



Photograph 41: MTP12 end of excavation, facing north



Photograph 42: MTP12 western profile

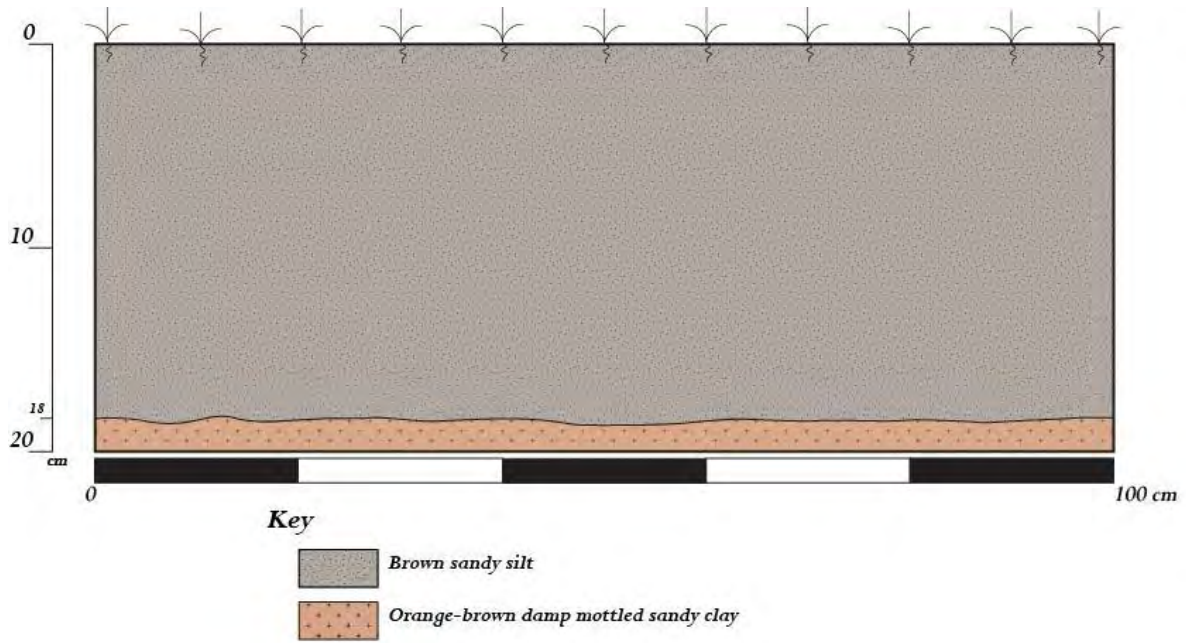


Figure 13: MTP12 northern profile



Photograph 43: MTP27 end of excavation, facing south.



Photograph 44: MTP27 southern profile.

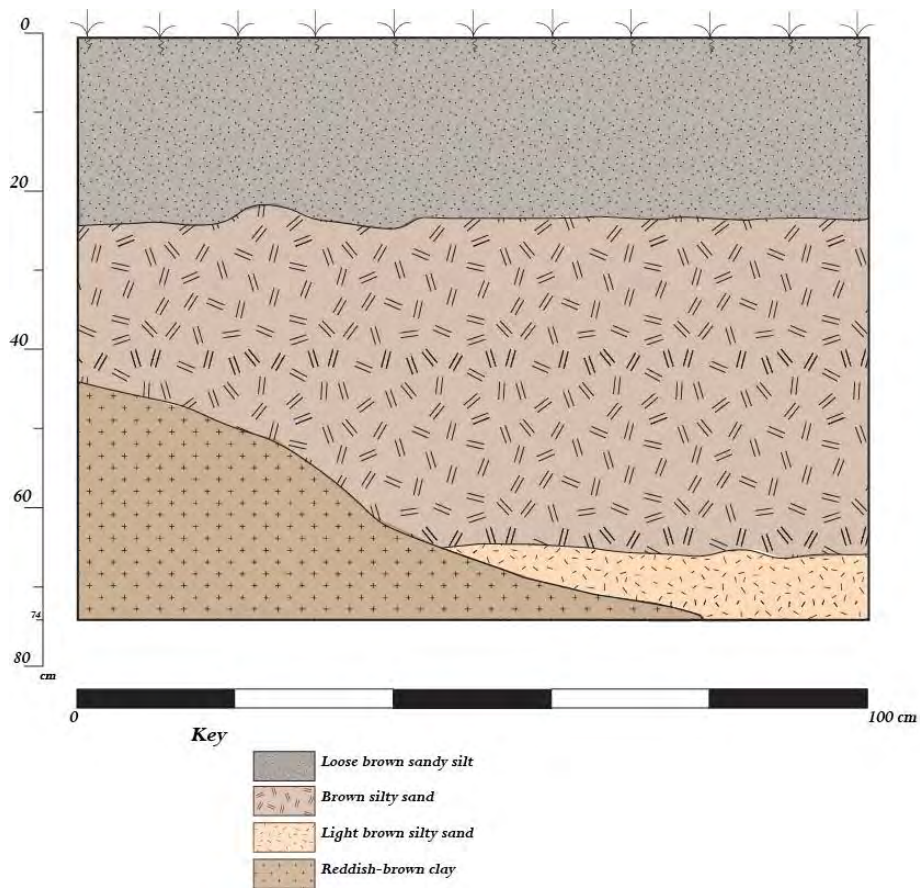


Figure 14: MTP27 stratigraphic profile, facing north



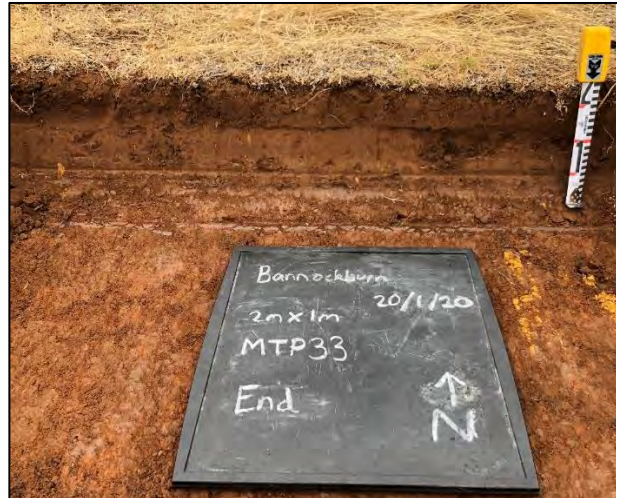
Photograph 45: MTP22 end of excavation, facing west.



Photograph 46: MTP22 northern profile.



Photograph 47: MTP33 end of excavation, facing north.



Photograph 48: MTP33 northern profile

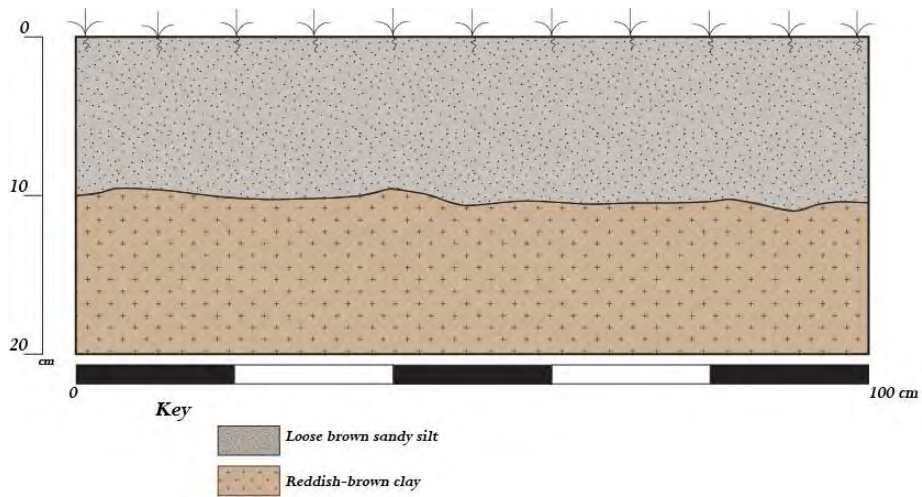


Figure 15: MTP33 stratigraphic profile, facing north



Photograph 49: MTP23 end of excavation, facing west



Photograph 50: MTP23 southern profile

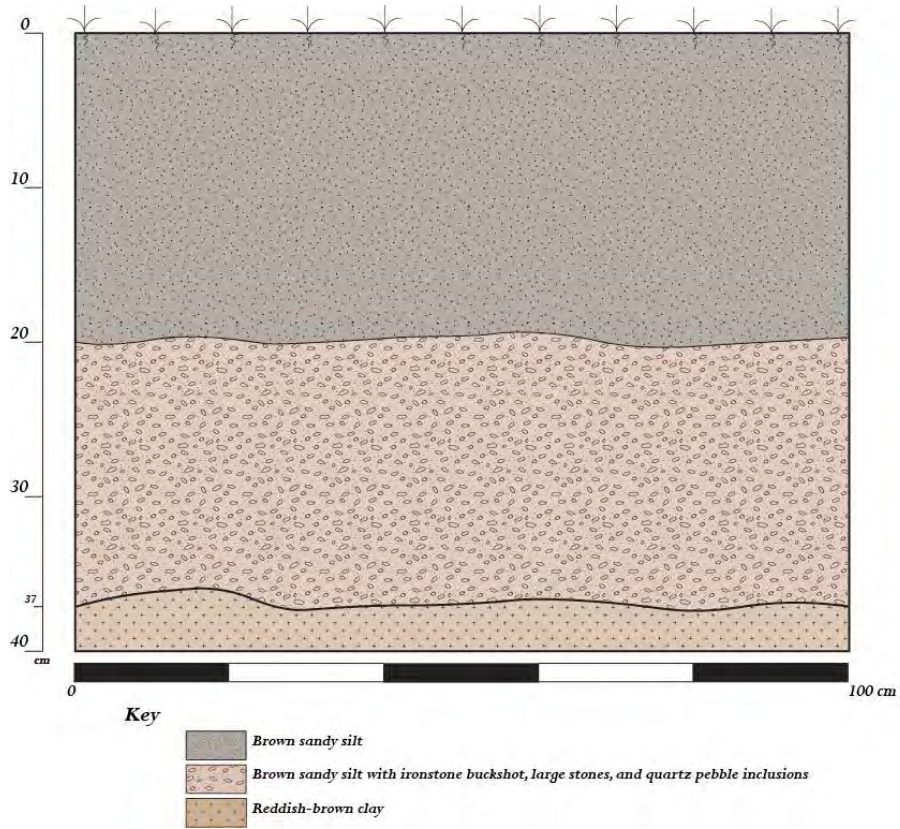


Figure 16: MTP23 stratigraphic profile, facing north



Photograph 51: MTP37 end of excavation, facing north.



Photograph 52: MTP37 western profile.



Photograph 53: MTP35 end of excavation, facing north



Photograph 54: MTP35 western profile

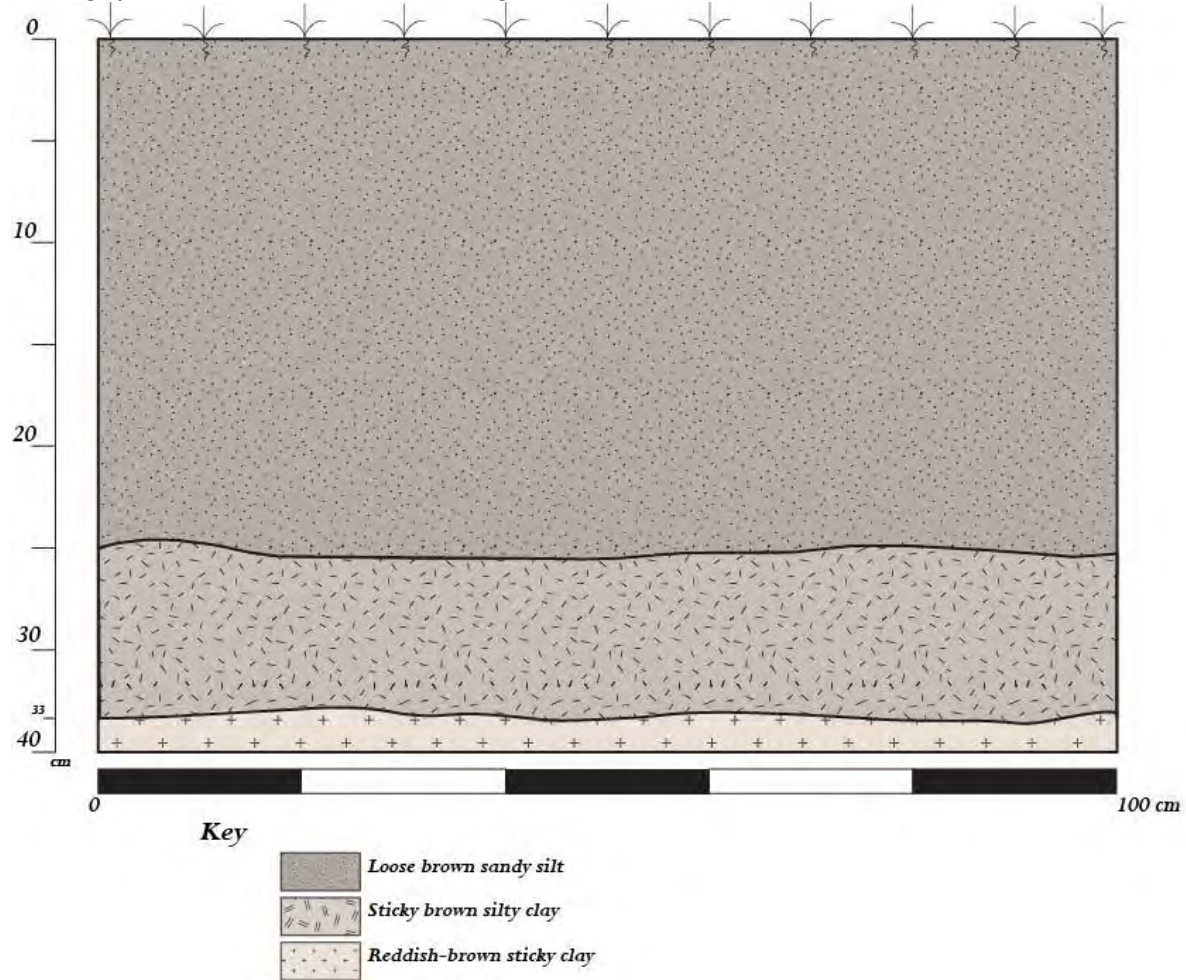


Figure 17: MTP35 stratigraphic profile, facing north

### **9.3 Conclusions of the Complex Assessment**

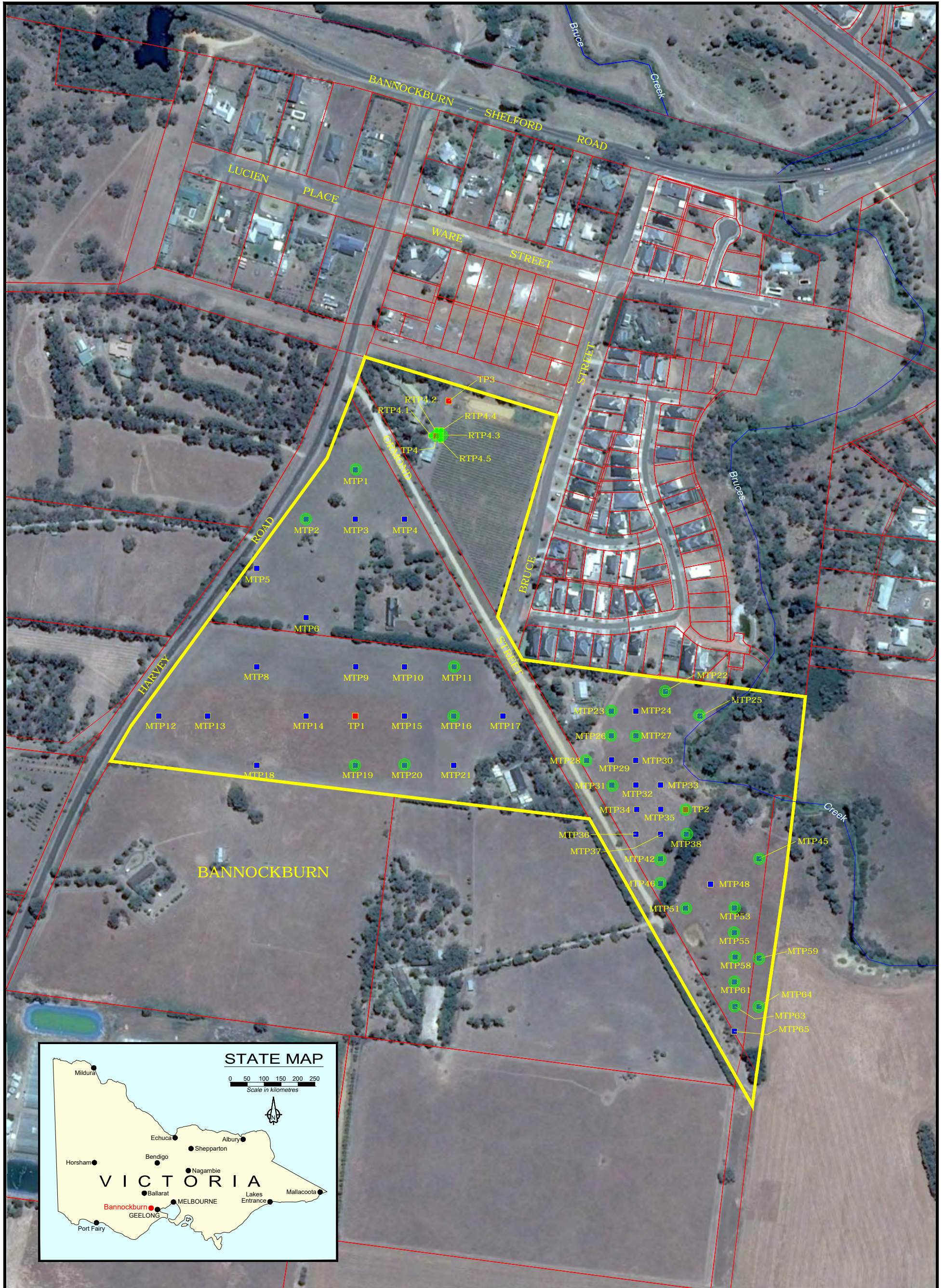
The Complex Assessment involved the manual excavation of four 1m x 1m test pits (TPs) and five 0.5m x 0.5m radial test pits (RTPs). A further forty-nine 2m x 1m machine test pits (MTPs) were excavated using a machine excavator. All test pits were excavated stratigraphically or in defined arbitrary spits of 100mm. All excavated material was screened using either 5mm gauge hand sieves or 5mm gauge mechanical sieves. The test pits were spaced throughout the activity area to sample as much of the area as possible and to target landforms identified during the Standard Assessment as archaeologically sensitive.

