil Samples by GC-MS						
4-Chloro-3-methylphenol	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
2-Chlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4-Dichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4-Dimethylphenol	mg/kg dry wt	< 3	< 3	< 3	< 3	< 3
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	< 3	< 3	< 3	< 3	< 3
2-Methylphenol (o-Cresol)	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Nitrophenol	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
Pentachlorophenol (PCP)	mg/kg dry wt	< 30	< 30	< 30	< 30	< 30
Phenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4,5-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4,6-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Plasticisers in SVOC Soil Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
Butylbenzylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di(2-ethylhexyl)adipate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Diethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dimethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di-n-butylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di-n-octylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
1,2-Dichlorobenzene	mg/kg dry wt	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
1,3-Dichlorobenzene	mg/kg dry wt	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
1,4-Dichlorobenzene	mg/kg dry wt	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Hexachlorobutadiene	mg/kg dry wt	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Hexachloroethane	mg/kg dry wt	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Other compounds in SVOC Soil Samples by GC-MS						
Benzyl alcohol	mg/kg dry wt	< 10	< 10	< 10	< 10	< 10
Carbazole	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzofuran	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Isophorone	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 8	< 8	< 8	< 8	< 8
C10 - C14	mg/kg dry wt	< 20	< 20	< 20	< 20	< 20
C15 - C36	mg/kg dry wt	< 40	< 40	< 40	< 40	< 40
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 70	< 70	< 70	< 70	< 70
BTEX in VOC Soils by Headspace GC-MS						
Benzene	mg/kg dry wt	< 0.14	< 0.17	< 0.16	< 0.18	< 0.15
Ethylbenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Toluene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
m&p-Xylene	mg/kg dry wt	< 0.3	< 0.4	< 0.4	< 0.4	< 0.3
o-Xylene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Halogenated Aliphatics in VOC Soils by Headspace GC-MS						
Bromomethane (Methyl Bromide)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Carbon tetrachloride	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Chloroethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Chloromethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,2-Dibromo-3-chloropropane	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dibromoethane (ethylene dibromide, EDB)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Dibromomethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,3-Dichloropropane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Dichlorodifluoromethane	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Sample Type: Soil						
Sample Name:		T235_3.6m 20-May-2021 9:00 am	TP235B_0.5m 20-May-2021 9:45 am	TP235_0.5m 20-May-2021 8:20 am	TP231_0.5m 19-May-2021 2:50 pm	TP234_3.5m 19-May-2021 3:20 pm
Lab Number:		2617956.1	2617956.2	2617956.3	2617956.4	2617956.5
Halogenated Aliphatics in VOC Soils by Headspace GC-MS						
1,1-Dichloroethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,2-Dichloroethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,1-Dichloroethene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
cis-1,2-Dichloroethene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
trans-1,2-Dichloroethene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Dichloromethane (methylene chloride)	mg/kg dry wt	< 3	< 4	< 4	< 4	< 3
1,2-Dichloropropane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,1-Dichloropropene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
cis-1,3-Dichloropropene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
trans-1,3-Dichloropropene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Hexachlorobutadiene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,1,1,2-Tetrachloroethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,1,2,2-Tetrachloroethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Tetrachloroethene (tetrachloroethylene)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,1,1-Trichloroethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,1,2-Trichloroethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Trichloroethene (trichloroethylene)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Trichlorofluoromethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,2,3-Trichloropropane	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2-Trichlorotrifluoroethane (Freon 113)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Vinyl chloride	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Haloaromatics in VOC Soils by Headspace GC-MS						
Bromobenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,3-Dichlorobenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
4-Chlorotoluene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Chlorobenzene (monochlorobenzene)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,2-Dichlorobenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,4-Dichlorobenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
2-Chlorotoluene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,2,3-Trichlorobenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,3,5-Trichlorobenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Monoaromatic Hydrocarbons in VOC Soils by Headspace GC-MS						
n-Butylbenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
tert-Butylbenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Isopropylbenzene (Cumene)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
4-Isopropyltoluene (p-Cymene)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
n-Propylbenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
sec-Butylbenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Styrene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,2,4-Trimethylbenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,3,5-Trimethylbenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Ketones in VOC Soils by Headspace GC-MS						
2-Butanone (MEK)	mg/kg dry wt	< 30	< 40	< 40	< 40	< 30
4-Methylpentan-2-one (MIBK)	mg/kg dry wt	< 6	< 7	< 7	< 7	< 6
Acetone	mg/kg dry wt	< 30	< 40	< 40	< 40	< 30
Methyl tert-butylether (MTBE)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Trihalomethanes in VOC Soils by Headspace GC-MS						
Bromodichloromethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Bromoform (tribromomethane)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Sample Type: Soil						
Sample Name:		T235_3.6m 20-May-2021 9:00 am	TP235B_0.5m 20-May-2021 9:45 am	TP235_0.5m 20-May-2021 8:20 am	TP231_0.5m 19-May-2021 2:50 pm	TP234_3.5m 19-May-2021 3:20 pm
Lab Number:		2617956.1	2617956.2	2617956.3	2617956.4	2617956.5
Trihalomethanes in VOC Soils by Headspace GC-MS						
Chloroform (Trichloromethane)	mg/kg as rcvd	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Dibromochloromethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Other VOC in Soils by Headspace GC-MS						
Carbon disulphide	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Naphthalene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

Sample Name:		TP235B_2.5m 20-May-2021 10:05 am				
Lab Number:		2617956.6				
Individual Tests						
Dry Matter	g/100g as rcvd	90	-	-	-	-
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	4	-	-	-	-
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	-	-	-	-
Total Recoverable Chromium	mg/kg dry wt	13	-	-	-	-
Total Recoverable Copper	mg/kg dry wt	10	-	-	-	-
Total Recoverable Lead	mg/kg dry wt	15.6	-	-	-	-
Total Recoverable Nickel	mg/kg dry wt	13	-	-	-	-
Total Recoverable Zinc	mg/kg dry wt	57	-	-	-	-
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.3	-	-	-	-
1-Methylnaphthalene	mg/kg dry wt	< 0.012	-	-	-	-
2-Methylnaphthalene	mg/kg dry wt	< 0.012	-	-	-	-
Acenaphthylene	mg/kg dry wt	< 0.012	-	-	-	-
Acenaphthene	mg/kg dry wt	< 0.012	-	-	-	-
Anthracene	mg/kg dry wt	< 0.012	-	-	-	-
Benzo[a]anthracene	mg/kg dry wt	< 0.012	-	-	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.012	-	-	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.03	-	-	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.03	-	-	-	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.012	-	-	-	-
Benzo[e]pyrene	mg/kg dry wt	< 0.012	-	-	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.012	-	-	-	-
Benzo[k]fluoranthene	mg/kg dry wt	< 0.012	-	-	-	-
Chrysene	mg/kg dry wt	< 0.012	-	-	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.012	-	-	-	-
Fluoranthene	mg/kg dry wt	< 0.012	-	-	-	-
Fluorene	mg/kg dry wt	< 0.012	-	-	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.012	-	-	-	-
Naphthalene	mg/kg dry wt	< 0.06	-	-	-	-
Perylene	mg/kg dry wt	< 0.012	-	-	-	-
Phenanthrene	mg/kg dry wt	< 0.012	-	-	-	-
Pyrene	mg/kg dry wt	< 0.012	-	-	-	-
Haloethers in SVOC Soil Samples by GC-MS						
Bis(2-chloroethoxy) methane	mg/kg dry wt	< 0.5	-	-	-	-
Bis(2-chloroethyl)ether	mg/kg dry wt	< 0.5	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg dry wt	< 0.5	-	-	-	-
4-Bromophenyl phenyl ether	mg/kg dry wt	< 0.4	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg dry wt	< 0.5	-	-	-	-
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
2,4-Dinitrotoluene	mg/kg dry wt	< 1.0	-	-	-	-
2,6-Dinitrotoluene	mg/kg dry wt	< 1.0	-	-	-	-