The soil profile was fairly homogenous across the activity area, generally consisting of a brown sandy silt topsoil above an intermediate sand layer and basal clay. The depths of the test pits varied greatly across the Activity Area but were generally deeper in areas on or near contour lines associated with Bruce Creek.

A total of 312 artefacts were found in fifty-eight subsurface testing locations across the activity area. The majority of subsurface artefacts were recorded within the top brown sandy silt layer at depths generally ranging between approximately 150-300mm. However, there were also artefacts recorded within the intermediate sandy silt layer at depths generally ranging between approximately 250-450mm. The highest densities of artefacts were found in MTP61 and MTP22 which were located in Section 4, on the plains and ridgeline leading to Bruce Creek. Approximately 86% of all subsurface artefacts recorded in the activity area were found in Section 4.

The results of the Complex Assessment support the conclusions of the Desktop and Standard Assessments that found low-density and/or diffuse Aboriginal cultural heritage present across the activity area but also with a far larger concentration of stone artefacts in the areas most closely associated with Bruce Creek.





	<b>KEY</b> Activity Area Radial Test Pit 50cmx50cm Test Pit 1mx1m Mechanical Test Pit Positive Test Pit	<b>GOLDEN PLAINS SHIRE</b>  Scale in metres	 Heritage Consultants 113 Victoria Rd, Northcote, VIC 3070 Ph. 03 9486 4524 Fax. 03 9481 2078	Drawn: R.M. Datum: GDA94 Date: 26/9/2020 Heights: AHD Format: A3	<b>BRUCE STREET,          HARVEY AND ORMOND          ROADS, BANNOCKBURN          COMPLEX ASSESSMENT</b> Drawing No.: Complex Assessment.dwg
				Scale in metres	

MAP 5: Showing results of the Complex Assessment.

## **10.0 Aboriginal Cultural Heritage in the Activity Area**

### **10.1 Ormond Street Bannockburn LDAD (VAHR 7721-1436)**

The following section provides details and analysis of Aboriginal cultural heritage identified during the Standard and Complex Assessments. The Primary Grid Coordinate for Ormond Street Bannockburn LDAD (VAHR 7721-1436) is E:250720, N:5784135 (MGA/GDA94, Zone 55).

#### **10.1.1 Artefact Analysis**

Attribute and technological analyses were undertaken on the assemblage observing the typological categories prescribed by AV. The definitions and interpretation of lithics primarily followed those outlined in Holdaway and Stern (2004). The collected subsurface lithic artefacts were sorted prior to analysis. The attributes of the artefacts were recorded using electronic callipers and a DN1040 table magnifying lamp, which provided 1.75 to 4x magnification to assist in identification of use-wear, retouch, flaking scars and raw material type in the laboratory at the TerraCulture offices.

Test Pit	Coordinates MGA/GDA94 Zone 55 (Easting/Northing)	Depth (m)	Raw Material	Primary Form	Cortex %	% Edge of Retouch/ Use- wear	Flake Platform	Flake Termination	Number of Complete Scars	Longest Scar (mm)	Formal Tool/Core type	Length (mm)	Width (mm)	Thickness (mm)	Max. Dimension (mm)
MTP19	250620/5784035	0.28	Quartzite	Flake - Distal	none	1-32%		Step			Notched Tool	24	32	8	32
MTP20	250670/5784035	0.35	Quartzite	Flake - Longitudinal Split	None	1-32%	Plain	Feather				21	15	4	21
MTP20	250670/5784035	0.18	Quartzite	Flake - Longitudinal Split	1-32%	33-66%	Plain	Feather				17	17	6	20
MTP16	250720/5784085	0.3	Quartzite	Blade - complete	none	1-32%	Plain	Feather				24	12	6	28
MTP11	250720/5784135	0.2	Quartz	Flake - complete	none	None	Plain	Feather				11	11	2	11
MTP2	250570/5784285	0.25	Quartzite	Blade - complete	None	33-66%	Plain	Feather				21	8	3	20
MTP2	250570/5784285	0.25	Quartzite	Flake - Complete	None	1-32%	Flaked	Plunge			Scraper - Steep- edged	28	13	8	29
MTP2	250570/5784285	0.15	Quartzite	Flake - Distal	None	1-32%		Feather				11	8	2	13
MTP2	250570/5784285	0.15	Quartzite	Flake - Longitudinal Split	None	1-32%	Plain	Feather				11	7	3	12
MTP2	250570/5784285	0.15	Quartzite	Flake - complete	None	1-32%	Plain	Feather				14	8	2	15
MTP2	250570/5784285	0.15	Quartzite	Flake - Distal	None	1-32%		Feather				12	14	3	21
MTP2	250570/5784285	0.15	Quartzite	Blade - complete	None	1-32%	Plain	Feather				17	7	2	20
MTP2	250570/5784285	0.15	Quartzite	Blade - complete	None	1-32%	Plain	Feather				32	9	7	32
MTP2	250570/5784285	0.15	Quartzite	Flake - proximal	none	1-32%	Plain					25	10	5	25
MTP2	250570/5784285	0.15	Quartzite	Core - unidirectional	1-32%	None			2	11		18	33	14	34
MTP1	250620/5784335	0.24	Quartzite	Core - Bidirectional	none	None			3	12		26	17	10	31
MTP1	250620/5784335	0.24	Quartzite	Flake - proximal	none	1-32%	Plain					12	10	3	15
MTP1	250620/5784335	0.24	Quartzite	Flake - medial	none	None						9	11	2	13
MTP1	250620/5784335	0.24	Quartzite	Flake - complete	none	1-32%	Crushed	Feather				12	9	2	13
MTP1	250620/5784335	0.24	Quartzite	Flake - complete	none	33-66%	Plain	Feather				19	10	4	23

Table 13: Summary artefact analysis of VAHR 7721-1436.

### 10.1.2 Site Formation Processes

The stone artefacts recorded during the Complex Assessments were registered with Aboriginal Victoria as Ormond Street Bannockburn LDAD (VAHR 7721-1436). This Aboriginal place lies on a flat volcanic plain approximately 200 metres west of Bruce Creek. Most of the artefacts were found within the brown sandy silt topsoil layer, however some artefacts were found within the lighter brown firm sandy silt intermediate layer. It is likely that disturbance has allowed artefacts to shift within the deposit. Overall, the place has poor contextual integrity and there was evidence of some ground disturbance by agricultural practices such as ploughing and livestock grazing, as well as by the construction of two houses and other various amenities.

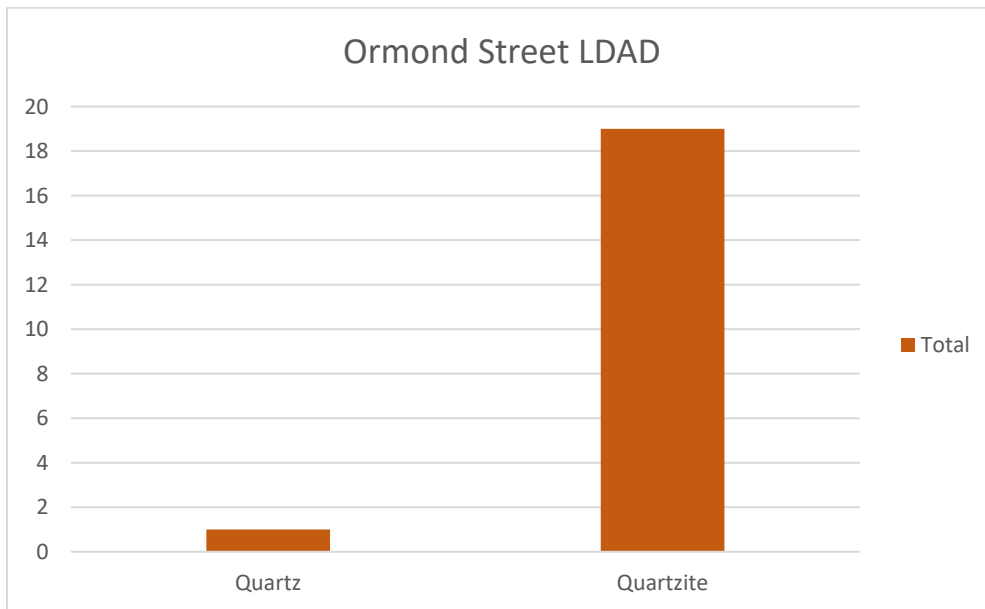
VAHR 7721-1436 has been registered as a low-density artefact distribution. As per Aboriginal Victoria's Guidelines for Recording Low Density Artefact Distributions, a low density artefact distribution is defined as 'the occurrence of stone artefacts at densities of up to 10 counted artefacts in any area of approximately 10m x 10m, or 100m<sup>2</sup>, including within a single test pit of ≤1m<sup>2</sup>'. Further, the guidelines state that 'there should be a maximum of one kilometre between the artefacts recorded in a single LDAD submission'. Although a total of twenty artefacts were registered within this LDAD, the findings do not see more than ten artefacts within the defined area of 10m x 10m, or 100m<sup>2</sup>, well within the density threshold. It is unclear whether the artefacts were discarded as a single discreet event or if the place was visited numerous times. It is likely that water erosion and other agricultural activities have caused some of the artefacts, at least, to have shifted within the sandy silt making it unlikely that the artefacts were recorded *in situ*. The artefact assemblage is very small, consisting of twenty quartz and quartzite artefacts, which makes inferences about the discard patterns difficult. This coupled with the disturbed context in which the artefacts were recorded makes it difficult to understand the site formation processes.

### 10.1.3 Results of the Artefact Analysis

The stone artefact assemblage that makes up Ormond Street Bannockburn LDAD (VAHR 7721-1436) consists of twenty artefacts made from quartz and quartzite. The largest number of artefacts were made from quartzite (n=19) which would have been common in the region. There is no source of quartzite within the Activity Area, however, and it was likely sourced from the Moorabool River. The results are consistent with previous assessments that indicate that quartz, quartzite and silcrete are the most common raw materials in the geographic region (e.g. Marshall and Hyett 2007, Bullers et al. 2014).

Quartzite is a quartz-rich sandstone that has been recrystallized by heat and/or pressure. It is also a commonly occurring raw material in stone tool assemblages in the region. Fine-grained varieties are better suited to knapping than coarser-grained varieties which produce irregular breakage patterns (Holdaway & Stern 2004: 24).

Quartz is a difficult raw material to work with due to natural imperfections in the crystalline structure which make breakage patterns often unpredictable (Holdaway & Stern 2004: 24). Nevertheless, it is common in Aboriginal stone tool assemblages for its ability to form durable sharp edges with little effort.



**Figure 18: Raw material frequency in VAHR 7721-1436.**

All artefacts recorded during the assessment were produced using stone flaking techniques with the most common primary forms being complete flakes and complete blades. The low number of artefacts and the lack of angular fragments suggests that the place was unlikely to have been used as a place of large-scale stone tool manufacture or encampment. Instead, the primary forms suggest that the place was likely only a peripheral place of occupation and most flakes and tools used in everyday activities were produced elsewhere and transported to site before being discarded.

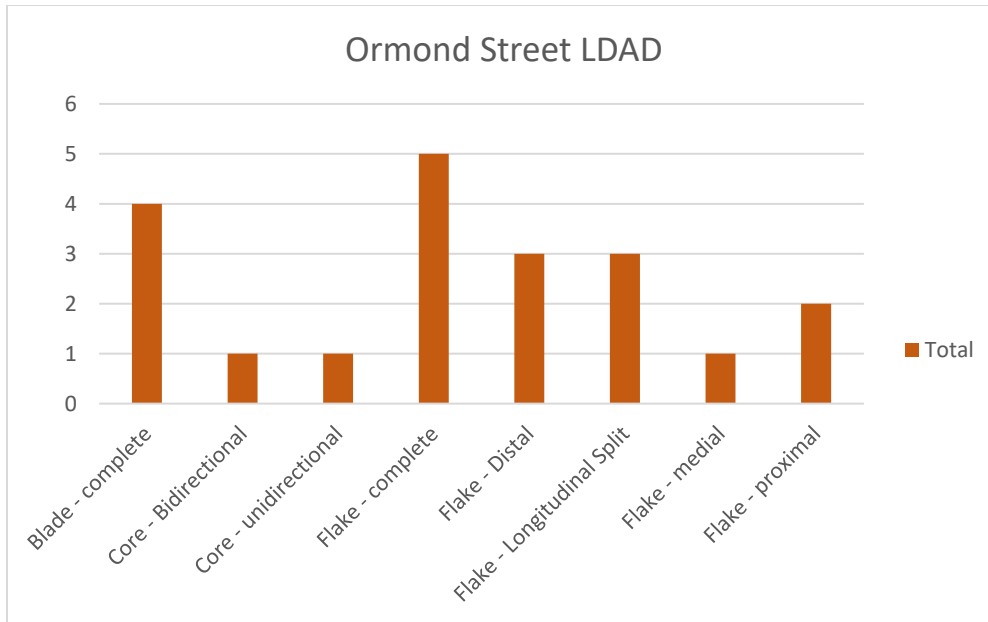


Figure 19: Primary form frequency in VAHR 7721-1436.

#### 10.1.4 Nature of Ormond Street LDAD (VAHR 7721-1436)

Within the activity area, Ormond Street LDAD (VAHR 7721-1436) consists of twenty quartzite and quartz artefacts found in subsurface test pits. The scatter is located within Sections 2 and 3 of the Activity Area, in flat paddocks approximately 200 metres west of Bruce Creek. Most of the artefacts were found within the brown sandy silt topsoil layer, however some artefacts were found within the lighter brown firm sandy silt intermediate layer. Overall, the place has very poor contextual integrity and there was evidence of major ground disturbance by agricultural and viticultural practices such as ploughing. Disturbance caused by humans and animals while the artefacts were on the surface is also likely to have occurred.



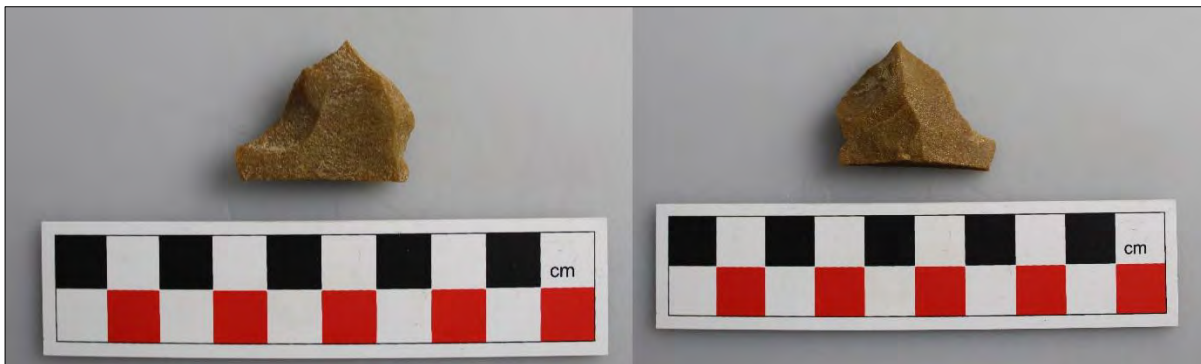
Photograph 55: MTP2, quartzite core, 15cm depth.



Photograph 56: MTP2, quartzite blade, 15cm depth.



Photograph 57: MTP2, quartzite flake, 15cm depth.



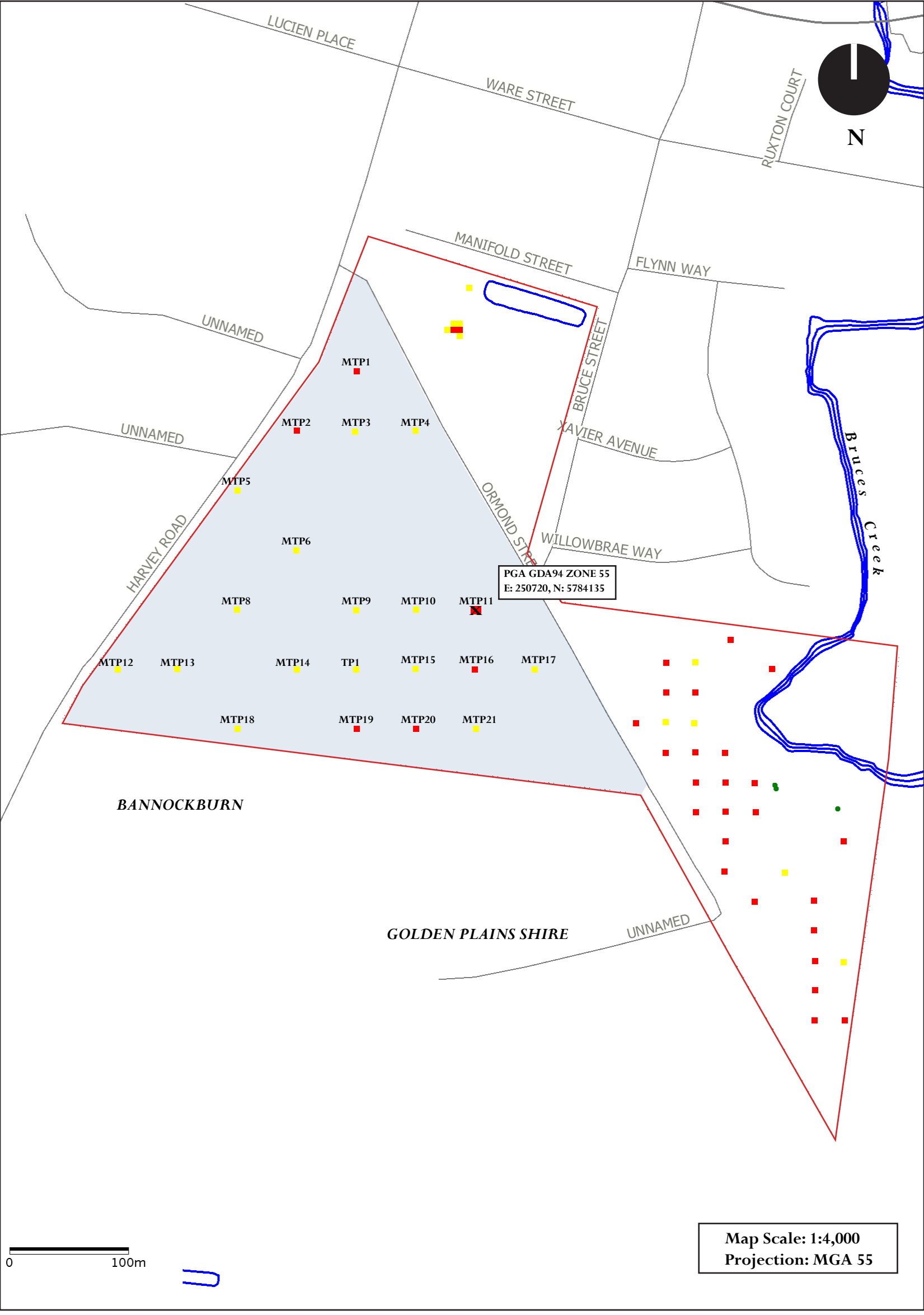
Photograph 58: MTP19, quartzite distal flake showing dorsal and ventral sides, 28cm depth.

### 10.1.5 Extent of Ormond Street Bannockburn LDAD (VAHR 7721-1436)

Ormond Street Bannockburn LDAD (VAHR 7721-1436) was registered with Aboriginal Victoria as a low-density artefact distribution which means it does not have a formal place extent. Instead, each artefact is a separate component. MTP2 had the highest density of artefacts (n=10), and MTP1 had the second highest density of artefacts (n=5). The entirety of Sections 2 and 3 within the activity area has been

disturbed by European land-use over the last 150 years, which has likely affected the density and distribution of the artefacts.





- KEY**
- Activity Area
  - Place Extent
  - X Primary Grid Coordinates
  - Surface Artefacts
  - Positive Test Pits
  - Negative Test Pits

### 10.1.6 Significance of Ormond Street Bannockburn LDAD (VAHR 7721-1436)

#### Significance Criteria

Aboriginal Cultural Heritage Places that are represented by archaeological features and deposits are a non-renewable resource. For most areas of Victoria, archaeology is one of the few sources of historical information on the former Aboriginal peoples that occupied the land prior to European settlement. Section 4 of the *Aboriginal Heritage Act 2006* includes archaeological, anthropological, contemporary, historical, scientific and social or spiritual significance values in its definition of cultural heritage significance.

#### Scientific and Archaeological Values and Significance

Scientific or archaeological significance measures importance according to a number of criteria such as type, artefact density, and potential to provide information of scientific or educational value. Some archaeological sites, by their contents or antiquity, automatically attain a high degree of significance. For others, significance is based on their value as representative examples of types within a given geographical area or environmental context, or their rarity within an area. In assessing the degree of significance of a Place it is necessary to consider four comparative criteria (Russell and Winkworth 2009:10):

- Provenance;
- Rarity or representativeness;
- Condition or completeness;
- Interpretive capacity.

Scientific Significance is ranked according to the following categories or combination of categories:

- High;
- Medium;
- Low; or
- None.

High Scientific Significance means that the Place has good contextual integrity, has demonstrated or potentially demonstrates high values for research potential or comparative ability. A Place assessed to have no Scientific Significance is usually allocated to Places that have no contextual integrity, the

provenance is poor or has been disturbed to such an extent that the information value has been removed or modified.

The criteria used to assess Scientific Significance are not standards that can necessarily be measured in a scientific fashion. They are relative estimates based on the current state of knowledge of the archaeology within the general region and within the specific area under consideration.

### Statement of Scientific Significance

Ormond Street LDAD VAHR 7721-1436 has been assessed as having low scientific significance or potential, given the low density of artefacts, the poor integrity of the site and the commonness of the place within the geographic region.

Many archaeological studies and CHMPs have occurred in the geographic region resulting in the registration of ninety-one Aboriginal cultural places. Low density artefact scatters are the most common registered place-type in the geographic region, making up fifty-nine of ninety places. In addition, most of the previous CHMPs in the geographic region have resulted in the identification of stone artefacts which suggests that they are common in the region.

The condition or completeness of the place is poor, with evidence of ground disturbance from previous land-use activities. Other disturbance includes the impact of animal burrowing and natural processes, such as movement of sediments by water and bioturbation.

The interpretive capacity of the place is low, due mainly to the low density of artefacts making it difficult to complete meaningful statistical analysis and the previous disturbance of the landform. However, the place can be fit into a wider framework for analysing Aboriginal occupation within the wider region.

VAHR No.	Primary Coordinates MGA94 Zone 55 (Easting/ Northing)	Site Representativeness	Integrity	Research Potential	Educational Potential	Scientific Significance
7721-1436	250720/5784135	Regionally Common	Locally Common	Poor	Low	Low

Table 14: Significance Assessment.

### 10.1.7 Cultural Significance According to Aboriginal Tradition

No specific comments on the cultural significance of VAHR 7721-1436 were provided by the WTOAC members involved in the conduct of the assessment. However, all cultural material is significant to the

Aboriginal community as it provides a tangible link to the past, a connection to country and is a non-renewable source of information about the lifestyles of the ancestors of the Wadawurrung people.

A general statement of significance for all sites from Mr Bryon Powell, former Chairperson of the Wadawurrung Traditional Owners Aboriginal Corporation is documented below:

*"All sites within the Wathaurung area are significant in cultural terms as they are a tangible link to our past and a non-renewable source of information about the lifestyle of our ancestors.*

*The cultural significance afforded to the sites by the Aboriginal community must be given a higher standing than the scientific rating as the scientific rating is based on a European perspective without due regard to the value of the Aboriginal culture as a whole."*

## **10.2 Bruces Creek Artefact Scatter (VAHR 7721-1435)**

The following section provides details and analysis of Aboriginal cultural heritage identified during the Standard and Complex Assessments. The Primary Grid Coordinate for Bruces Creek Artefact Scatter (VAHR 7721-1435) is E:250905, N:5783990 (MGA/GDA94, Zone 55).

### **10.2.1 Artefact Analysis**

Attribute and technological analyses were undertaken on the assemblage observing the typological categories prescribed by AV. The definitions and interpretation of lithics primarily followed those outlined in Holdaway and Stern (2004). The collected lithic artefacts were sorted prior to analysis. The attributes of the artefacts were recorded using electronic callipers and a DN1040 table magnifying lamp, which provided 1.75 to 4x magnification to assist in identification of use-wear, retouch, flaking scars and raw material type in the laboratory at the TerraCulture offices.

Test Pit	Coordinates MGA/GDA94 Zone 55 (Easting/Northing)	Depth (m)	Raw Material	Primary Form	Cortex %	% Edge of Retouch/Use-wear	Flake Platform	Flake Termination	Number of Complete Scars	Longest Scar (mm)	Formal Tool/Core type	Length (mm)	Width (mm)	Thickness (mm)	Max. Dimension (mm)
MTP28	250855/5784040	0.05	Quartz	Flake - Complete	None	1-32%	Plain	Feather				13	11	4	15
MTP 28	250855/5784040	0.05	Quartz	Angular Fragment	33-66%	None						14	12	12	14
MTP 28		0.05	Quartz	Angular Fragment	1-32%	None						18	13	10	18
MTP 28	250855/5784040	0.1	Quartz	Angular Fragment	None	None						13	10	4	15
MTP 28	250855/5784040	0.1	Quartz	Angular Fragment	None	None						18	5	3	18
MTP 28	250855/5784040	0.1	Quartz	Angular Fragment	None	None						12	8	8	12
MTP 28	250855/5784040	0.1	Quartz	Flake - Complete	None	None	Plain	Feather				18	13	3	20
MTP 28	250855/5784040	0.15	Quartz	Angular Fragment	None	None						13	10	3	13
MTP 28	250855/5784040	0.15	Quartzite	Flake - Complete	None	1-32%	Flaked	Feather			Scraper - Steep-edged	25	21	11	29
MTP 23	250880/5784090	0.2	Quartz	Angular Fragment	None	None						12	9	2	12
MTP 23	250880/5784090	0.15	Quartz	Angular Fragment	None	None						17	12	5	17
MTP 23	250880/5784090	0.15	Quartz	Core - Unidirectional	1-32%	None			2	9		29	29	14	33
MTP 26	250880/5784065	0.25	Quartz	Angular Fragment	None	None						13	13	2	13
MTP 31	250880/5784015	0.25	Quartz	Core - Unidirectional	None	None			3	15		25	15	13	26
MTP 31	250880/5784015	0.15	Silcrete	Flake - Proximal	None	None	Plain					19	12	3	20
MTP 31	250880/5784015	0.15	Quartz	Angular Fragment	None	None						15	11	10	15
MTP 31	250880/5784015	0.2	Quartzite	Flake - medial	None	None						28	24	7	33
MTP 22	250935/5784110	0.65	Quartzite	Core - Unidirectional	None	None			1	18		30	15	7	31
MTP 22	250935/5784110	0.95	Quartzite	Flake - Complete	None	1-32%	Plain	Feather				30	29	12	35

Test Pit	Coordinates MGA/GDA94 Zone 55 (Easting/Northing)	Depth (m)	Raw Material	Primary Form	Cortex %	% Edge of Retouch/ Use- wear	Flake Platform	Flake Termination	Number of Complete Scars	Longest Scar (mm)	Formal Tool/Core type	Length (mm)	Width (mm)	Thickness (mm)	Max. Dimension (mm)
MTP 22	250935/5784110	0.95	Quartzite	Flake - Complete	None	1-32%	Plain	Feather				11	10	2	15
MTP 22	250935/5784110	0.85	Quartzite	Blade - complete	None	33-66%	Plain	Feather				19	8	3	20
MTP 22	250935/5784110	0.85	Quartzite	Flake - Complete	None	1-32%	Plain	Feather				12	5	2	12
MTP 22	250935/5784110	0.85	Quartzite	Flake - Complete	None	1-32%	Plain	Feather				8	7	3	13
MTP 22	250935/5784110	0.85	Quartzite	Angular Fragment	None	None						17	12	6	20
MTP 22	250935/5784110	0.85	Quartz	Angular Fragment	None	None						9	5	10	3
MTP 22	250935/5784110	0.85	Quartzite	Flake - Complete	None	None	Plain	Feather				12	8	2	14
MTP 22	250935/5784110	0.85	Quartzite	Flake - Complete	None	1-32%	Plain	Feather				9	1	7	9
MTP 22	250935/5784110	0.85	Quartzite	Flake - Complete	None	None	Plain	Hinge				13	5	5	13
MTP 22	250935/5784110	0.85	Quartzite	Flake - Complete	None	1-32%	Plain	plunge				20	12	6	22
MTP 22	250935/5784110	0.85	Quartz	Angular Fragment	None	None						12	5	3	12
MTP 22	250935/5784110	0.85	Quartzite	Angular Fragment	None	None						12	9	6	12
MTP 22	250935/5784110	1.3	Quartz	Angular Fragment	1-32%	None						32	16	10	32
MTP 22	250935/5784110	1.3	Quartzite	Flake - Distal	None	1-32%		Feather				13	5	2	13
MTP 22	250935/5784110	1.15	Quartzite	Flake - Proximal	None	1-32%	Flaked					15	5	3	16
MTP 22	250935/5784110	1.15	Quartzite	Flake - Distal	None	1-32%		Feather				11	13	2	11
MTP 22	250935/5784110	1.15	Quartzite	Flake - Complete	None	1-32%	Plain	Feather				8	7	1	11
MTP 22	250935/5784110	1.15	Quartzite	Flake - medial	None	None						5	9	2	9
MTP 22	250935/5784110	1.15	Quartzite	Flake - Complete	None	None	Plain	Feather				6	12	2	12
MTP 22	250935/5784110	1.15	Quartzite	Flake - Proximal	None	None	Plain					8	9	2	14