Sample Type: Soil						
Sample Name:		TP235B_2.5m 20-May-2021 10:05 am				
Lab Number:		2617956.6				
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
Nitrobenzene	mg/kg dry wt	< 0.5	-	-	-	-
N-Nitrosodi-n-propylamine	mg/kg dry wt	< 0.7	-	-	-	-
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	< 0.7	-	-	-	-
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Aldrin	mg/kg dry wt	< 0.5	-	-	-	-
alpha-BHC	mg/kg dry wt	< 0.5	-	-	-	-
beta-BHC	mg/kg dry wt	< 0.5	-	-	-	-
delta-BHC	mg/kg dry wt	< 0.5	-	-	-	-
gamma-BHC (Lindane)	mg/kg dry wt	< 0.5	-	-	-	-
4,4'-DDD	mg/kg dry wt	< 0.5	-	-	-	-
4,4'-DDE	mg/kg dry wt	< 0.5	-	-	-	-
4,4'-DDT	mg/kg dry wt	< 1.0	-	-	-	-
Dieldrin	mg/kg dry wt	< 0.5	-	-	-	-
Endosulfan I	mg/kg dry wt	< 1.0	-	-	-	-
Endosulfan II	mg/kg dry wt	< 2	-	-	-	-
Endosulfan sulphate	mg/kg dry wt	< 1.0	-	-	-	-
Endrin	mg/kg dry wt	< 0.7	-	-	-	-
Endrin ketone	mg/kg dry wt	< 1.0	-	-	-	-
Heptachlor	mg/kg dry wt	< 0.5	-	-	-	-
Heptachlor epoxide	mg/kg dry wt	< 0.5	-	-	-	-
Hexachlorobenzene	mg/kg dry wt	< 0.5	-	-	-	-
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Acenaphthene	mg/kg dry wt	< 0.5	-	-	-	-
Acenaphthylene	mg/kg dry wt	< 0.5	-	-	-	-
Anthracene	mg/kg dry wt	< 0.5	-	-	-	-
Benzo[a]anthracene	mg/kg dry wt	< 0.5	-	-	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.5	-	-	-	-
Benzo[b]fluoranthene + Benzo[j]fluoranthene	mg/kg dry wt	< 0.5	-	-	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.5	-	-	-	-
Benzo[k]fluoranthene	mg/kg dry wt	< 0.5	-	-	-	-
1&2-Chloronaphthalene	mg/kg dry wt	< 0.5	-	-	-	-
Chrysene	mg/kg dry wt	< 0.5	-	-	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.5	-	-	-	-
Fluoranthene	mg/kg dry wt	< 0.5	-	-	-	-
Fluorene	mg/kg dry wt	< 0.5	-	-	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.5	-	-	-	-
2-Methylnaphthalene	mg/kg dry wt	< 0.5	-	-	-	-
Naphthalene	mg/kg dry wt	< 0.5	-	-	-	-
Phenanthrene	mg/kg dry wt	< 0.5	-	-	-	-
Pyrene	mg/kg dry wt	< 0.5	-	-	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 1.3	-	-	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 1.3	-	-	-	-
Phenols in SVOC Soil Samples by GC-MS						
4-Chloro-3-methylphenol	mg/kg dry wt	< 5	-	-	-	-
2-Chlorophenol	mg/kg dry wt	< 1.0	-	-	-	-
2,4-Dichlorophenol	mg/kg dry wt	< 1.0	-	-	-	-
2,4-Dimethylphenol	mg/kg dry wt	< 3	-	-	-	-
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	< 3	-	-	-	-
2-Methylphenol (o-Cresol)	mg/kg dry wt	< 1.0	-	-	-	-
2-Nitrophenol	mg/kg dry wt	< 5	-	-	-	-

Sample Type: Soil						
Sample Name:		TP235B_2.5m 20-May-2021 10:05 am				
Lab Number:		2617956.6				
Phenols in SVOC Soil Samples by GC-MS						
Pentachlorophenol (PCP)	mg/kg dry wt	< 30	-	-	-	-
Phenol	mg/kg dry wt	< 1.0	-	-	-	-
2,4,5-Trichlorophenol	mg/kg dry wt	< 1.0	-	-	-	-
2,4,6-Trichlorophenol	mg/kg dry wt	< 1.0	-	-	-	-
Plasticisers in SVOC Soil Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	< 5	-	-	-	-
Butylbenzylphthalate	mg/kg dry wt	< 1.0	-	-	-	-
Di(2-ethylhexyl)adipate	mg/kg dry wt	< 1.0	-	-	-	-
Diethylphthalate	mg/kg dry wt	< 1.0	-	-	-	-
Dimethylphthalate	mg/kg dry wt	< 1.0	-	-	-	-
Di-n-butylphthalate	mg/kg dry wt	< 1.0	-	-	-	-
Di-n-octylphthalate	mg/kg dry wt	< 1.0	-	-	-	-
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
1,2-Dichlorobenzene	mg/kg dry wt	< 0.7	-	-	-	-
1,3-Dichlorobenzene	mg/kg dry wt	< 0.7	-	-	-	-
1,4-Dichlorobenzene	mg/kg dry wt	< 0.7	-	-	-	-
Hexachlorobutadiene	mg/kg dry wt	< 0.7	-	-	-	-
Hexachloroethane	mg/kg dry wt	< 0.7	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.5	-	-	-	-
Other compounds in SVOC Soil Samples by GC-MS						
Benzyl alcohol	mg/kg dry wt	< 10	-	-	-	-
Carbazole	mg/kg dry wt	< 0.5	-	-	-	-
Dibenzofuran	mg/kg dry wt	< 0.5	-	-	-	-
Isophorone	mg/kg dry wt	< 0.5	-	-	-	-
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 8	-	-	-	-
C10 - C14	mg/kg dry wt	< 20	-	-	-	-
C15 - C36	mg/kg dry wt	< 40	-	-	-	-
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 70	-	-	-	-
BTEX in VOC Soils by Headspace GC-MS						
Benzene	mg/kg dry wt	< 0.16	-	-	-	-
Ethylbenzene	mg/kg dry wt	< 0.3	-	-	-	-
Toluene	mg/kg dry wt	< 0.3	-	-	-	-
m&p-Xylene	mg/kg dry wt	< 0.4	-	-	-	-
o-Xylene	mg/kg dry wt	< 0.3	-	-	-	-
Halogenated Aliphatics in VOC Soils by Headspace GC-MS						
Bromomethane (Methyl Bromide)	mg/kg dry wt	< 0.3	-	-	-	-
Carbon tetrachloride	mg/kg dry wt	< 0.3	-	-	-	-
Chloroethane	mg/kg dry wt	< 0.3	-	-	-	-
Chloromethane	mg/kg dry wt	< 0.3	-	-	-	-
1,2-Dibromo-3-chloropropane	mg/kg dry wt	< 0.5	-	-	-	-
1,2-Dibromoethane (ethylene dibromide, EDB)	mg/kg dry wt	< 0.3	-	-	-	-
Dibromomethane	mg/kg dry wt	< 0.3	-	-	-	-
1,3-Dichloropropane	mg/kg dry wt	< 0.3	-	-	-	-
Dichlorodifluoromethane	mg/kg dry wt	< 0.5	-	-	-	-
1,1-Dichloroethane	mg/kg dry wt	< 0.3	-	-	-	-
1,2-Dichloroethane	mg/kg dry wt	< 0.3	-	-	-	-
1,1-Dichloroethene	mg/kg dry wt	< 0.3	-	-	-	-
cis-1,2-Dichloroethene	mg/kg dry wt	< 0.3	-	-	-	-
trans-1,2-Dichloroethene	mg/kg dry wt	< 0.3	-	-	-	-
Dichloromethane (methylene chloride)	mg/kg dry wt	< 4	-	-	-	-
1,2-Dichloropropane	mg/kg dry wt	< 0.3	-	-	-	-