Test Pit	Coordinates MGA/GDA94 Zone 55 (Easting/Northing)	Depth (m)	Raw Material	Primary Form	Cortex %	% Edge of Retouch/ Use- wear	Flake Platform	Flake Termination	Number of Complete Scars	Longest Scar (mm)	Formal Tool/Core type	Length (mm)	Width (mm)	Thickness (mm)	Max. Dimension (mm)
MTP 22	250935/5784110	1.15	Quartzite	Flake - Complete	None	1-32%	Crushed	Feather				9	12	1	12
MTP 22	250935/5784110	0.55	Quartzite	Flake - Proximal	None	None	Plain					9	12	3	12
MTP 22	250935/5784110	0.55	Quartzite	Flake - Proximal	None	None	Plain					14	17	5	20
MTP 22	250935/5784110	0.55	Quartzite	Flake - Complete	None	1-32%	Plain	Hinge				27	19	8	28
MTP 22	250935/5784110	1.2	Quartzite	Flake - Complete	None	33-66%	Plain	Feather			Scraper - Steep-edged	23	18	8	23
MTP 22	250935/5784110	1.2	Quartz	Flake - medial	None	1-32%						11	8	4	12
MTP 22	250935/5784110	1.05	Quartzite	Flake - Proximal	None	67-99%	Plain					31	26	5	32
MTP 22	250935/5784110	1.05	Quartzite	Angular Fragment	None	None						11	5	3	11
MTP 22	250935/5784110	1.05	Quartzite	Flake - Complete	None	None	Plain	Step				14	9	3	14
MTP 22	250935/5784110	0.25	Quartzite	Flake - Complete	None	33-66%	Plain	Feather				17	18	2	22
MTP 22	250935/5784110	0.25	Quartzite	Flake - Proximal	None	1-32%	Plain					24	12	5	25
MTP 22	250935/5784110	0.25	Quartzite	Flake - Distal	None	1-32%		Feather				11	12	3	15
MTP 22	250935/5784110	0.25	Quartzite	Flake - Complete	None	None	Plain	Feather				10	8	3	10
MTP 22	250935/5784110	0.25	Quartzite	Angular Fragment	None	None						13	9	2	13
MTP 22	250935/5784110	0.25	Quartzite	Flake - Complete	1-32%	1-32%	Plain	Feather			Notched Tool	43	22	10	44
MTP 22	250935/5784110	0.25	Quartz	Angular Fragment	None	None						11	8	3	11
MTP 27	250905/5784065	0.3	Quartz	Angular Fragment	1-32%	None						16	18	3	19
MTP 32	250905/5784015	0.2	Silcrete	Flake - Complete	None	67-99%	Plain	Feather				26	35	4	36
MTP 32	250905/5784015	0.2	Quartz	Core - Unidirectional	None	None			3	9		13	25	22	26

Test Pit	Coordinates MGA/GDA94 Zone 55 (Easting/Northing)	Depth (m)	Raw Material	Primary Form	Cortex %	% Edge of Retouch/ Use- wear	Flake Platform	Flake Termination	Number of Complete Scars	Longest Scar (mm)	Formal Tool/Core type	Length (mm)	Width (mm)	Thickness (mm)	Max. Dimension (mm)
MTP 32	250905/5784015	0.1	Silcrete	Flake - Complete	None	67-99%	Flaked	Feather			Backed - Geometric Microlith	22	11	3	22
MTP 32	250905/5784015	0.1	Quartz	Flake - Complete	None	1-32%	Plain	Feather				12	14	5	15
MTP 32	250905/5784015	0.1	Silcrete	Core - Unidirectional	None	None			1	9		20	22	10	23
MTP 34	250905/5783990	0.25	Quartz	Flake - Complete	None	1-32%	Plain	Feather				12	10	2	12
MTP 34	250905/5783990	0.25	Quartz	Flake - Complete	None	None	Plain	Feather				12	13	3	14
MTP 34	250905/5783990	0.25	Quartz	Flake - Complete	None	1-32%	Plain	Feather				13	10	2	13
MTP 34	250905/5783990	0.2	Quartz	Angular Fragment	None	None						12	6	4	12
MTP 34	250905/5783990	0.2	Quartz	Angular Fragment	None	None						8	8	4	8
MTP 34	250905/5783990	0.2	Quartz	Angular Fragment	None	None						14	6	6	14
MTP 34	250905/5783990	0.2	Quartz	Flake - Complete	None	None	Plain	Feather				9	8	2	9
MTP 34	250905/5783990	0.2	Quartz	Angular Fragment	None	None						10	8	2	11
MTP 34	250905/5783990	0.2	Quartz	Angular Fragment	None	None						15	7	4	15
MTP 34	250905/5783990	0.2	Quartz	Angular Fragment	1-32%	None						25	17	11	25
MTP 34	250905/5783990	0.2	Quartzite	Flake - Complete	None	33-66%	Plain	Feather				41	30	8	42
MTP 34	250905/5783990	0.1	Quartz	Angular Fragment	1-32%	None						20	18	3	20
MTP 34	250905/5783990	0.1	Quartz	Flake - Complete	None	1-32%	Plain	Feather				17	14	2	17
MTP 34	250905/5783990	0.15	Quartz	Angular Fragment	None	None						11	10	2	12
MTP 34	250905/5783990	0.15	Quartz	Angular Fragment	33-66%	None						10	12	2	12
MTP 34	250905/5783990	0.15	Quartz	Angular Fragment	1-32%	None						10	8	3	10
MTP 34	250905/5783990	0.15	Quartz	Angular Fragment	33-66%	None						17	13	3	17



Test Pit	Coordinates MGA/GDA94 Zone 55 (Easting/Northing)	Depth (m)	Raw Material	Primary Form	Cortex %	% Edge of Retouch/ Use- wear	Flake Platform	Flake Termination	Number of Complete Scars	Longest Scar (mm)	Formal Tool/Core type	Length (mm)	Width (mm)	Thickness (mm)	Max. Dimension (mm)
MTP 34	250905/5783990	0.15	Quartz	Flake - Distal	None	None		Feather				9	10	2	11
MTP 34	250905/5783990	0.15	Quartz	Angular Fragment	None	None						8	5	3	8
MTP 34	250905/5783990	0.15	Quartz	Angular Fragment	None	None						17	9	6	17
MTP 34	250905/5783990	0.15	Quartz	Flake - Proximal	None	None	Crushed					11	10	2	15
MTP 34	250905/5783990	0.15	Quartz	Flake - Complete	33- 66%	1-32%	Flaked	Feather				12	15	4	16
MTP 34	250905/5783990	0.15	Quartz	Angular Fragment	1-32%	None						12	8	4	12
MTP 34	250905/5783990	0.15	Quartz	Flake - Complete	None	None	Plain	Feather				9	9	3	11
MTP 34	250905/5783990	0.15	Quartz	Angular Fragment	None	None						22	9	6	22
MTP 34	250905/5783990	0.15	Quartz	Blade - complete	None	None	Plain	Step				22	8	3	23
MTP 34	250905/5783990	0.15	Quartz	Angular Fragment	None	None						15	11	5	15
MTP 34	250905/5783990	0.15	Quartz	Angular Fragment	1-32%	None						13	10	3	13
MTP 36	250905/5783965	0.2	Quartz	Angular Fragment	1-32%	None						15	8	2	15
MTP 36	250905/5783965	0.2	Quartz	Angular Fragment	None	None						18	9	3	18
MTP 36	250905/5783965	0.15	Quartz	Angular Fragment	None	None						15	8	3	15
MTP 36	250905/5783965	0.25	Quartzite	Flake - Distal	None	None		Feather				16	20	10	20
MTP 36	250905/5783965	0.25	Quartzite	Flake - Complete	None	None	Plain	Feather				23	13	5	23
MTP 36	250905/5783965	0.25	Quartzite	Flake - Complete	None	33-66%	Plain	Hinge			Scraper - Steep- edged	32	17	4	33
MTP 36	250905/5783965	0.25	Quartz	Angular Fragment	None	None						11	8	2	11
MTP 42	250930/5783940	0.1	Silcrete	Blade - Proximal	None	1-32%	Crushed					14	7	4	14
MTP 42	250930/5783940	0.1	Silcrete	Flake - Proximal	None	1-32%	Plain					16	10	2	17

Test Pit	Coordinates MGA/GDA94 Zone 55 (Easting/Northing)	Depth (m)	Raw Material	Primary Form	Cortex %	% Edge of Retouch/ Use- wear	Flake Platform	Flake Termination	Number of Complete Scars	Longest Scar (mm)	Formal Tool/Core type	Length (mm)	Width (mm)	Thickness (mm)	Max. Dimension (mm)
MTP 42	250930/5783940	0.1	Quartz	Core - Unidirectional	None	None			2	10		16	30	13	32
MTP 42	250930/5783940	0.15	Quartz	Angular Fragment	None	None						22	9	8	22
MTP 42	250930/5783940	0.15	Quartz	Angular Fragment	None	None						12	7	3	12
MTP 42	250930/5783940	0.15	Quartzite	Flake - Proximal	None	None	Crushed					18	20	5	21
MTP 42	250930/5783940	0.15	Quartz	Flake - Proximal	None	None	Plain				Scraper - Steep- edged	25	15	9	28
MTP 42	250930/5783940	0.15	Quartz	Flake - Distal	None	None		Feather				16	11	8	17
MTP 42	250930/5783940	0.15	Quartzite	Flake - Complete	None	1-32%	Plain	Plunge				20	14	3	21
MTP 42	250930/5783940	0.2	Quartzite	Flake - Complete	None	1-32%	Plain	Feather				25	27	6	28
MTP 42	250930/5783940	0.2	Quartz	Flake - Complete	None	None	Plain	Feather				23	15	5	23
MTP 42	250930/5783940	0.2	Quartz	Angular Fragment	None	None						22	13	11	22
MTP 46	250930/5783915	0.25	Quartz	Flake - Complete	None	None	Crushed	Feather				22	13	6	22
MTP 33	250930/5784015	0.15	Quartzite	Flake - Distal	None	1-32%		Step				22	27	6	30
MTP 35	250930/5783990	0.1	Quartz	Angular Fragment	None	None						20	13	5	20
MTP 35	250930/5783990	0.15	Quartzite	Flake - Complete	None	1-32%	Plain	Feather				58	32	16	63
MTP 35	250930/5783990	0.15	Silcrete	Flake - Distal	None	None		Step				30	24	8	32
MTP 37	250930/5783965	0.15	Quartzite	Flake - Complete	None	1-32%	Plain	Hinge				21	10	5	22
MTP 37	250930/5783965	0.15	Quartzite	Angular Fragment	None	None						15	11	3	15
MTP 37	250930/5783965	0.25	Quartzite	Core - Unidirectional	None	None			1	11		13	25	7	25
MTP 37	250930/5783965	0.25	Quartzite	Flake - medial	None	None						23	18	6	27
TP2	250955/5783990	0.05	Silcrete	Flake - Proximal	None	1-32%	Crushed					10	11	2	13

Test Pit	Coordinates MGA/GDA94 Zone 55 (Easting/Northing)	Depth (m)	Raw Material	Primary Form	Cortex %	% Edge of Retouch/ Use- wear	Flake Platform	Flake Termination	Number of Complete Scars	Longest Scar (mm)	Formal Tool/Core type	Length (mm)	Width (mm)	Thickness (mm)	Max. Dimension (mm)
TP2	250955/5783990	0.05	Quartz	Flake - Complete	None	None	Plain	Step				20	18	4	20
TP2	250955/5783990	0.1	Quartzite	Angular Fragment	None	None						13	13	4	15
TP2	250955/5783990	0.1	Quartzite	Core - Unidirectional	None	None			1	12		23	16	8	25
MTP 51	250955/5783890	0.15	Quartz	Blade - complete	None	None	Crushed	Plunge				20	6	4	20
MTP 51	250955/5783890	0.15	Quartzite	Flake - Complete	None	None	Plain	Plunge				18	13	3	19
MTP 25	250970/5784085	0.5	Silcrete	Flake - Proximal	None	None	Plain					15	12	5	23
MTP 25	250970/5784085	0.5	Silcrete	Flake - Complete	None	1-32%	Crushed	Feather				19	10	5	20
MTP 25	250970/5784085	0.4	Silcrete	Flake - Complete	None	1-32%	Plain	Step				24	14	6	27
MTP 25	250970/5784085	0.4	Silcrete	Blade - complete	None	1-32%	Plain	Feather				22	8	4	24
MTP 25	250970/5784085	0.4	Silcrete	Flake - Complete	None	None	Plain	Step				27	12	6	28
MTP 25	250970/5784085	0.4	Silcrete	Flake - Complete	None	1-32%	Plain	Feather				11	17	2	18
MTP 25	250970/5784085	0.4	Silcrete	Flake - medial	None	None						6	10	2	10
MTP 38	250955/5783965	0.25	Quartz	Flake - Complete	None	None	Plain	Feather				12	8	3	13
MTP 38	250955/5783965	0.05	Quartz	Angular Fragment	None	None						15	19	4	19
MTP 38	250955/5783965	0.05	Quartzite	Flake - Proximal	None	None	Plain					22	28	6	28
MTP 38	250955/5783965	0.05	Quartz	Angular Fragment	None	None						27	25	12	27
MTP 38	250955/5783965	0.3	Quartz	Flake - Complete	None	None	Plain	Feather				16	10	3	18
MTP 38	250955/5783965	0.2	Quartzite	Flake - Proximal	None	None	Plain					31	15	6	31
MTP 38	250955/5783965	0.2	Quartzite	Flake - Complete	None	33-66%	Flaked	Step				24	16	5	25
MTP 38	250955/5783965	0.2	Quartzite	Blade - complete	None	1-32%	Plain	Feather				32	14	5	32

Test Pit	Coordinates MGA/GDA94 Zone 55 (Easting/Northing)	Depth (m)	Raw Material	Primary Form	Cortex %	% Edge of Retouch/ Use- wear	Flake Platform	Flake Termination	Number of Complete Scars	Longest Scar (mm)	Formal Tool/Core type	Length (mm)	Width (mm)	Thickness (mm)	Max. Dimension (mm)
MTP 38	250955/5783965	0.2	Quartzite	Flake - Complete	None	1-32%	Plain	Feather				21	13	5	21
Surface	250972/5783988	0	Quartzite	Flake - Proximal	None	None	Flaked					23	20	11	23
Surface	250973/5783985	0	Quartz	Angular Fragment	None	None						14	8	2	14
MTP 53	251005/5783890	0.4	Quartz	Flake - Complete	None	None	Plain	Feather				42	20	12	42
MTP 55	251005/5783865	0.15	Quartz	Flake - Complete	1-32%	1-32%	Plain	Feather			Scraper - Round-edged	33	27	15	35
MTP 55	251005/5783865	0.15	Quartz	Flake - medial	None	None						10	8	6	13
MTP 55	251005/5783865	0.15	Quartzite	Flake - Longitudinal Split	None	None	Plain	Feather				25	17	10	30
MTP 55	251005/5783865	0.15	Quartzite	Blade - distal	None	33-66%		Feather				22	11	6	22
MTP 55	251005/5783865	0.15	Quartzite	Flake - Complete	None	33-66%	Plain	Hinge			Scraper - Flat-edged	40	22	10	41
MTP 55	251005/5783865	0.15	Quartzite	Flake - Distal	None	None		Feather				25	24	9	28
MTP 55	251005/5783865	0.15	Silcrete	Core - Unidirectional	None	None			2	15		19	23	16	33
MTP 55	251005/5783865	0.15	Silcrete	Flake - Proximal	None	None	Plain					15	10	5	17
MTP 58	251005/5783840	0.2	Quartz	Flake - Proximal	1-32%	None	Plain					16	14	7	17
MTP 58	251005/5783840	0.2	Quartz	Angular Fragment	None	None						9	6	4	9
MTP 58	251005/5783840	0.2	Quartz	Flake - Complete	None	None	Plain	Feather				15	9	3	16
MTP 58	251005/5783840	0.2	Quartz	Flake - Complete	33-66%	None	Plain	Feather				26	15	8	27
MTP 58	251005/5783840	0.15	Quartzite	Flake - Complete	None	33-66%	Plain	Feather				30	16	7	35
MTP 58	251005/5783840	0.15	Quartzite	Angular Fragment	None	None						20	18	5	20
MTP 58	251005/5783840	0.15	Quartzite	Flake - Complete	None	33-66%	Plain	Feather			Scraper - Thumbnail	16	16	2	16

Test Pit	Coordinates MGA/GDA94 Zone 55 (Easting/Northing)	Depth (m)	Raw Material	Primary Form	Cortex %	% Edge of Retouch/ Use- wear	Flake Platform	Flake Termination	Number of Complete Scars	Longest Scar (mm)	Formal Tool/Core type	Length (mm)	Width (mm)	Thickness (mm)	Max. Dimension (mm)
MTP 58	251005/5783840	0.15	Quartz	Angular Fragment	33- 66%	None						23	15	11	23
MTP 58	251005/5783840	0.15	Quartz	Angular Fragment	None	None						19	15	6	19
MTP 58	251005/5783840	0.15	Quartz	Flake - Complete	None	None	Plain	Feather				16	16	8	18
MTP 58	251005/5783840	0.15	Quartz	Flake - Complete	None	None	Plain	Feather				24	16	8	25
MTP 58	251005/5783840	0.15	Quartz	Angular Fragment	None	None						17	12	6	17
MTP 58	251005/5783840	0.15	Quartz	Angular Fragment	None	None						18	9	5	18
MTP 58	251005/5783840	0.15	Quartz	Flake - Complete	None	1-32%	Plain	Feather				7	10	2	10
MTP 58	251005/5783840	0.15	Quartz	Flake - medial	None	None						7	12	3	12
MTP 58	251005/5783840	0.1	Quartz	Blade - complete	1-32%	None	Crushed	Feather				26	9	5	27
MTP 58	251005/5783840	0.1	Quartz	Angular Fragment	None	None						12	5	3	12
MTP 58	251005/5783840	0.25	Quartzite	Flake - Complete	None	1-32%	Plain	Step				15	10	3	15
MTP 61	251005/5783815	0.15	Quartz	Flake - Complete	None	None	Plain	Feather				11	8	2	11
MTP 61	251005/5783815	0.15	Quartz	Flake - Complete	33- 66%	None	Plain	Feather				8	10	3	10
MTP 61	251005/5783815	0.15	Quartz	Flake - Complete	None	None	Plain	Step				11	16	4	16
MTP 61	251005/5783815	0.15	Quartz	Angular Fragment	33- 66%	None						20	15	5	20
MTP 61	251005/5783815	0.15	Quartz	Angular Fragment	None	None						15	5	4	15
MTP 61	251005/5783815	0.15	Quartz	Angular Fragment	None	None						21	12	6	21
MTP 61	251005/5783815	0.15	Quartz	Angular Fragment	None	None						8	6	5	8
MTP 61	251005/5783815	0.15	Quartz	Angular Fragment	None	None						11	5	1	11
MTP 61	251005/5783815	0.15	Quartz	Flake - Complete	None	1-32%	Plain	Step				7	8	3	8

Test Pit	Coordinates MGA/GDA94 Zone 55 (Easting/Northing)	Depth (m)	Raw Material	Primary Form	Cortex %	% Edge of Retouch/ Use- wear	Flake Platform	Flake Termination	Number of Complete Scars	Longest Scar (mm)	Formal Tool/Core type	Length (mm)	Width (mm)	Thickness (mm)	Max. Dimension (mm)
MTP 61	251005/5783815	0.15	Quartz	Flake - Proximal	None	None	Plain					18	7	3	18
MTP 61	251005/5783815	0.15	Quartz	Angular Fragment	None	None						16	10	3	16
MTP 61	251005/5783815	0.15	Quartz	Angular Fragment	None	None						13	7	4	13
MTP 61	251005/5783815	0.15	Quartz	Flake - Complete	None	None	Plain	Feather				15	7	3	15
MTP 61	251005/5783815	0.15	Quartz	Flake - Complete	None	None	Plain	Feather				13	21	4	21
MTP 61	251005/5783815	0.15	Quartz	Angular Fragment	None	None						8	8	2	8
MTP 61	251005/5783815	0.15	Quartz	Angular Fragment	None	None						11	6	3	11
MTP 61	251005/5783815	0.15	Quartz	Angular Fragment	None	None						9	5	2	9
MTP 61	251005/5783815	0.15	Quartz	Flake - Complete	None	None	Plain	Feather				17	18	5	18
MTP 63	251005/5783790	0.35	Quartzite	Flake - Complete	None	None	Plain	Feather				35	26	11	36
MTP 63	251005/5783790	0.35	Silcrete	Flake - Complete	None	1-32%	Plain	Feather				14	9	4	18
MTP 63	251005/5783790	0.35	Silcrete	Flake - Complete	None	1-32%	Plain	Feather				16	9	2	16
MTP 63	251005/5783790	0.15	Quartz	Flake - Complete	None	1-32%	Plain	Feather				15	11	2	16
MTP 63	251005/5783790	0.15	Quartz	Angular Fragment	None	None						12	8	5	12
MTP 61	251005/5783815	0.35	Quartz	Flake - Complete	None	None	Plain	Feather				10	8	3	11
MTP 61	251005/5783815	0.35	Quartz	Flake - Complete	None	None	Plain	Feather				11	7	2	11
MTP 61	251005/5783815	0.35	Quartz	Angular Fragment	None	None						16	12	13	18
MTP 61	251005/5783815	0.35	Quartz	Flake - medial	None	None						19	10	5	22
MTP 61	251005/5783815	0.35	Quartz	Flake - Distal	None	1-32%		Feather				30	16	7	30
MTP 61	251005/5783815	0.3	Quartzite	Core - Bidirectional	None	None			2	15		25	20	20	32

Test Pit	Coordinates MGA/GDA94 Zone 55 (Easting/Northing)	Depth (m)	Raw Material	Primary Form	Cortex %	% Edge of Retouch/ Use- wear	Flake Platform	Flake Termination	Number of Complete Scars	Longest Scar (mm)	Formal Tool/Core type	Length (mm)	Width (mm)	Thickness (mm)	Max. Dimension (mm)
MTP 61	251005/5783815	0.3	Quartzite	Flake - Complete	None	None	Plain	Feather				11	10	5	16
MTP 61	251005/5783815	0.3	Quartz	Flake - Complete	1-32%	None	Plain	Feather				20	11	7	20
MTP 61	251005/5783815	0.3	Quartz	Angular Fragment	None	None						19	11	3	19
MTP 61	251005/5783815	0.3	Quartz	Flake - Complete	None	None	Crushed	Step				8	7	2	15
MTP 61	251005/5783815	0.3	Quartz	Flake - Complete	None	None	Plain	Feather				10	5	5	13
MTP 61	251005/5783815	0.2	Quartzite	Flake - Complete	1-32%	1-32%	Plain	Hinge			Scraper - Steep-edged	29	19	18	30
MTP 61	251005/5783815	0.2	Quartz	Flake - Proximal	None	None	Plain					12	11	3	14
MTP 61	251005/5783815	0.2	Quartz	Core - Unidirectional	None	None			1	13		14	10	6	17
MTP 61	251005/5783815	0.2	Quartz	Angular Fragment	None	None						18	7	5	18
MTP 61	251005/5783815	0.2	Quartz	Flake - Complete	None	None	Plain	Feather				13	18	5	18
MTP 61	251005/5783815	0.2	Quartz	Flake - Proximal	None	None	Crushed					14	9	2	15
MTP 61	251005/5783815	0.2	Quartz	Flake - Complete	None	None	Plain	Feather				8	7	3	14
MTP 61	251005/5783815	0.2	Quartz	Flake - Complete	None	None	Plain	Feather				9	6	3	10
MTP 61	251005/5783815	0.2	Quartz	Flake - Complete	None	33-66%	Plain	Feather				8	8	2	11
MTP 61	251005/5783815	0.2	Quartz	Flake - Proximal	None	None	Plain					12	7	2	14
MTP 61	251005/5783815	0.2	Quartz	Angular Fragment	None	None						15	10	2	15
MTP 61	251005/5783815	0.2	Quartz	Flake - Complete	None	None	Plain	Feather				7	6	2	9
MTP 61	251005/5783815	0.2	Quartz	Flake - Proximal	1-32%	None	Plain					10	13	3	25
MTP 61	251005/5783815	0.2	Quartz	Angular Fragment	None	None						18	12	7	18

Test Pit	Coordinates MGA/GDA94 Zone 55 (Easting/Northing)	Depth (m)	Raw Material	Primary Form	Cortex %	% Edge of Retouch/ Use- wear	Flake Platform	Flake Termination	Number of Complete Scars	Longest Scar (mm)	Formal Tool/Core type	Length (mm)	Width (mm)	Thickness (mm)	Max. Dimension (mm)
MTP 61	251005/5783815	0.2	Quartz	Flake - Complete	1-32%	1-32%	Plain	Feather			Scraper - Steep-edged	21	8	5	22
MTP 61	251005/5783815	0.2	Quartz	Angular Fragment	None	None						8	7	2	8
MTP 61	251005/5783815	0.2	Quartz	Angular Fragment	None	None						10	7	5	8
MTP 61	251005/5783815	0.2	Quartz	Flake - Complete	None	1-32%	Plain	Feather			Scraper - Round-edged	15	10	5	18
MTP 61	251005/5783815	0.2	Quartz	Flake - Complete	None	1-32%	Plain	Feather				10	5	3	10
MTP 61	251005/5783815	0.2	Quartz	Angular Fragment	None	None						9	6	2	10
MTP 61	251005/5783815	0.2	Quartz	Angular Fragment	1-32%	None						12	7	4	12
MTP 61	251005/5783815	0.2	Quartz	Flake - Complete	None	1-32%	Plain	Feather				16	10	3	17
MTP 61	251005/5783815	0.2	Quartz	Flake - Complete	None	None	Plain	Feather				8	7	2	10
MTP 61	251005/5783815	0.2	Quartz	Angular Fragment	67-99%	None						10	7	4	10
MTP 61	251005/5783815	0.2	Quartz	Angular Fragment	None	None						16	5	3	16
MTP 61	251005/5783815	0.2	Quartz	Flake - Complete	None	1-32%	Plain	Hinge			Scraper - Steep-edged	27	21	13	28
MTP 61	251005/5783815	0.2	Quartz	Flake - Proximal	None	1-32%	Plain					20	14	7	23
MTP 61	251005/5783815	0.2	Quartz	Angular Fragment	None	None						14	8	7	14
MTP 61	251005/5783815	0.2	Quartz	Angular Fragment	None	None						4	3	1	4
MTP 61	251005/5783815	0.2	Quartz	Flake - Complete	None	None	Plain	Feather				7	7	2	8
MTP 61	251005/5783815	0.2	Quartz	Flake - Distal	None	None		Step				12	9	2	12
MTP 61	251005/5783815	0.2	Quartz	Angular Fragment	None	None						7	7	5	7
MTP 61	251005/5783815	0.25	Quartz	Flake - Complete	None	1-32%	Plain	Hinge				21	5	5	22



Test Pit	Coordinates MGA/GDA94 Zone 55 (Easting/Northing)	Depth (m)	Raw Material	Primary Form	Cortex %	% Edge of Retouch/ Use- wear	Flake Platform	Flake Termination	Number of Complete Scars	Longest Scar (mm)	Formal Tool/Core type	Length (mm)	Width (mm)	Thickness (mm)	Max. Dimension (mm)
MTP 61	251005/5783815	0.25	Quartzite	Core - Bidirectional	None	None			5	19	Core - Horseshoof	34	43	30	45
MTP 61	251005/5783815	0.25	Quartzite	Core - Bidirectional	1-32%	None			5	18		25	36	24	49
MTP 61	251005/5783815	0.25	Quartz	Angular Fragment	None	None						11	6	4	12
MTP 61	251005/5783815	0.25	Quartz	Flake - Complete	None	None	Plain	Feather				10	10	3	11
MTP 61	251005/5783815	0.25	Quartz	Angular Fragment	None	None						25	11	9	25
MTP 61	251005/5783815	0.25	Quartz	Core - Unidirectional	None	None			2	10		14	16	7	19
Surface	251025/5783968	0	Quartz	Flake - Complete	None	None	Plain	Feather				27	12	10	27
MTP 45	251030/5783940	0.1	Quartz	Blade - complete	None	None	Plain	Feather				21	9	4	22
MTP 45	251030/5783940	0.1	Quartz	Angular Fragment	33-66%	None						14	11	3	14
MTP 45	251030/5783940	0.3	Quartzite	Flake - Complete	None	1-32%	Plain	Feather				13	16	6	16
MTP 45	251030/5783940	0.3	Quartz	Angular Fragment	None	None						10	8	3	10
MTP 45	251030/5783940	0.3	Quartz	Angular Fragment	None	None						7	5	3	7
MTP 45	251030/5783940	0.3	Quartz	Angular Fragment	None	None						12	8	6	12
MTP 45	251030/5783940	0.3	Quartz	Angular Fragment	None	None						8	7	4	10
MTP 45	251030/5783940	0.3	Quartz	Angular Fragment	1-32%	None						11	8	5	11
MTP 45	251030/5783940	0.3	Quartz	Flake - Complete	None	None	Plain	Feather				13	7	4	14
MTP 45	251030/5783940	0.65	Quartzite	Flake - Complete	None	None	Plain	Feather				10	7	2	11
MTP 45	251030/5783940	0.65	Quartzite	Flake - Proximal	None	1-32%	Plain					14	9	4	16
MTP 45	251030/5783940	0.4	Quartzite	Flake - Longitudinal Split	None	None	Plain	Feather				10	6	3	10

Test Pit	Coordinates MGA/GDA94 Zone 55 (Easting/Northing)	Depth (m)	Raw Material	Primary Form	Cortex %	% Edge of Retouch/ Use- wear	Flake Platform	Flake Termination	Number of Complete Scars	Longest Scar (mm)	Formal Tool/Core type	Length (mm)	Width (mm)	Thickness (mm)	Max. Dimension (mm)
MTP 45	251030/5783940	0.4	Quartzite	Flake - Proximal	None	1-32%	Plain				Scraper - Round-edged	15	16	6	18
MTP 45	251030/5783940	0.4	Quartzite	Flake - Complete	None	1-32%	Plain	Hinge				13	19	5	22
MTP 45	251030/5783940	0.4	Quartz	Angular Fragment	None	None						11	8	6	11
MTP 45	251030/5783940	0.4	Silcrete	Flake - medial	None	1-32%						12	8	3	14
MTP 45	251030/5783940	0.4	Silcrete	Flake - Proximal	None	1-32%	Plain					13	18	2	18
MTP 45	251030/5783940	0.75	Quartz	Flake - Longitudinal Split	None	None	Plain	Feather				30	9	6	30
MTP 45	251030/5783940	0.55	Quartz	Angular Fragment	None	None						12	6	5	12
MTP 45	251030/5783940	0.55	Silcrete	Flake - Complete	None	33-66%	Flaked	Feather			Scraper - Thumbnail	17	15	4	17
MTP 59	251030/5783840	0.15	Quartz	Angular Fragment	1-32%	None						7	6	4	7
MTP 59	251030/5783840	0.25	Other	Flake - Complete	None	None	Plain	Feather				15	7	3	15
MTP 59	251030/5783840	0.3	Quartz	Flake - Complete	None	1-32%	Plain	Feather				16	9	2	16
MTP 59	251030/5783840	0.1	Quartz	Angular Fragment	1-32%	None						17	11	3	17
MTP 59	251030/5783840	0.1	Silcrete	Flake - Complete	None	1-32%	Plain	Feather				6	9	2	10
MTP 64	251030/5783790	0.25	Silcrete	Core - Unidirectional	None	None			1	13		22	23	14	30
MTP 64	251030/5783790	0.1	Quartzite	Core - Bidirectional	None	None			2	15		29	37	8	37
MTP 64	251030/5783790	0.1	Quartz	Flake - Complete	None	1-32%	Plain	Feather				13	12	3	15

Table 15: Summary artefact analysis of VAHR 7721-1435

### 10.2.2 Site formation processes

The stone artefacts recorded during the Standard and Complex Assessments were identified as being an extension of a previously registered site to the north of the Activity Area (VAHR 7721-0835). The artefacts previously registered as VAHR 7721-0835 were located on the same landform and were found in a similar context to the artefacts identified during current investigations (Clark 2007, CHMP 10068). Therefore, Bruces Creek Artefact Scatter (VAHR 7721-1435) was merged with this site. This Aboriginal place lies on a volcanic plain and ridge, immediately west of the embankment leading down to Bruce Creek. Most of the artefacts were found within the compact brown sandy silt topsoil layer, however some artefacts were found within the brown sandy silt intermediate layer, characterised by pebble or ironstone buckshot inclusions. It is possible that disturbance has allowed artefacts to shift within the deposit. Overall, the place has poor contextual integrity and there was evidence of some ground disturbance by rabbit burrowing, erosion along the creek embankment, agricultural practices such as ploughing and livestock grazing, and by the construction of a house and garden.

VAHR 7721-1435 has been registered as an artefact scatter. The artefact assemblage is large, consisting of two hundred and seventy quartz, quartzite, silcrete, and glass artefacts. The high density of artefacts exhibiting evidence of both stone tool manufacture (cores, angular fragments) and subsistence activities (formal tool types, retouch, use-wear) suggests that the site was visited numerous times and may have been a place of prolonged habitation or 'base camp' (see Holdaway and Stern 2004: 53). However, it is likely that water erosion, animal disturbance and agricultural activities have caused some of the artefacts, at least, to have shifted within the sandy silt making it unlikely that all of the artefacts were recorded *in situ*.