Sample Type: Soil						
Sample Name:		TP235B_2.5m 20-May-2021 10:05 am				
Lab Number:		2617956.6				
Halogenated Aliphatics in VOC Soils by Headspace GC-MS						
1,1-Dichloropropene	mg/kg dry wt	< 0.3	-	-	-	-
cis-1,3-Dichloropropene	mg/kg dry wt	< 0.3	-	-	-	-
trans-1,3-Dichloropropene	mg/kg dry wt	< 0.3	-	-	-	-
Hexachlorobutadiene	mg/kg dry wt	< 0.3	-	-	-	-
1,1,1,2-Tetrachloroethane	mg/kg dry wt	< 0.3	-	-	-	-
1,1,2,2-Tetrachloroethane	mg/kg dry wt	< 0.3	-	-	-	-
Tetrachloroethene (tetrachloroethylene)	mg/kg dry wt	< 0.3	-	-	-	-
1,1,1-Trichloroethane	mg/kg dry wt	< 0.3	-	-	-	-
1,1,2-Trichloroethane	mg/kg dry wt	< 0.3	-	-	-	-
Trichloroethene (trichloroethylene)	mg/kg dry wt	< 0.3	-	-	-	-
Trichlorofluoromethane	mg/kg dry wt	< 0.3	-	-	-	-
1,2,3-Trichloropropane	mg/kg dry wt	< 0.5	-	-	-	-
1,1,2-Trichlorotrifluoroethane (Freon 113)	mg/kg dry wt	< 0.3	-	-	-	-
Vinyl chloride	mg/kg dry wt	< 0.3	-	-	-	-
Haloaromatics in VOC Soils by Headspace GC-MS						
Bromobenzene	mg/kg dry wt	< 0.3	-	-	-	-
1,3-Dichlorobenzene	mg/kg dry wt	< 0.3	-	-	-	-
4-Chlorotoluene	mg/kg dry wt	< 0.3	-	-	-	-
Chlorobenzene (monochlorobenzene)	mg/kg dry wt	< 0.3	-	-	-	-
1,2-Dichlorobenzene	mg/kg dry wt	< 0.3	-	-	-	-
1,4-Dichlorobenzene	mg/kg dry wt	< 0.3	-	-	-	-
2-Chlorotoluene	mg/kg dry wt	< 0.3	-	-	-	-
1,2,3-Trichlorobenzene	mg/kg dry wt	< 0.3	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.3	-	-	-	-
1,3,5-Trichlorobenzene	mg/kg dry wt	< 0.3	-	-	-	-
Monoaromatic Hydrocarbons in VOC Soils by Headspace GC-MS						
n-Butylbenzene	mg/kg dry wt	< 0.3	-	-	-	-
tert-Butylbenzene	mg/kg dry wt	< 0.3	-	-	-	-
Isopropylbenzene (Cumene)	mg/kg dry wt	< 0.3	-	-	-	-
4-Isopropyltoluene (p-Cymene)	mg/kg dry wt	< 0.3	-	-	-	-
n-Propylbenzene	mg/kg dry wt	< 0.3	-	-	-	-
sec-Butylbenzene	mg/kg dry wt	< 0.3	-	-	-	-
Styrene	mg/kg dry wt	< 0.3	-	-	-	-
1,2,4-Trimethylbenzene	mg/kg dry wt	< 0.3	-	-	-	-
1,3,5-Trimethylbenzene	mg/kg dry wt	< 0.3	-	-	-	-
Ketones in VOC Soils by Headspace GC-MS						
2-Butanone (MEK)	mg/kg dry wt	< 40	-	-	-	-
4-Methylpentan-2-one (MIBK)	mg/kg dry wt	< 7	-	-	-	-
Acetone	mg/kg dry wt	< 40	-	-	-	-
Methyl tert-butylether (MTBE)	mg/kg dry wt	< 0.3	-	-	-	-
Trihalomethanes in VOC Soils by Headspace GC-MS						
Bromodichloromethane	mg/kg dry wt	< 0.3	-	-	-	-
Bromoform (tribromomethane)	mg/kg dry wt	< 0.5	-	-	-	-
Chloroform (Trichloromethane)	mg/kg as rcvd	< 0.3	-	-	-	-
Dibromochloromethane	mg/kg dry wt	< 0.3	-	-	-	-
Other VOC in Soils by Headspace GC-MS						
Carbon disulphide	mg/kg dry wt	< 0.3	-	-	-	-
Naphthalene	mg/kg dry wt	< 0.3	-	-	-	-

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 Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	1-6
Total of Reported PAHs in Soil	Sonication extraction, GC-MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	1-6
Dry Matter (Env)	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	1-6
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.002 mg/kg dry wt	1-6
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.002 mg/kg dry wt	1-6
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.002 - 70 mg/kg dry wt	1-6
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-6
Semivolatile Organic Compounds Screening in Soil by GC-MS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.002 - 30 mg/kg dry wt	1-6
Volatile Organic Compounds Screening in Soil by Headspace GC-MS	Sonication extraction, Headspace GC-MS analysis. Tested on as received sample. In-house based on US EPA 8260 and 5021.	-	1-6
Total Petroleum Hydrocarbons in Soil			
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	8 mg/kg dry wt	1-6
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1-6
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1-6
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1-6

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

Testing was completed between 25-May-2021 and 27-May-2021. 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

Hill Laboratories
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R J Hill Laboratories Limited
Ground Fl, 28 Heather Street
Parnell
Auckland 1052 New Zealand

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

Certificate of Analysis

Client:	Stantec New Zealand	**Lab No:**	2618023	A2Pv1
Contact:	Julia O'Brien	**Date Received:**	21-May-2021	
	C/- Stantec New Zealand	**Date Reported:**	26-May-2021	
	PO Box 13052	**Quote No:**	111545	
	Armagh	**Order No:**		
	Christchurch 8141	**Client Reference:**		
		Add. Client Ref:	Sampled: 20/05/21	
		Submitted By:	Julia O'Brien	

Sample Type: Soil

Sample Name	Lab Number	As Received Weight (g)	Dry Weight (g)	<2mm Subsample Weight* (g dry wt)	Asbestos Presence / Absence	Description of Asbestos Form
TP235_3.6m	2618023.1	398.3	351.3	53.4	Asbestos NOT detected.	-
TP235B_0.5m	2618023.2	365.7	327.0	50.2	Asbestos NOT detected.	-
TP235_0.5m	2618023.3	376.9	334.5	50.4	Asbestos NOT detected.	-
TP231_0.5m	2618023.4	343.4	299.0	50.4	Asbestos NOT detected.	-
TP234_3.5m	2618023.5	467.6	436.8	50.1	Asbestos NOT detected.	-
TP235B_2.5m	2618023.6	440.5	408.3	50.6	Asbestos NOT detected.	-

Glossary of Terms

- Loose fibres (Minor) - One or two fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- Loose fibres (Major) - Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- ACM Debris (Minor) - One or two small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- ACM Debris (Major) - Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- Unknown Mineral Fibres - Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
- Trace - Trace levels of asbestos, as defined by AS4964-2004.

For further details, please contact the Asbestos Team.

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 Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1-6
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1-6
<2mm Subsample Weight*	Sample ashed at 400°C, weight of <2mm sample fraction taken for asbestos identification if less than entire fraction. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	-	1-6
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-6
Description of Asbestos Form	Description of asbestos form and/or shape if present. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	-	1-6

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

Testing was completed between 25-May-2021 and 26-May-2021. 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.

Minzi (Laura) Liu MSc
Laboratory Technician - Asbestos

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

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

Certificate of Analysis

Client:	Stantec New Zealand	**Lab No:**	2635023 SPv1
Contact:	Julia O'Brien C/- Stantec New Zealand PO Box 13052 Armagh Christchurch 8141	**Date Received:** **Date Reported:** **Quote No:** **Order No:** **Client Reference:** **Submitted By:**	14-Jun-2021 17-Jun-2021 111545 Julia O'Brien

Sample Type: Soil

Sample Name:		ORSL_2_3.5m 14-Jun-2021 12:55 pm	ORL_2_2m 14-Jun-2021 12:36 pm	ORSL_1_2m 14-Jun-2021 11:55 am	ORSL_2_0.5m 14-Jun-2021 12:30 pm	ORSL_1_3.5m 14-Jun-2021 12:16 pm
Lab Number:		2635023.1	2635023.2	2635023.3	2635023.4	2635023.5
Individual Tests						
Dry Matter	g/100g as rcvd	93	90	68	86	88
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	3	5	17	5	5
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	0.34	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	12	14	24	14	14
Total Recoverable Copper	mg/kg dry wt	9	11	18	10	11
Total Recoverable Lead	mg/kg dry wt	13.0	17.6	24	14.7	26
Total Recoverable Nickel	mg/kg dry wt	13	15	12	14	13
Total Recoverable Zinc	mg/kg dry wt	53	63	94	61	80
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.3	< 0.3	< 0.4	< 0.3	< 0.3
1-Methylnaphthalene	mg/kg dry wt	< 0.011	< 0.011	< 0.015	< 0.012	< 0.012
2-Methylnaphthalene	mg/kg dry wt	< 0.011	< 0.011	< 0.015	< 0.012	< 0.012
Acenaphthylene	mg/kg dry wt	< 0.011	< 0.011	< 0.015	< 0.012	< 0.012
Acenaphthene	mg/kg dry wt	< 0.011	< 0.011	< 0.015	< 0.012	< 0.012
Anthracene	mg/kg dry wt	< 0.011	< 0.011	< 0.015	< 0.012	< 0.012
Benzo[a]anthracene	mg/kg dry wt	< 0.011	< 0.011	< 0.015	< 0.012	< 0.012
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.011	< 0.011	0.015	< 0.012	< 0.012
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.03	< 0.03	< 0.04	< 0.03	< 0.03
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.03	< 0.03	< 0.04	< 0.03	< 0.03
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.011	< 0.011	0.016	< 0.012	< 0.012
Benzo[e]pyrene	mg/kg dry wt	< 0.011	< 0.011	< 0.015	< 0.012	< 0.012
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.011	< 0.011	< 0.015	< 0.012	< 0.012
Benzo[k]fluoranthene	mg/kg dry wt	< 0.011	< 0.011	< 0.015	< 0.012	< 0.012
Chrysene	mg/kg dry wt	< 0.011	< 0.011	< 0.015	< 0.012	< 0.012
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.011	< 0.011	< 0.015	< 0.012	< 0.012
Fluoranthene	mg/kg dry wt	< 0.011	< 0.011	0.019	< 0.012	< 0.012
Fluorene	mg/kg dry wt	< 0.011	< 0.011	< 0.015	< 0.012	< 0.012
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.011	< 0.011	< 0.015	< 0.012	< 0.012
Naphthalene	mg/kg dry wt	< 0.06	< 0.06	< 0.08	< 0.06	< 0.06
Perylene	mg/kg dry wt	< 0.011	< 0.011	< 0.015	< 0.012	< 0.012
Phenanthrene	mg/kg dry wt	< 0.011	< 0.011	< 0.015	< 0.012	< 0.012
Pyrene	mg/kg dry wt	< 0.011	< 0.011	0.022	< 0.012	< 0.012

Sample Type: Soil						
Sample Name:		ORSL_2_3.5m 14-Jun-2021 12:55 pm	ORL_2_2m 14-Jun-2021 12:36 pm	ORSL_1_2m 14-Jun-2021 11:55 am	ORSL_2_0.5m 14-Jun-2021 12:30 pm	ORSL_1_3.5m 14-Jun-2021 12:16 pm
Lab Number:		2635023.1	2635023.2	2635023.3	2635023.4	2635023.5
Haloethers in SVOC Soil Samples by GC-MS						
Bis(2-chloroethoxy) methane	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroethyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroisopropyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4-Bromophenyl phenyl ether	mg/kg dry wt	< 0.4	< 0.4	< 0.5	< 0.4	< 0.4
4-Chlorophenyl phenyl ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
2,4-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,6-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Nitrobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
N-Nitrosodi-n-propylamine	mg/kg dry wt	< 0.7	< 0.7	< 0.9	< 0.7	< 0.7
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	< 0.7	< 0.7	< 0.9	< 0.7	< 0.7
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Aldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
alpha-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
beta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
delta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
gamma-BHC (Lindane)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDD	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDE	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDT	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dieldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Endosulfan I	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Endosulfan II	mg/kg dry wt	< 2	< 2	< 2	< 2	< 2
Endosulfan sulphate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Endrin	mg/kg dry wt	< 0.7	< 0.7	< 0.9	< 0.7	< 0.7
Endrin ketone	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Heptachlor	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Heptachlor epoxide	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Acenaphthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[k]fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1&2-Chloronaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
2-Methylnaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3