The single flaked glass artefact found within MTP59 indicates Aboriginal presence in the area from at least the contact-period and may also show evidence of interaction between Aboriginals and Europeans in the area.

### 10.2.3 Results of the Artefact Analysis

The stone artefact assemblage that makes up Bruces Creek Artefact Scatter (VAHR 7721-1435) consists of two hundred and seventy quartz, quartzite, silcrete, and glass artefacts. The largest number of artefacts were made from quartz (n=167) which would have been common in the region. The results are consistent with previous assessments that indicate that quartz, quartzite and silcrete are the most common raw materials in the geographic region (e.g. Marshall and Hyett 2007; Bullers et al. 2014).

Quartz is a difficult raw material to work with due to natural imperfections in the crystalline structure which make breakage patterns often unpredictable (Holdaway & Stern 2004: 24). Nevertheless, it is common in Aboriginal stone tool assemblages for its ability to form durable sharp edges with little effort.

Quartzite is a quartz-rich sandstone that has been recrystallized by heat and/or pressure. It is also a commonly occurring raw material in stone tool assemblages in the region. Fine-grained varieties are better suited to knapping than coarser-grained varieties which produce irregular breakage patterns (Holdaway & Stern 2004: 24).

Silcrete, another commonly occurring raw material in Aboriginal stone tool assemblages, varies in texture and thus varies in suitability for knapping. According to Holdaway and Stern (2004), coarser-grained silcretes generally produce 'more durable edges', although they are likely to be less sharp than those 'produced from finer-grained varieties' (Holdaway and Stern 2004: 24).

Flaked glass is a common occurrence in post-contact Aboriginal archaeological sites (Gibbs and Harrison 2008). Often, flaked glass was used as a substitute for traditional lithic raw materials in the post-contact years, and while they sometimes show similar retouch characteristics to stone tools, non-retouched shards were also sometimes utilised (see Loy and Wolski 1999: 66). Veth and O'Connor (2005) have highlighted that more attention to these artefacts has the potential to reveal the complex social structure of post-contact settlements and show continuities in Aboriginal occupation that are often absent from the historical record.

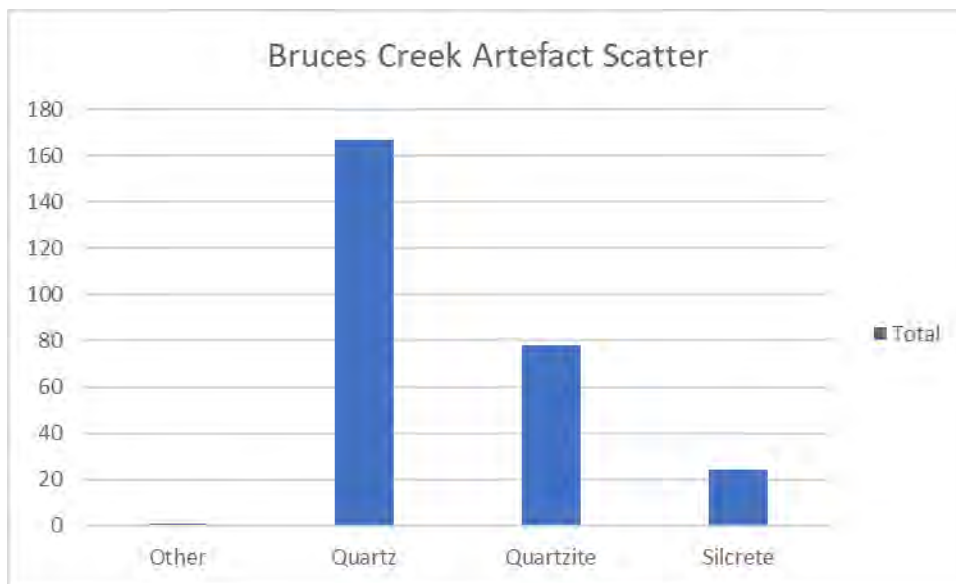


Figure 20: Raw material frequency in VAHR 7721-1435. 'Other' in this instance refers solely to glass.

All artefacts recorded during the assessment were produced using stone flaking techniques with the most common primary forms being complete flakes (n=102) and angular fragments (n=93). The high number of artefacts, particularly those related to subsistence activities and stone tool manufacture suggests that the place was likely to have been used as a place of stone tool manufacture and/or encampment.

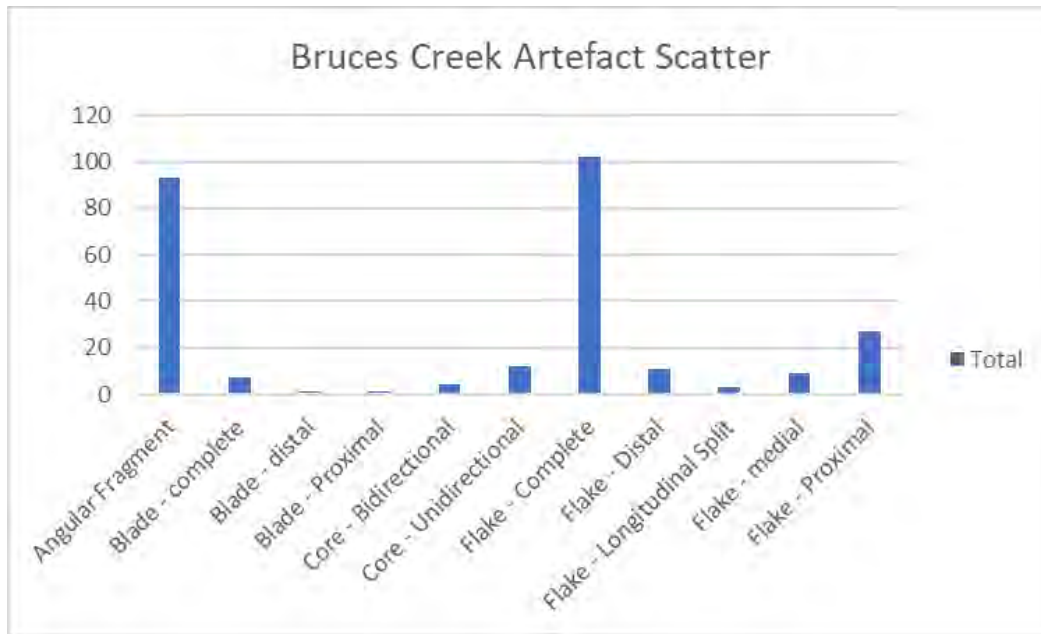


Figure 21: Primary form frequency in VAHR 7721-1435.

#### 10.2.4 Nature of Bruces Creek Artefact Scatter (VAHR 7721-1435)

Within the activity area, Bruces Creek Artefact Scatter (VAHR 7721-1435) consists of two hundred and seventy quartz, quartzite, silcrete and glass artefacts found in both surface and subsurface test pits. The scatter is located within Section 4 of the Activity Area, on a volcanic plain and ridge, immediately west of the embankment leading down to Bruce Creek. Most of the artefacts were found within the brown sandy silt topsoil layer, however some artefacts were found within the brown sandy silt intermediate layer, characterised by pebble or ironstone buckshot inclusions. Overall, the place has poor contextual integrity and there was evidence of some ground disturbance by erosion and agricultural practices such as ploughing. Disturbance caused by humans and animals while the artefacts were on the surface is also likely to have occurred.



Photograph 59: Quartzite flakes from MTP22, 105cm depth



Photograph 60: Quartzite scraper from MTP22, 120cm depth



Photograph 61: Silcrete flakes from MTP25, 40cm depth



Photograph 62: Quartzite core from MTP61, 25cm depth



Photograph 63: Silcrete backed geometric microlith showing dorsal and ventral sides from MTP32, 10cm depth





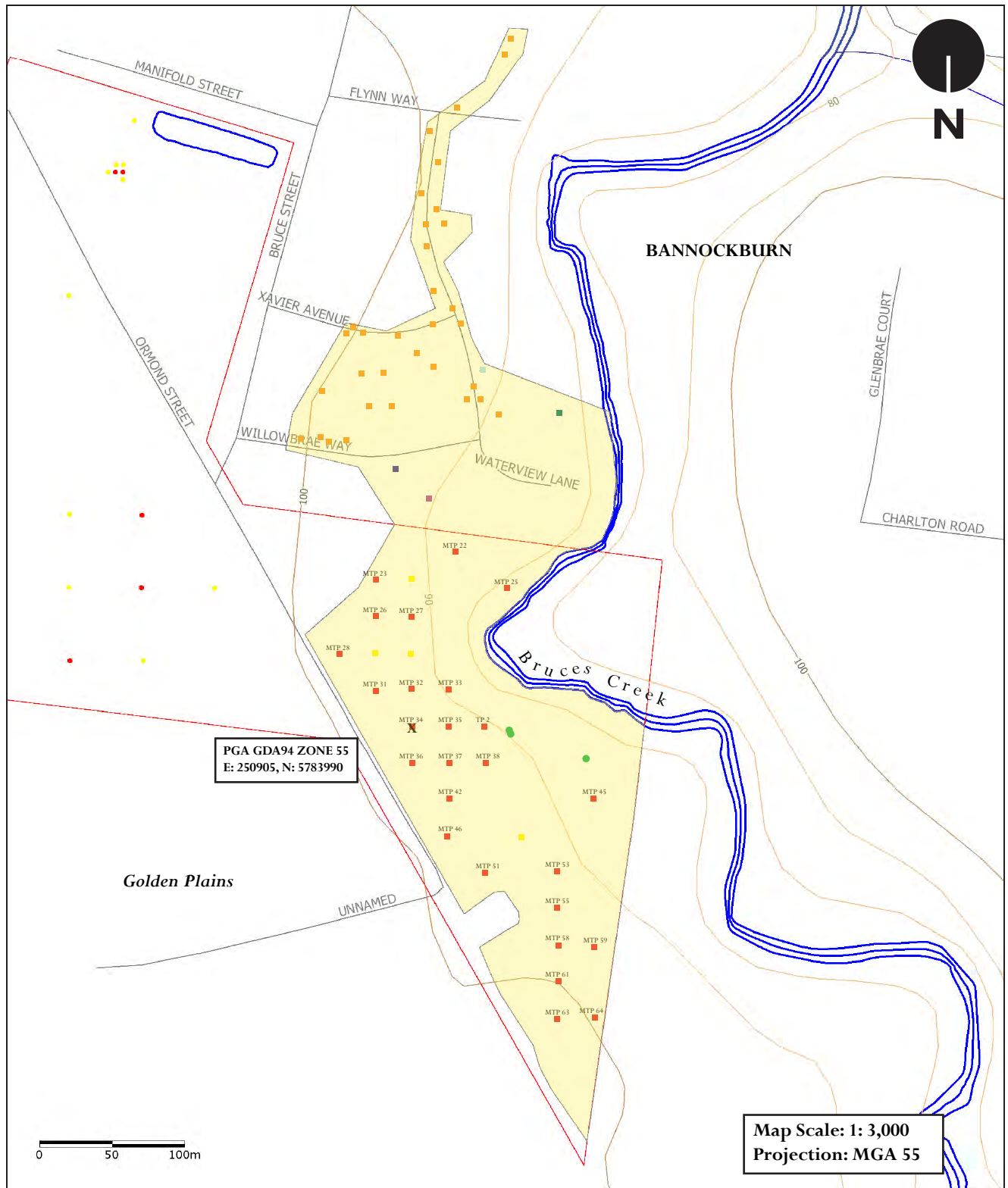
Photograph 64: Quartz core from MTP61, 25cm depth



Photograph 65: Glass flake showing dorsal and ventral sides from MTP59, 25cm depth

### 10.2.5 Extent of Bruce Creek Artefact Scatter (VAHR 7721-1435)

The extent is based on landform and encompasses the southern slopes leading down to Bruce Creek and includes the area from just inside the 100m contour line down to the bank of the creek. The northern boundary is defined by the extent defined in report 10068, place 7721-0835, to which this place is merging. The southern boundary is defined by the property boundary and Ormond Street as testing could not occur outside the activity area. If Aboriginal cultural heritage is present to the south it will likely be located on the ridgeline along Bruce Creek. The western boundary is defined by Ormond Street. Artefacts identified further west of the boundary should be interpreted as a distinct place, as it is a separate landform to the ridge leading to Bruce Creek. The eastern extent is defined by Bruce Creek. No places have been previously registered on the eastern side of Bruce Creek and the landform is comprised of a very steep slope.



**KEY**

- Activity Area
- Place Extent
- Primary Grid Coordinates
- VAHR 7721-0835
- VAHR 7721-0836
- VAHR 7721-0837
- VAHR 7721-0839
- VAHR 7721-0838-1
- Surface Artefacts
- Positive Test Pits
- Negative Test Pits

Map 7: Showing the extent of Bruces Creek Artefact Scatter (VAHR 7721-1435).



## 10.2.6 Significance of Bruces Creek Artefact Scatter (VAHR 7721-1435)

### Significance Criteria

Aboriginal Cultural Heritage Places that are represented by archaeological features and deposits are a non-renewable resource. For most areas of Victoria, archaeology is one of the few sources of historical information on the Aboriginal peoples that occupied the land prior to European settlement. Section 4 of the *Aboriginal Heritage Act 2006* includes archaeological, anthropological, contemporary, historical, scientific and social or spiritual significance values in its definition of cultural heritage significance.

### Scientific and Archaeological Values and Significance

Scientific or archaeological significance measures importance according to a number of criteria such as type, artefact density, and potential to provide information of scientific or educational value. Some archaeological sites, by their contents or antiquity, automatically attain a high degree of significance. For others, significance is based on their value as representative examples of types within a given geographical area or environmental context, or their rarity within an area. In assessing the degree of significance of a Place it is necessary to consider four comparative criteria (Russell and Winkworth 2010:10):

- Provenance;
- Rarity or representativeness;
- Condition or completeness;
- Interpretive capacity.

Scientific Significance is ranked according to the following categories or combination of categories:

- High;
- Medium;
- Low; or
- None.

High Scientific Significance means that the Place has good contextual integrity, has demonstrated or potentially demonstrates high values for research potential or comparative ability. A Place assessed to have no Scientific Significance is usually allocated to Places that have no contextual integrity, the provenance is poor or has been disturbed to such an extent that the information value has been removed or modified.

The criteria used to assess Scientific Significance are not standards that can necessarily be measured in a scientific fashion. They are relative estimates based on the current state of knowledge of the archaeology within the general region and within the specific area under consideration.

### Statement of Scientific Significance

Bruces Creek Artefact Scatter VAHR 7721-1435 has been assessed as having medium scientific significance or potential, given the high density and location of the artefacts.

Many archaeological studies and CHMPs have occurred in the geographic region resulting in the registration of ninety-one Aboriginal cultural places. Low density artefact scatters are the most common registered place-type in the geographic region, making up fifty-nine of ninety places. In addition, most of the previous CHMPs in the geographic region have resulted in the identification of stone artefacts which suggests that they are common in the region.

The condition or completeness of the place is poor, with evidence of ground disturbance from previous land-use activities. Other disturbance includes the impact of animal burrowing and natural processes, such as movement of sediments by water and bioturbation.

The interpretive capacity of the place is moderate, due to the high density of artefacts and formal tool-types, as well as the location of the place along the creek embankment. The place can also fit into a wider framework for analysing Aboriginal occupation within the wider region.

VAHR No.	Primary Coordinates MGA94 Zone 55 (Easting/ Northing)	Site Representativeness		Integrity	Research Potential	Educational Potential	Scientific Significance
7721-1435	250905/5783990	Regionally Common	Locally Common	Poor	Medium	Medium	Medium

Table 16: Significance Assessment of Bruces Creek Artefact Scatter (VAHR 7721-1435).

### 10.2.7 Cultural Significance According to Aboriginal Tradition

No specific comments on the cultural significance of VAHR 7721-1435 were provided by the WTOAC members involved in the conduct of the assessment. However, all cultural material is significant to the Aboriginal community as it provides a tangible link to the past, a connection to country and is a non-renewable source of information about the lifestyles of the ancestors of the Wadawurrung people.