Sample Type: Soil						
Sample Name:		ORSL_2_3.5m 14-Jun-2021 12:55 pm	ORL_2_2m 14-Jun-2021 12:36 pm	ORSL_1_2m 14-Jun-2021 11:55 am	ORSL_2_0.5m 14-Jun-2021 12:30 pm	ORSL_1_3.5m 14-Jun-2021 12:16 pm
Lab Number:		2635023.1	2635023.2	2635023.3	2635023.4	2635023.5
Phenols in SVOC Soil Samples by GC-MS						
4-Chloro-3-methylphenol	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
2-Chlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4-Dichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4-Dimethylphenol	mg/kg dry wt	< 3	< 3	< 3	< 3	< 3
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	< 3	< 3	< 3	< 3	< 3
2-Methylphenol (o-Cresol)	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Nitrophenol	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
Pentachlorophenol (PCP)	mg/kg dry wt	< 30	< 30	< 30	< 30	< 30
Phenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4,5-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4,6-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Plasticisers in SVOC Soil Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
Butylbenzylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di(2-ethylhexyl)adipate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Diethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dimethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di-n-butylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di-n-octylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
1,2-Dichlorobenzene	mg/kg dry wt	< 0.7	< 0.7	< 0.9	< 0.7	< 0.7
1,3-Dichlorobenzene	mg/kg dry wt	< 0.7	< 0.7	< 0.9	< 0.7	< 0.7
1,4-Dichlorobenzene	mg/kg dry wt	< 0.7	< 0.7	< 0.9	< 0.7	< 0.7
Hexachlorobutadiene	mg/kg dry wt	< 0.7	< 0.7	< 0.9	< 0.7	< 0.7
Hexachloroethane	mg/kg dry wt	< 0.7	< 0.7	< 0.9	< 0.7	< 0.7
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Other compounds in SVOC Soil Samples by GC-MS						
Benzyl alcohol	mg/kg dry wt	< 10	< 10	< 10	< 10	< 10
Carbazole	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzofuran	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Isophorone	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 8	< 8	< 9	< 8	< 8
C10 - C14	mg/kg dry wt	< 20	< 20	< 20	< 20	< 20
C15 - C36	mg/kg dry wt	< 40	< 40	139	< 40	54
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 70	< 70	139	< 70	< 70
BTEX in VOC Soils by Headspace GC-MS						
Benzene	mg/kg dry wt	< 0.15	< 0.16	< 0.3	< 0.18	< 0.17
Ethylbenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Toluene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
m&p-Xylene	mg/kg dry wt	< 0.3	< 0.4	< 0.5	< 0.4	< 0.4
o-Xylene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Halogenated Aliphatics in VOC Soils by Headspace GC-MS						
Bromomethane (Methyl Bromide)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Carbon tetrachloride	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Chloroethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Chloromethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,2-Dibromo-3-chloropropane	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dibromoethane (ethylene dibromide, EDB)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Dibromomethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,3-Dichloropropane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Dichlorodifluoromethane	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Sample Type: Soil						
Sample Name:		ORSL_2_3.5m 14-Jun-2021 12:55 pm	ORL_2_2m 14-Jun-2021 12:36 pm	ORSL_1_2m 14-Jun-2021 11:55 am	ORSL_2_0.5m 14-Jun-2021 12:30 pm	ORSL_1_3.5m 14-Jun-2021 12:16 pm
Lab Number:		2635023.1	2635023.2	2635023.3	2635023.4	2635023.5
Halogenated Aliphatics in VOC Soils by Headspace GC-MS						
1,1-Dichloroethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,2-Dichloroethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,1-Dichloroethene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
cis-1,2-Dichloroethene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
trans-1,2-Dichloroethene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Dichloromethane (methylene chloride)	mg/kg dry wt	< 3	< 4	< 5	< 4	< 4
1,2-Dichloropropane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,1-Dichloropropene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
cis-1,3-Dichloropropene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
trans-1,3-Dichloropropene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Hexachlorobutadiene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,1,1,2-Tetrachloroethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,1,2,2-Tetrachloroethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Tetrachloroethene (tetrachloroethylene)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,1,1-Trichloroethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,1,2-Trichloroethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Trichloroethene (trichloroethylene)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Trichlorofluoromethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,2,3-Trichloropropane	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2-Trichlorotrifluoroethane (Freon 113)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Vinyl chloride	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Haloaromatics in VOC Soils by Headspace GC-MS						
Bromobenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,3-Dichlorobenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
4-Chlorotoluene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Chlorobenzene (monochlorobenzene)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,2-Dichlorobenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,4-Dichlorobenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
2-Chlorotoluene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,2,3-Trichlorobenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,3,5-Trichlorobenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Monoaromatic Hydrocarbons in VOC Soils by Headspace GC-MS						
n-Butylbenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
tert-Butylbenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Isopropylbenzene (Cumene)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
4-Isopropyltoluene (p-Cymene)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
n-Propylbenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
sec-Butylbenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Styrene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,2,4-Trimethylbenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,3,5-Trimethylbenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Ketones in VOC Soils by Headspace GC-MS						
2-Butanone (MEK)	mg/kg dry wt	< 30	< 40	< 50	< 40	< 40
4-Methylpentan-2-one (MIBK)	mg/kg dry wt	< 6	< 7	< 10	< 7	< 7
Acetone	mg/kg dry wt	< 30	< 40	< 50	< 40	< 40
Methyl tert-butylether (MTBE)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Trihalomethanes in VOC Soils by Headspace GC-MS						
Bromodichloromethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Bromoform (tribromomethane)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Sample Type: Soil						
Sample Name:		ORSL_2_3.5m 14-Jun-2021 12:55 pm	ORL_2_2m 14-Jun-2021 12:36 pm	ORSL_1_2m 14-Jun-2021 11:55 am	ORSL_2_0.5m 14-Jun-2021 12:30 pm	ORSL_1_3.5m 14-Jun-2021 12:16 pm
Lab Number:		2635023.1	2635023.2	2635023.3	2635023.4	2635023.5
Trihalomethanes in VOC Soils by Headspace GC-MS						
Chloroform (Trichloromethane)	mg/kg as rcvd	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Dibromochloromethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Other VOC in Soils by Headspace GC-MS						
Carbon disulphide	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Naphthalene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

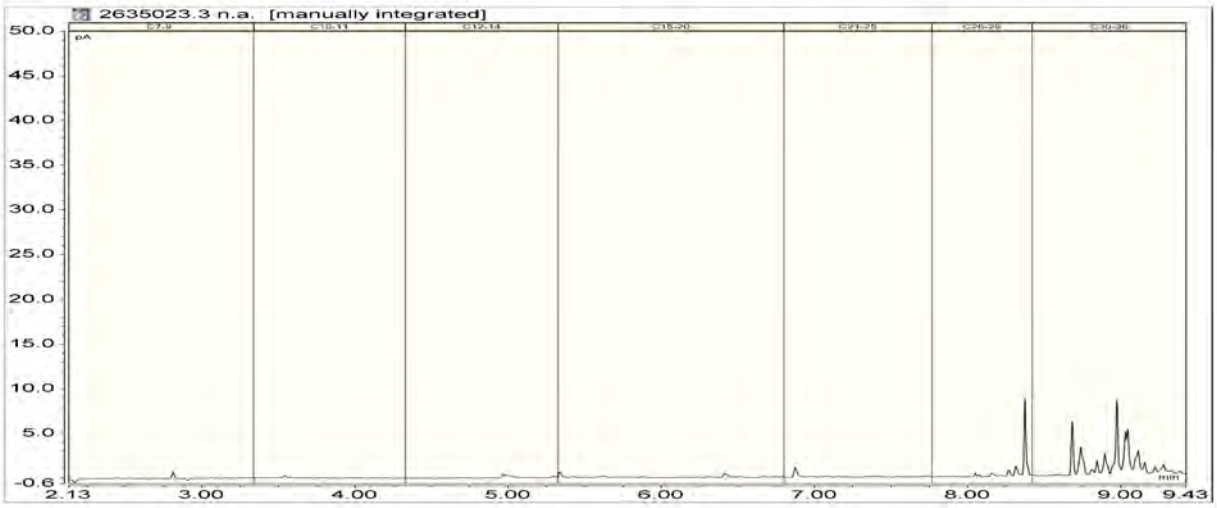
Sample Name:		ORSL_1_0.4m 14-Jun-2021 11:45 am				
Lab Number:		2635023.6				
Individual Tests						
Dry Matter	g/100g as rcvd	88	-	-	-	-
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	5	-	-	-	-
Total Recoverable Cadmium	mg/kg dry wt	0.11	-	-	-	-
Total Recoverable Chromium	mg/kg dry wt	19	-	-	-	-
Total Recoverable Copper	mg/kg dry wt	15	-	-	-	-
Total Recoverable Lead	mg/kg dry wt	81	-	-	-	-
Total Recoverable Nickel	mg/kg dry wt	15	-	-	-	-
Total Recoverable Zinc	mg/kg dry wt	98	-	-	-	-
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.3	-	-	-	-
1-Methylnaphthalene	mg/kg dry wt	< 0.012	-	-	-	-
2-Methylnaphthalene	mg/kg dry wt	< 0.012	-	-	-	-
Acenaphthylene	mg/kg dry wt	< 0.012	-	-	-	-
Acenaphthene	mg/kg dry wt	< 0.012	-	-	-	-
Anthracene	mg/kg dry wt	< 0.012	-	-	-	-
Benzo[a]anthracene	mg/kg dry wt	0.012	-	-	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	0.016	-	-	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.03	-	-	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.03	-	-	-	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	0.018	-	-	-	-
Benzo[e]pyrene	mg/kg dry wt	< 0.012	-	-	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.012	-	-	-	-
Benzo[k]fluoranthene	mg/kg dry wt	< 0.012	-	-	-	-
Chrysene	mg/kg dry wt	0.013	-	-	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.012	-	-	-	-
Fluoranthene	mg/kg dry wt	0.019	-	-	-	-
Fluorene	mg/kg dry wt	< 0.012	-	-	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.012	-	-	-	-
Naphthalene	mg/kg dry wt	< 0.06	-	-	-	-
Perylene	mg/kg dry wt	< 0.012	-	-	-	-
Phenanthrene	mg/kg dry wt	0.013	-	-	-	-
Pyrene	mg/kg dry wt	0.022	-	-	-	-
Haloethers in SVOC Soil Samples by GC-MS						
Bis(2-chloroethoxy) methane	mg/kg dry wt	< 0.5	-	-	-	-
Bis(2-chloroethyl)ether	mg/kg dry wt	< 0.5	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg dry wt	< 0.5	-	-	-	-
4-Bromophenyl phenyl ether	mg/kg dry wt	< 0.4	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg dry wt	< 0.5	-	-	-	-
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
2,4-Dinitrotoluene	mg/kg dry wt	< 1.0	-	-	-	-
2,6-Dinitrotoluene	mg/kg dry wt	< 1.0	-	-	-	-

Sample Type: Soil						
Sample Name:		ORSL_1_0.4m 14-Jun-2021 11:45 am				
Lab Number:		2635023.6				
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
Nitrobenzene	mg/kg dry wt	< 0.5	-	-	-	-
N-Nitrosodi-n-propylamine	mg/kg dry wt	< 0.7	-	-	-	-
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	< 0.7	-	-	-	-
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Aldrin	mg/kg dry wt	< 0.5	-	-	-	-
alpha-BHC	mg/kg dry wt	< 0.5	-	-	-	-
beta-BHC	mg/kg dry wt	< 0.5	-	-	-	-
delta-BHC	mg/kg dry wt	< 0.5	-	-	-	-
gamma-BHC (Lindane)	mg/kg dry wt	< 0.5	-	-	-	-
4,4'-DDD	mg/kg dry wt	< 0.5	-	-	-	-
4,4'-DDE	mg/kg dry wt	< 0.5	-	-	-	-
4,4'-DDT	mg/kg dry wt	< 1.0	-	-	-	-
Dieldrin	mg/kg dry wt	< 0.5	-	-	-	-
Endosulfan I	mg/kg dry wt	< 1.0	-	-	-	-
Endosulfan II	mg/kg dry wt	< 2	-	-	-	-
Endosulfan sulphate	mg/kg dry wt	< 1.0	-	-	-	-
Endrin	mg/kg dry wt	< 0.7	-	-	-	-
Endrin ketone	mg/kg dry wt	< 1.0	-	-	-	-
Heptachlor	mg/kg dry wt	< 0.5	-	-	-	-
Heptachlor epoxide	mg/kg dry wt	< 0.5	-	-	-	-
Hexachlorobenzene	mg/kg dry wt	< 0.5	-	-	-	-
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Acenaphthene	mg/kg dry wt	< 0.5	-	-	-	-
Acenaphthylene	mg/kg dry wt	< 0.5	-	-	-	-
Anthracene	mg/kg dry wt	< 0.5	-	-	-	-
Benzo[a]anthracene	mg/kg dry wt	< 0.5	-	-	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.5	-	-	-	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.5	-	-	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.5	-	-	-	-
Benzo[k]fluoranthene	mg/kg dry wt	< 0.5	-	-	-	-
1&2-Chloronaphthalene	mg/kg dry wt	< 0.5	-	-	-	-
Chrysene	mg/kg dry wt	< 0.5	-	-	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.5	-	-	-	-
Fluoranthene	mg/kg dry wt	< 0.5	-	-	-	-
Fluorene	mg/kg dry wt	< 0.5	-	-	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.5	-	-	-	-
2-Methylnaphthalene	mg/kg dry wt	< 0.5	-	-	-	-
Naphthalene	mg/kg dry wt	< 0.5	-	-	-	-
Phenanthrene	mg/kg dry wt	< 0.5	-	-	-	-
Pyrene	mg/kg dry wt	< 0.5	-	-	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 1.3	-	-	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 1.3	-	-	-	-
Phenols in SVOC Soil Samples by GC-MS						
4-Chloro-3-methylphenol	mg/kg dry wt	< 5	-	-	-	-
2-Chlorophenol	mg/kg dry wt	< 1.0	-	-	-	-
2,4-Dichlorophenol	mg/kg dry wt	< 1.0	-	-	-	-
2,4-Dimethylphenol	mg/kg dry wt	< 3	-	-	-	-
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	< 3	-	-	-	-
2-Methylphenol (o-Cresol)	mg/kg dry wt	< 1.0	-	-	-	-
2-Nitrophenol	mg/kg dry wt	< 5	-	-	-	-