A general statement of significance for all sites from Mr Bryon Powell, former Chairperson of the Wadawurrung Traditional Owners Aboriginal Corporation is documented below:

*"All sites within the Wathaurung area are significant in cultural terms as they are a tangible link to our past and a non-renewable source of information about the lifestyle of our ancestors.*

*The cultural significance afforded to the sites by the Aboriginal community must be given a higher standing than the scientific rating as the scientific rating is based on a European perspective without due regard to the value of the Aboriginal culture as a whole."*

### **10.3 Manifold Street Artefact Scatter (VAHR 7721-1434)**

The following section provides details and analysis of Aboriginal cultural heritage identified during the Complex Assessment. The Primary Grid Coordinate for Manifold Street Artefact Scatter (VAHR 7721-1434) is E:250702, N:5784370 (MGA/GDA94, Zone 55).

#### **10.3.1 Artefact Analysis**

Attribute and technological analyses were undertaken on the assemblage observing the typological categories prescribed by AV. The definitions and interpretation of lithics primarily followed those outlined in Holdaway and Stern (2004). The collected subsurface lithic artefacts were sorted prior to analysis. The attributes of the artefacts were recorded using electronic callipers and a DN1040 table magnifying lamp, which provided 1.75 to 4x magnification to assist in identification of use-wear, retouch, flaking scars and raw material type in the laboratory at the TerraCulture offices.

Test Pit	Coordinates MGA/GDA94 Zone 55 (Easting/Northing)	Depth (m)	Raw Material	Primary Form	Cortex %	% Edge of Retouch/Use-wear	Flake Platform	Flake Termination	Number of Complete Scars	Longest Scar (mm)	Formal Tool/Core type	Length (mm)	Width (mm)	Thickness (mm)	Max. Dimension (mm)
TP4	250702/5784370	0.15	Silcrete	Flake - Complete	None	33-66%	plain	feather			Backed - Geometric Microlith	19	10	4	20
TP4	250702/5784370	0.15	Silcrete	Flake - proximal	None	1-32%	plain					10	13	5	14
TP4	250702/5784370	0.25	Silcrete	Flake - proximal	None	none	plain					14	14	2	17
TP4	250702/5784370	0.25	Silcrete	Angular Fragment	None	none						11	5	5	11
TP4	250702/5784370	0.25	Silcrete	Flake - distal	None	1-32%		feather				9	13	3	15
TP4	250702/5784370	0.25	Silcrete	Flake - Complete	None	1-32%	crushed	feather				9	13	1	13
TP4	250702/5784370	0.25	Silcrete	Flake - proximal	None	1-32%	crushed					10	9	1	12
TP4	250702/5784370	0.25	Silcrete	Flake - Complete	None	none	plain	feather				13	10	2	19
TP4	250702/5784370	0.25	Silcrete	Blade - complete	None	1-32%	plain	feather				14	5	2	15
TP4	250702/5784370	0.25	Silcrete	Angular Fragment	None	none						8	8	3	8
TP4	250702/5784370	0.25	Silcrete	Core - unidirectional	None	none			1	11		18	7	5	18
TP4	250702/5784370	0.25	Silcrete	Flake - Complete	None	1-32%	plain	feather				13	8	1	15
TP4	250702/5784370	0.25	Silcrete	Angular Fragment	None	none						16	8	7	16
RTP4.3	250707/5784370	0.25	Quartzite	Flake - distal	None	1-32%		Step				20	11	4	20
RTP4.3	250707/5784370	0.25	Quartzite	Flake - proximal	None	1-32%	plain					11	15	6	18
TP4	250702/5784370	0.2	Silcrete	Flake - Complete	None	1-32%	plain	feather				13	11	3	17
TP4	250702/5784370	0.2	Silcrete	Flake - proximal	None	none	plain					10	10	3	12
TP4	250702/5784370	0.2	Silcrete	Flake - Complete	None	none	plain	feather				6	7	2	7
TP4	250702/5784370	0.2	Silcrete	Flake - Longitudinal Split	None	1-32%	plain	feather				24	15	5	25
TP4	250702/5784370	0.2	Silcrete	Flake - proximal	None	1-32%	crushed					12	15	2	17

Test Pit	Coordinates MGA/GDA94 Zone 55 (Easting/Northing)	Depth (m)	Raw Material	Primary Form	Cortex %	% Edge of Retouch/ Use- wear	Flake Platform	Flake Termination	Number of Complete Scars	Longest Scar (mm)	Formal Tool/Core type	Length (mm)	Width (mm)	Thickness (mm)	Max. Dimension (mm)
TP4	250702/5784370	0.2	Silcrete	Flake - Complete	None	1-32%	crushed	feather				8	8	1	10
TP4	250702/5784370	0.2	Silcrete	Flake - proximal	None	none	plain					7	8	2	10
TP4	250702/5784370	0.2	Silcrete	Flake - Complete	None	1-32%	plain	feather				13	11	3	14
TP4	250702/5784370	0.2	Silcrete	Core - Bifacial	None	none			3	10		12	20	14	23
TP4	250702/5784370	0.2	Silcrete	Core - Bidirectional	None	none			2	9		11	18	13	18

**Table 17: Summary of artefact analysis from VAHR 7721-1434**

### 10.3.2 Site formation processes

The stone artefacts recorded during the Standard and Complex Assessments were registered with Aboriginal Victoria as Manifold Street Artefact Scatter (VAHR 7721-1434). This Aboriginal place lies on a volcanic plain, approximately 290 metres west of Bruce Creek. All of the artefacts were found within the intermediate light greyish brown compact silty sand layer. It is likely that disturbance has allowed artefacts to shift within the deposit. Overall, the place has poor contextual integrity and there was evidence of some ground disturbance by rabbit burrowing, agricultural practices such as ploughing, viticultural practices and livestock grazing, as well as by the construction of a house, garden, and dam.

VAHR 7721-1434 has been registered as an artefact scatter, consisting of twenty-five silcrete and quartzite artefacts found within one 1m x 1m test pit and one 0.5m x 0.5m radial test pit. Due to the high density of artefacts found within close proximity to one another, homogeneity of raw material, and lack of identification of artefacts in four of the five radial test pits, it is likely that the artefacts were discarded as a single or a few discreet events. It is likely that agricultural and viticultural activities have caused some of the artefacts, however, to have shifted within the silty sand making it unlikely that the artefacts were recorded *in situ*. This makes it difficult to understand the initial site formation processes.

### 10.3.3 Results of the Artefact Analysis

The stone artefact assemblage that makes up Manifold Street Artefact Scatter (VAHR 7721-1434) consists of twenty-five artefacts made from silcrete and quartzite. The largest number of artefacts were made from silcrete (n=23) which would have been common in the region, although there is no source of silcrete within the Activity Area. The nearest known silcrete quarry is located at Maude (approximately 14km north of the Activity Area) and Sutherlands Creek (approximately 5km northeast of the Activity Area), so it is possible that it was sourced from these areas (see Light and Tuechler 2014: 53). The results are consistent with previous assessments that indicate that quartz, quartzite and silcrete are the most common raw materials in the geographic region.

Silcrete varies in texture and thus varies in suitability for knapping. According to Holdaway and Stern (2004), coarser-grained silcretes generally produce 'more durable edges', although they are likely to be less sharp than those 'produced from finer-grained varieties' (Holdaway and Stern 2004: 24).

Quartzite is a quartz-rich sandstone that has been recrystallized by heat and/or pressure. It is also a commonly occurring raw material in stone tool assemblages in the region. Fine-grained varieties are

better suited to knapping than coarser-grained varieties which produce irregular breakage patterns (Holdaway & Stern 2004: 24).



Figure 22: Raw material frequency in VAHR 7721-1434.

All artefacts recorded during the assessment were produced using stone flaking techniques with the most common primary forms being complete flakes and complete blades. The high presence of cores (n=3) relative to the number angular fragments and flakes suggests that the place was likely the location of a single knapping event, rather than a place of large-scale stone tool manufacture or encampment.

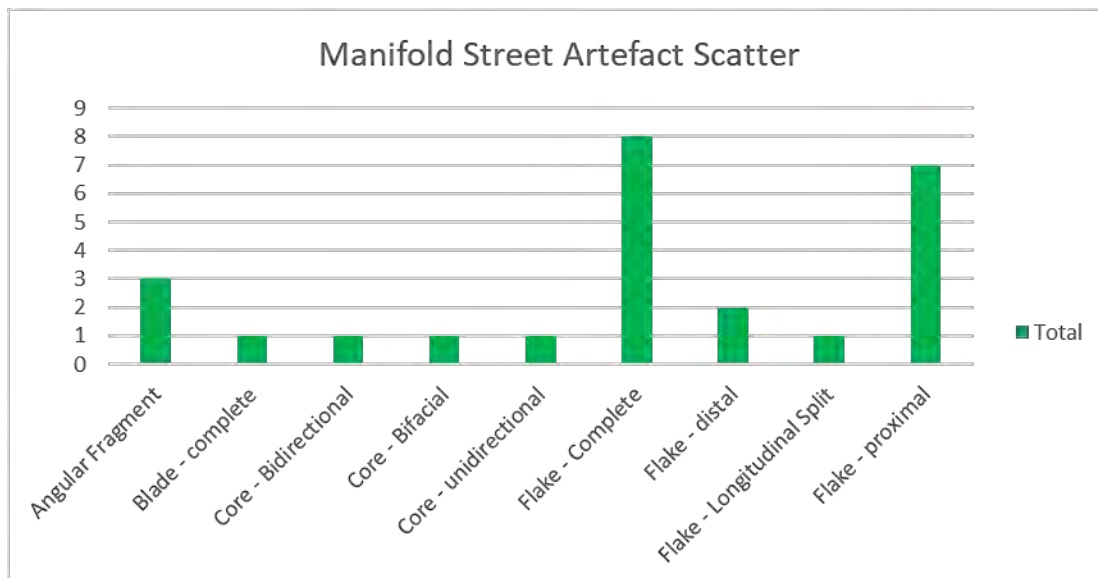


Figure 23: Primary form frequency in VAHR 7721-1434.

#### **10.3.4 Nature of Manifold Street Artefact Scatter (VAHR 7721-1434)**

Within the Activity Area, Manifold Street Artefact Scatter (VAHR 7721-1434) consists of twenty-five silcrete and quartzite artefacts found in subsurface test pits. The scatter is located within Section 1 of the Activity Area, in a flat volcanic plain approximately 290 metres west of Bruce Creek. All of the artefacts were found within the intermediate light greyish brown silty sand layer, at depths of between 150-250mm. Overall, the place has very poor contextual integrity and there was evidence of major ground disturbance by agricultural and viticultural practices such as ploughing. Disturbance caused by humans and animals while the artefacts were on the surface is also likely to have occurred.





Photograph 66: Silcrete artefacts from TP4, 20cm depth



Photograph 67: Close-up of silcrete core from TP4, 20cm depth



Photograph 68: Backed geometric microlith from TP4, 15cm depth



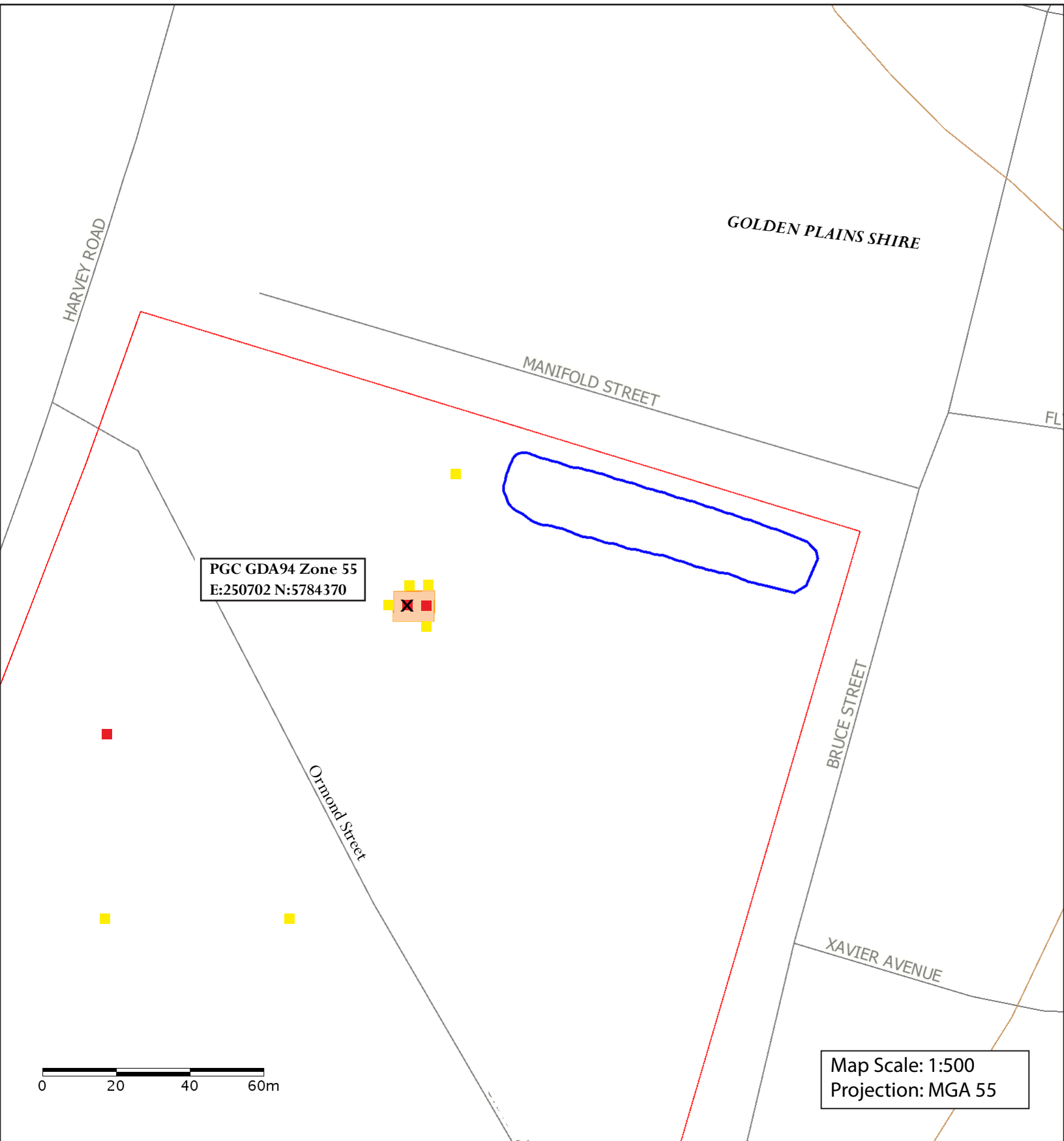
Photograph 69: Silcrete flake from TP4, 15cm depth



Photograph 70: Quartzite flakes from TP4.3, 25cm depth

### 10.3.5 Extent of Manifold Street Artefact Scatter (VAHR 7721-1434)

The extent is based on radial subsurface testing that was undertaken during the Complex Assessment of CHMP 15813. The extent encompasses the two positive test pits (TP4 and RTP4.3) and is defined to the north, south and west by the presence of negative test pits. The eastern boundary is defined by a vineyard which has caused disturbance to the landform through viticultural practices.



**KEY**

- Activity Area
- Place Extent
- Positive Testpits
- Negative Testpits
- X Primary Coordinates

Map 8: Showing the extent of Manifold Street Artefact Scatter (VAHR 7721-1434).

### 10.3.6 Significance of Manifold Street Artefact Scatter (VAHR 7721-1434)

#### Significance Criteria

Aboriginal Cultural Heritage Places that are represented by archaeological features and deposits are a non-renewable resource. For most areas of Victoria, archaeology is one of the few sources of historical information on the Aboriginal peoples that occupied the land prior to European settlement. Section 4 of the *Aboriginal Heritage Act 2006* includes archaeological, anthropological, contemporary, historical, scientific and social or spiritual significance values in its definition of cultural heritage significance.

#### Scientific and Archaeological Values and Significance

Scientific or archaeological significance measures importance according to a number of criteria such as type, artefact density, and potential to provide information of scientific or educational value. Some archaeological sites, by their contents or antiquity, automatically attain a high degree of significance. For others, significance is based on their value as representative examples of types within a given geographical area or environmental context, or their rarity within an area. In assessing the degree of significance of a Place it is necessary to consider four comparative criteria (Russell and Winkworth 2010:10):

- Provenance;
- Rarity or representativeness;
- Condition or completeness;
- Interpretive capacity.

Scientific Significance is ranked according to the following categories or combination of categories:

- High;
- Medium;
- Low; or
- None.

High Scientific Significance means that the Place has good contextual integrity, has demonstrated or potentially demonstrates high values for research potential or comparative ability. A Place assessed to have no Scientific Significance is usually allocated to Places that have no contextual integrity, the provenance is poor or has been disturbed to such an extent that the information value has been removed or modified.