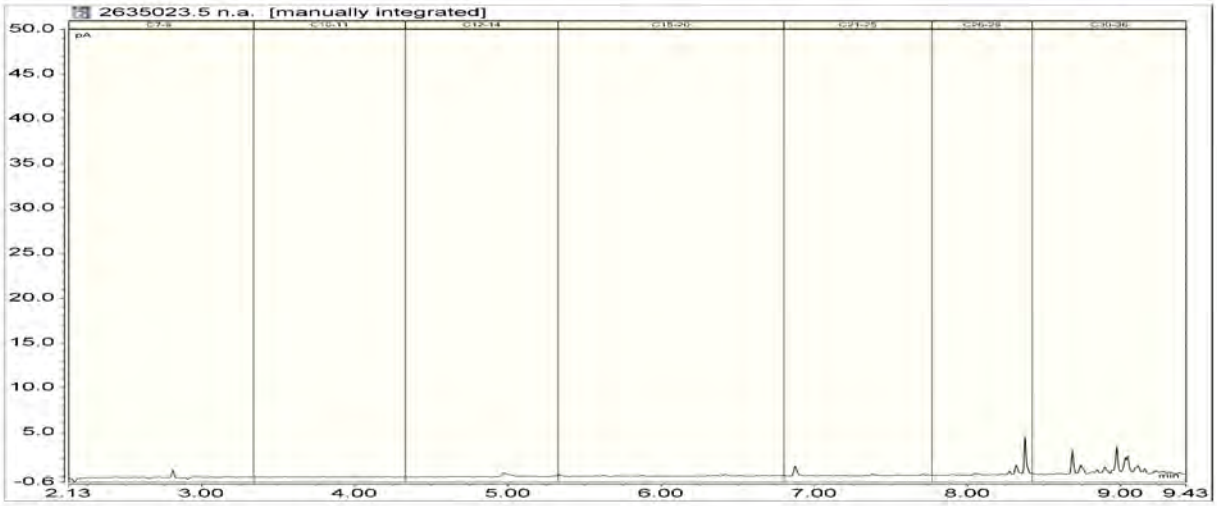
Sample Type: Soil						
Sample Name:		ORSL_1_0.4m 14-Jun-2021 11:45 am				
Lab Number:		2635023.6				
Phenols in SVOC Soil Samples by GC-MS						
Pentachlorophenol (PCP)	mg/kg dry wt	< 30	-	-	-	-
Phenol	mg/kg dry wt	< 1.0	-	-	-	-
2,4,5-Trichlorophenol	mg/kg dry wt	< 1.0	-	-	-	-
2,4,6-Trichlorophenol	mg/kg dry wt	< 1.0	-	-	-	-
Plasticisers in SVOC Soil Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	< 5	-	-	-	-
Butylbenzylphthalate	mg/kg dry wt	< 1.0	-	-	-	-
Di(2-ethylhexyl)adipate	mg/kg dry wt	< 1.0	-	-	-	-
Diethylphthalate	mg/kg dry wt	< 1.0	-	-	-	-
Dimethylphthalate	mg/kg dry wt	< 1.0	-	-	-	-
Di-n-butylphthalate	mg/kg dry wt	< 1.0	-	-	-	-
Di-n-octylphthalate	mg/kg dry wt	< 1.0	-	-	-	-
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
1,2-Dichlorobenzene	mg/kg dry wt	< 0.7	-	-	-	-
1,3-Dichlorobenzene	mg/kg dry wt	< 0.7	-	-	-	-
1,4-Dichlorobenzene	mg/kg dry wt	< 0.7	-	-	-	-
Hexachlorobutadiene	mg/kg dry wt	< 0.7	-	-	-	-
Hexachloroethane	mg/kg dry wt	< 0.7	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.5	-	-	-	-
Other compounds in SVOC Soil Samples by GC-MS						
Benzyl alcohol	mg/kg dry wt	< 10	-	-	-	-
Carbazole	mg/kg dry wt	< 0.5	-	-	-	-
Dibenzofuran	mg/kg dry wt	< 0.5	-	-	-	-
Isophorone	mg/kg dry wt	< 0.5	-	-	-	-
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 8	-	-	-	-
C10 - C14	mg/kg dry wt	< 20	-	-	-	-
C15 - C36	mg/kg dry wt	79	-	-	-	-
Total hydrocarbons (C7 - C36)	mg/kg dry wt	81	-	-	-	-
BTEX in VOC Soils by Headspace GC-MS						
Benzene	mg/kg dry wt	< 0.16	-	-	-	-
Ethylbenzene	mg/kg dry wt	< 0.3	-	-	-	-
Toluene	mg/kg dry wt	< 0.3	-	-	-	-
m&p-Xylene	mg/kg dry wt	< 0.4	-	-	-	-
o-Xylene	mg/kg dry wt	< 0.3	-	-	-	-
Halogenated Aliphatics in VOC Soils by Headspace GC-MS						
Bromomethane (Methyl Bromide)	mg/kg dry wt	< 0.3	-	-	-	-
Carbon tetrachloride	mg/kg dry wt	< 0.3	-	-	-	-
Chloroethane	mg/kg dry wt	< 0.3	-	-	-	-
Chloromethane	mg/kg dry wt	< 0.3	-	-	-	-
1,2-Dibromo-3-chloropropane	mg/kg dry wt	< 0.5	-	-	-	-
1,2-Dibromoethane (ethylene dibromide, EDB)	mg/kg dry wt	< 0.3	-	-	-	-
Dibromomethane	mg/kg dry wt	< 0.3	-	-	-	-
1,3-Dichloropropane	mg/kg dry wt	< 0.3	-	-	-	-
Dichlorodifluoromethane	mg/kg dry wt	< 0.5	-	-	-	-
1,1-Dichloroethane	mg/kg dry wt	< 0.3	-	-	-	-
1,2-Dichloroethane	mg/kg dry wt	< 0.3	-	-	-	-
1,1-Dichloroethene	mg/kg dry wt	< 0.3	-	-	-	-
cis-1,2-Dichloroethene	mg/kg dry wt	< 0.3	-	-	-	-
trans-1,2-Dichloroethene	mg/kg dry wt	< 0.3	-	-	-	-
Dichloromethane (methylene chloride)	mg/kg dry wt	< 4	-	-	-	-
1,2-Dichloropropane	mg/kg dry wt	< 0.3	-	-	-	-

Sample Type: Soil						
Sample Name:		ORSL_1_0.4m 14-Jun-2021 11:45 am				
Lab Number:		2635023.6				
Halogenated Aliphatics in VOC Soils by Headspace GC-MS						
1,1-Dichloropropene	mg/kg dry wt	< 0.3	-	-	-	-
cis-1,3-Dichloropropene	mg/kg dry wt	< 0.3	-	-	-	-
trans-1,3-Dichloropropene	mg/kg dry wt	< 0.3	-	-	-	-
Hexachlorobutadiene	mg/kg dry wt	< 0.3	-	-	-	-
1,1,1,2-Tetrachloroethane	mg/kg dry wt	< 0.3	-	-	-	-
1,1,2,2-Tetrachloroethane	mg/kg dry wt	< 0.3	-	-	-	-
Tetrachloroethene (tetrachloroethylene)	mg/kg dry wt	< 0.3	-	-	-	-
1,1,1-Trichloroethane	mg/kg dry wt	< 0.3	-	-	-	-
1,1,2-Trichloroethane	mg/kg dry wt	< 0.3	-	-	-	-
Trichloroethene (trichloroethylene)	mg/kg dry wt	< 0.3	-	-	-	-
Trichlorofluoromethane	mg/kg dry wt	< 0.3	-	-	-	-
1,2,3-Trichloropropane	mg/kg dry wt	< 0.5	-	-	-	-
1,1,2-Trichlorotrifluoroethane (Freon 113)	mg/kg dry wt	< 0.3	-	-	-	-
Vinyl chloride	mg/kg dry wt	< 0.3	-	-	-	-
Haloaromatics in VOC Soils by Headspace GC-MS						
Bromobenzene	mg/kg dry wt	< 0.3	-	-	-	-
1,3-Dichlorobenzene	mg/kg dry wt	< 0.3	-	-	-	-
4-Chlorotoluene	mg/kg dry wt	< 0.3	-	-	-	-
Chlorobenzene (monochlorobenzene)	mg/kg dry wt	< 0.3	-	-	-	-
1,2-Dichlorobenzene	mg/kg dry wt	< 0.3	-	-	-	-
1,4-Dichlorobenzene	mg/kg dry wt	< 0.3	-	-	-	-
2-Chlorotoluene	mg/kg dry wt	< 0.3	-	-	-	-
1,2,3-Trichlorobenzene	mg/kg dry wt	< 0.3	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.3	-	-	-	-
1,3,5-Trichlorobenzene	mg/kg dry wt	< 0.3	-	-	-	-
Monoaromatic Hydrocarbons in VOC Soils by Headspace GC-MS						
n-Butylbenzene	mg/kg dry wt	< 0.3	-	-	-	-
tert-Butylbenzene	mg/kg dry wt	< 0.3	-	-	-	-
Isopropylbenzene (Cumene)	mg/kg dry wt	< 0.3	-	-	-	-
4-Isopropyltoluene (p-Cymene)	mg/kg dry wt	< 0.3	-	-	-	-
n-Propylbenzene	mg/kg dry wt	< 0.3	-	-	-	-
sec-Butylbenzene	mg/kg dry wt	< 0.3	-	-	-	-
Styrene	mg/kg dry wt	< 0.3	-	-	-	-
1,2,4-Trimethylbenzene	mg/kg dry wt	< 0.3	-	-	-	-
1,3,5-Trimethylbenzene	mg/kg dry wt	< 0.3	-	-	-	-
Ketones in VOC Soils by Headspace GC-MS						
2-Butanone (MEK)	mg/kg dry wt	< 40	-	-	-	-
4-Methylpentan-2-one (MIBK)	mg/kg dry wt	< 7	-	-	-	-
Acetone	mg/kg dry wt	< 40	-	-	-	-
Methyl tert-butylether (MTBE)	mg/kg dry wt	< 0.3	-	-	-	-
Trihalomethanes in VOC Soils by Headspace GC-MS						
Bromodichloromethane	mg/kg dry wt	< 0.3	-	-	-	-
Bromoform (tribromomethane)	mg/kg dry wt	< 0.5	-	-	-	-
Chloroform (Trichloromethane)	mg/kg as rcvd	< 0.3	-	-	-	-
Dibromochloromethane	mg/kg dry wt	< 0.3	-	-	-	-
Other VOC in Soils by Headspace GC-MS						
Carbon disulphide	mg/kg dry wt	< 0.3	-	-	-	-
Naphthalene	mg/kg dry wt	< 0.3	-	-	-	-

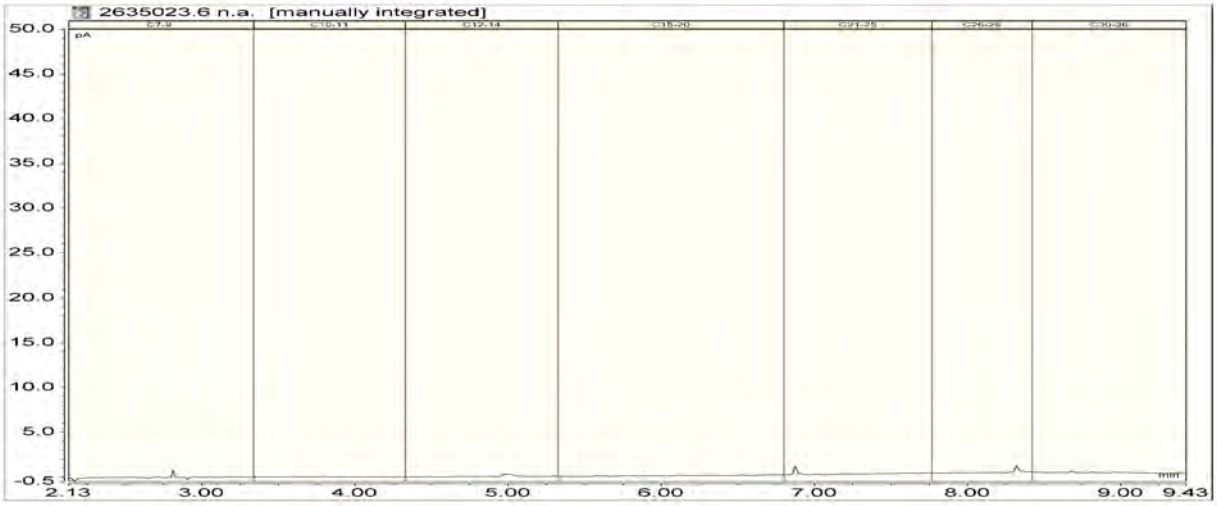
2635023.3
ORSL_1_2m 14-Jun-2021 11:55 am
Client Chromatogram for TPH by FID



2635023.5
ORSL_1_3.5m 14-Jun-2021 12:16 pm
Client Chromatogram for TPH by FID



2635023.6
ORSL_1_0.4m 14-Jun-2021 11:45 am
Client Chromatogram for TPH by FID



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 Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	1-6
Total of Reported PAHs in Soil	Sonication extraction, GC-MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	1-6
Dry Matter (Env)	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	1-6
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.002 mg/kg dry wt	1-6
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.002 mg/kg dry wt	1-6
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.002 - 70 mg/kg dry wt	1-6
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-6
Semivolatile Organic Compounds Screening in Soil by GC-MS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.002 - 30 mg/kg dry wt	1-6
Volatile Organic Compounds Screening in Soil by Headspace GC-MS	Sonication extraction, Headspace GC-MS analysis. Tested on as received sample. In-house based on US EPA 8260 and 5021.	-	1-6
Total Petroleum Hydrocarbons in Soil			
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	3, 5-6
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	8 mg/kg dry wt	1-6
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1-6
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1-6
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1-6

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

Testing was completed on 17-Jun-2021. 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

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R J Hill Laboratories Limited
101C Waterloo Road
Hornby
Christchurch 8042 New Zealand

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

Certificate of Analysis

Client:	Stantec New Zealand	**Lab No:**	2635799	A2Pv1
Contact:	Julia O'Brien	**Date Received:**	15-Jun-2021	
	C/- Stantec New Zealand	**Date Reported:**	18-Jun-2021	
	PO Box 13052	**Quote No:**	111545	
	Armagh	**Order No:**		
	Christchurch 8141	**Client Reference:**		
		Submitted By:	Julia O'Brien	

Sample Type: Soil

Sample Name	Lab Number	As Received Weight (g)	Dry Weight (g)	<2mm Subsample Weight (g dry wt)	Asbestos Presence / Absence	Description of Asbestos Form
ORSL_2_3.5m	2635799.1	431.4	403.5	50.4	Asbestos NOT detected.	-
ORL_2_2m	2635799.2	418.4	380.8	56.3	Asbestos NOT detected.	-
ORSL_1_2m	2635799.3	398.9	328.4	53.8	Asbestos NOT detected.	-
ORSL_2_0.5m	2635799.4	395.2	359.4	58.3	Asbestos NOT detected.	-
ORSL_1_3.5m	2635799.5	415.7	371.4	56.4	Asbestos NOT detected.	-
ORSL_1_0.4m	2635799.6	421.1	364.3	58.2	Asbestos NOT detected.	-

Glossary of Terms

- Loose fibres (Minor) - One or two fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- Loose fibres (Major) - Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- ACM Debris (Minor) - One or two small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- ACM Debris (Major) - Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- Unknown Mineral Fibres - Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
- Trace - Trace levels of asbestos, as defined by AS4964-2004.

For further details, please contact the Asbestos Team.

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 Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-6
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-6
<2mm Subsample Weight	Sample dried at 100 to 105°C, weight of <2mm sample fraction taken for asbestos identification if less than entire fraction. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	-	1-6
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-6
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-6

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

Testing was completed on 18-Jun-2021. 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.

Dexter Paguirigan Dip Chem Engineering Tech
Laboratory Technician - Asbestos

DESIGN WITH COMMUNITY IN MIND

Communities are fundamental. Whether around the corner or across the globe, they provide a foundation, a sense of place and of belonging. That's why at Stantec, we always design with community in mind.

We care about the communities we serve—because they're our communities too. This allows us to assess what's needed and connect our expertise, to appreciate nuances and envision what's never been considered, to bring together diverse perspectives so we can collaborate toward a shared success.

We're designers, engineers, scientists, and project managers, innovating together at the intersection of community, creativity, and client relationships. Balancing these priorities results in projects that advance the quality of life in communities across the globe.

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