The criteria used to assess Scientific Significance are not standards that can necessarily be measured in a scientific fashion. They are relative estimates based on the current state of knowledge of the archaeology within the general region and within the specific area under consideration.

### Statement of Scientific Significance

Manifold Street Artefact Scatter VAHR 7721-1434 has been assessed as having low scientific significance or potential, given the density of artefacts, the integrity of the site and the commonness of the place within the geographic region.

Many archaeological studies and CHMPs have occurred in the geographic region resulting in the registration of ninety-one Aboriginal cultural places. Low density artefact scatters are the most common registered place-type in the geographic region, making up fifty-nine of ninety places. In addition, most of the previous CHMPs in the geographic region have resulted in the identification of stone artefacts which suggests that they are common in the region.

The condition or completeness of the place is poor, with evidence of ground disturbance from previous land-use activities. Other disturbance includes the impact of animal burrowing and natural processes, such as movement of sediments by water and bioturbation.

The interpretive capacity of the place is low, due to the low density of artefacts making it difficult to complete meaningful statistical analysis, and the previous disturbance of the landform. However, the place can be fit into a wider framework for analysing Aboriginal occupation within the wider region.

VAHR No.	Primary Coordinates MGA94 Zone 55 (Easting/ Northing)	Site Representativeness		Integrity	Research Potential	Educational Potential	Scientific Significance
7721-1434	250702/5784370	Regionally Common	Locally Common	Poor	Poor	Poor	Poor

Table 18: Significance Assessment of Manifold Street Artefact Scatter (VAHR 7721-1434).

### 10.3.7 Cultural Significance According to Aboriginal Tradition

No specific comments on the cultural significance of VAHR 7721-1434 were provided by the WTOAC members involved in the conduct of the assessment. However, all cultural material is significant to the Aboriginal community as it provides a tangible link to the past, a connection to country and is a non-renewable source of information about the lifestyles of the ancestors of the Wadawurrung people.

A general statement of significance for all sites from Mr Bryon Powell, former Chairperson of the Wadawurrung Traditional Owners Aboriginal Corporation is documented below:

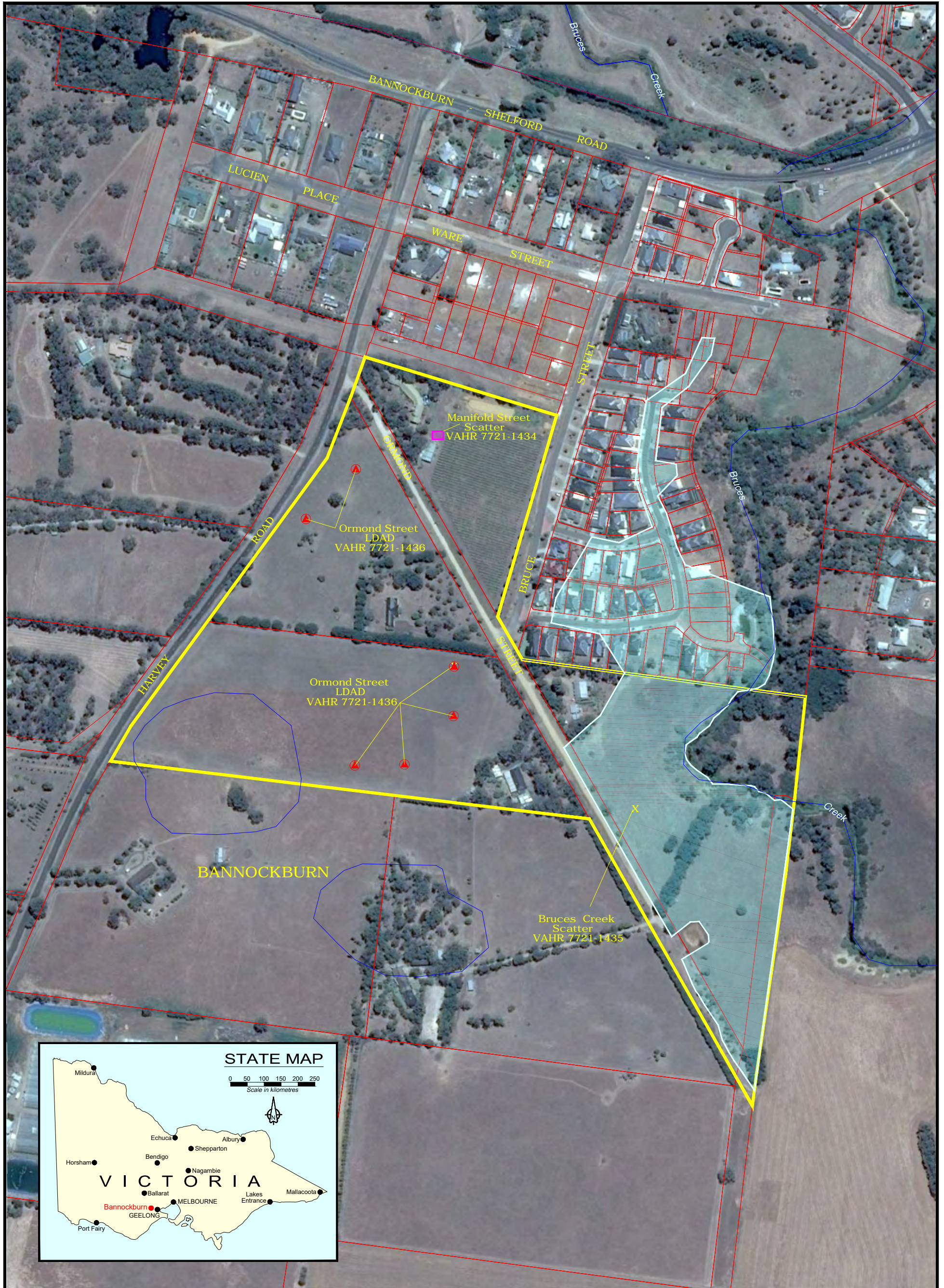
*"All sites within the Wathaurung area are significant in cultural terms as they are a tangible link to our past and a non-renewable source of information about the lifestyle of our ancestors.*

*The cultural significance afforded to the sites by the Aboriginal community must be given a higher standing than the scientific rating as the scientific rating is based on a European perspective without due regard to the value of the Aboriginal culture as a whole."*

#### **10.4 Conclusions of Aboriginal Cultural Heritage Assessment**

Three new Aboriginal cultural heritage places were identified within the activity area during the current assessment, consisting of two artefact scatters and one low density artefact distributions. The places were registered as Ormond Street LDAD (VAHR 7721-1436), Bruces Creek Artefact Scatter (VAHR 7721-1435), and Manifold Street Artefact Scatter (VAHR 7721-1434).

Bruces Creek Artefact Scatter (VAHR 7721-1435) was assessed as having medium scientific significance due to the high density of artefacts and its location relative to Bruce Creek. The remaining places were assessed as having low scientific significance due to the relatively low density of artefacts, the poor integrity of the places and the commonness of the place types in the geographic region. However, all cultural material is significant to the Aboriginal community as it provides a tangible link to the past, a connection to country and is a non-renewable source of information about the lifestyles of the ancestors of the Wadawurrung.



	<b>KEY</b> Activity Area Manifold Street scatter Ormond Road LDAD Bruces Creek Scatter VAHR 7721 - 0835	<b>GOLDEN PLAINS SHIRE</b>  Scale in metres	 Heritage Consultants 113 Victoria Rd, Northcote, VIC 3070 Ph. 03 9489 9583 Fax. 03 9481 2078	Drawn: R.M. Datum: GDA94 Date: 17/12/20 Heights: AHD Format: A3	<b>BRUCE STREET,          HARVEY AND ORMOND          ROADS, BANNOCKBURN          CULTURAL HERITAGE</b> Drawing No.: Cultural Heritage.dwg
		 Scale in kilometres			

MAP 9: Showing Cultural Heritage within the Activity Area.

## **11.0 Consideration of Section 61 Matters- Impact**

### **Assessment**

In accordance with the *Aboriginal Heritage Act 2006* and the *Aboriginal Heritage Regulations 2018*, an assessment must be made concerning whether the proposed activity can be conducted in a way that avoids harm to Aboriginal cultural heritage, or in a way that minimises harm to Aboriginal cultural heritage.

#### **11.1 Impact on Ormond Street LDAD (VAHR 7721-1436)**

This section assesses the impact of the proposed activity on the Ormond Street LDAD (VAHR 7721-1436).

##### **11.1.1 Can Harm be Avoided?**

The components of the place within the Activity Area are located in soils at depths ranging from approximately 15cm. Due to the nature and impact of the proposed activity it is not possible to avoid harm to the place.

##### **11.1.2 Can Harm be Minimised?**

The proposed activity involves excavation to depths of over 15cm across the entire Activity Area. Therefore, harm to the place cannot be minimised.

#### **11.2 Specific Measures Needed for the Protection of Ormond Street LDAD (VAHR 7721-1436)**

##### **11.2.1 Inductions**

Cultural heritage inductions will be conducted for all personnel involved in ground disturbance works. The inductions will provide information relating to the identification of Aboriginal artefacts, the deposits in which they may occur and explain the conditions and contingencies of the management plan, including what to do if suspected Aboriginal cultural heritage is identified. The details of the cultural heritage inductions are provided in Part 1 Section 1.1.2 of this CHMP.



### **11.2.2 Compliance Inspections**

Three compliance checks will take place before commencement, during the activity and following the completion of the activity for the purpose of ensuring compliance with the CHMP. The details of the compliance inspections are presented in Part 1 Section 1.1.3 of this CHMP.

### **11.2.3 Repatriation**

Following the completion of the activity, all artefacts collected during the assessment of VAHR 7721-1436 will be reburied according to the policies of the WTOAC. The details of the repatriation are provided in Part 1 Section 1.2.1 of this CHMP.

## **11.3 Impact on Bruces Creek Artefact Scatter (VAHR 7721-1435)**

This section assesses the impact of the proposed activity on the Bruces Creek Artefact Scatter (VAHR 7721-1435).

### **11.3.1 Can Harm be Avoided?**

The components of the place within the Activity Area are located in soils at depths ranging from the surface and approximately 5cm. Due to the nature and impact of the proposed activity it is not possible to avoid harm to the place.

### **11.3.2 Can Harm be Minimised?**

The proposed activity involves excavation to depths of over 5cm across the entire Activity Area. Therefore, harm to the place cannot be minimised.

## **11.4 Specific Measures Needed for the Protection of Bruces Creek Artefact Scatter (VAHR 7721-1435)**

### **11.4.1 Inductions**

Cultural heritage inductions will be conducted for all personnel involved in ground disturbance works. The inductions will provide information relating to the identification of Aboriginal artefacts, the deposits in which they may occur and explain the conditions and contingencies of the management plan, including what to do if suspected Aboriginal cultural heritage is identified. The details of the cultural heritage inductions are provided in Part 1 Section 1.1.2 of this CHMP.

### **11.4.2 Compliance Inspections**

Three compliance checks will take place before commencement, during the activity and following the completion of the activity for the purpose of ensuring compliance with the CHMP. The details of the compliance inspections are presented in Part 1 Section 1.1.3 of this CHMP.

### **11.4.3 Salvage Excavations**

Prior to the commencement of the activity, archaeological salvage excavations will be conducted for VAHR 7721-1435. The aim of the salvage is to recover the Aboriginal cultural heritage associated with this place in order to mitigate harm from the proposed activity and allow for the reburial of the artefacts. The details of the salvage excavations are provided in Part 1 Section 1.3.1 of this CHMP.

### **11.4.4 Repatriation**

Following the completion of the activity, all artefacts collected during the assessment and salvage of VAHR 7721-1435 will be reburied according to the policies of the WTOAC. The details of the repatriation are provided in Part 1 Section 1.3.2 of this CHMP.

## **11.5 Impact on Manifold Street Artefact Scatter (VAHR 7721-1434)**

This section assesses the impact of the proposed activity on the Manifold Street Artefact Scatter (VAHR 7721-1434).

### **11.5.1 Can Harm be Avoided?**

The components of the place within the Activity Area are located in soils at depths ranging from approximately 15cm. Due to the nature and impact of the proposed activity it is not possible to avoid harm to the place.

### **11.5.2 Can Harm be Minimised?**

The proposed activity involves excavation to depths of over 15cm across the entire Activity Area. Therefore, harm to the place cannot be minimised.

## **11.6 Specific Measures Needed for the Protection of Manifold Street Artefact Scatter (VAHR 7721-1434)**

### **11.6.1 Inductions**

Cultural heritage inductions will be conducted for all personnel involved in ground disturbance works. The inductions will provide information relating to the identification of Aboriginal artefacts, the deposits in which they may occur and explain the conditions and contingencies of the management plan, including what to do if suspected Aboriginal cultural heritage is identified. The details of the cultural heritage inductions are provided in Part 1 Section 1.1.2 of this CHMP.

### **11.6.2 Compliance Inspections**

Three compliance checks will take place before commencement, during the activity and following the completion of the activity for the purpose of ensuring compliance with the CHMP. The details of the compliance inspections are presented in Part 1 Section 1.1.3 of this CHMP.

### **11.6.3 Repatriation**

Following the completion of the activity, all artefacts collected during the assessment and salvage of VAHR 7721-1434 will be reburied according to the policies of the WTOAC. The details of the repatriation are provided in Part 1 Section 1.4.1 of this CHMP.

## **11.7 Cumulative Impacts of the Activity on Aboriginal Cultural Heritage in the Region**

Artefact scatters and low-density artefact distributions are common in the geographic region with a total of 27 artefact scatters and 59 LDAD components previously identified. Previous development in the geographic region has caused the destruction of many of the Aboriginal Cultural Heritage Places recorded as part of CHMPs. However, a large amount of the region remains rural/semi-rural, meaning that unrecorded artefact scatters are highly likely to be present.

The proposed activity will cause harm to Ormond Street LDAD (VAHR 7721-1436), Bruces Creek Artefact Scatter (VAHR 7721-1435), and Manifold Street Artefact Scatter (VAHR 7721-1434). However, the reburial of Aboriginal cultural heritage recovered during the assessment and subsequent salvage within a designated area of public open space will ensure that harm to these places is mitigated and the area

maintains a connection to the Aboriginal community.

It is recommended that future CHMPs in the Golden Plains region emphasise the importance of retaining Aboriginal cultural heritage to minimise the impacts from future developments.

## **11.8 Contingency Plans**

Relevant contingency plans for this Activity Area are detailed in Part 1 Section 2.0 of this report. They include the following:

- Section 61 Matters (Section 2.1);
- Dispute resolution (Section 2.2);
- Discovery of Aboriginal human remains during the activity (Section 2.3);
- Discovery of Aboriginal cultural heritage during the activity (Section 2.4);
- Protocol for handling sensitive information (Section 2.5);
- Reporting discovery of Aboriginal cultural heritage during works (Section 2.6); and
- Reviewing compliance (Section 2.7).

## **11.9 Custody and Management Arrangements**

The reburial of artefacts must be undertaken in accordance with the following WTOAC standard procedures:

- a) Cultural material to be reburied must be placed in a durable container manufactured by the WTOAC;
- b) A separate container is to be manufactured for each Aboriginal Place to be reburied;
- c) Where an Aboriginal Place is comprised of a large amount of cultural material it will be necessary to manufacture a number of containers to rebury the cultural material;
- d) The contents of the container must include the cultural material to be reburied, a catalogue of the cultural material to be reburied on both paper and on an archive quality storage medium, a copy of the relevant sections of the CHMP under which the reburial is being performed and a handful of soil from the Aboriginal Place from which the cultural material originated;
- e) The reburial must be attended by a Wadawurrung Traditional Owner and a representative;
- f) A smoking ceremony must be performed prior to the reburial of cultural material;
- g) Flagging tape must be laid within the hole at a depth of 300mm above the reburied cultural material to identify that cultural material is buried below the flagging tape;

- h) Once reburied, the reburial location must be recorded to sub-metre accuracy by the HA and be relocatable;
- i) The relevant VAHR site record card must be updated by submitting an Object Collection component form with the reburial location details. This must be completed by the HA and lodged with AV;
- j) Following the reburial, interpretive signage must be placed within the activity area. The content of that interpretive signage, the method of its construction and the location for its placement must be developed in consultation with the WTOAC; and
- k) The cost of the manufacture of the container, the analysis and preparation of the cultural material for reburial, smoking ceremony, WTOAC attendance at the reburial and any consultation with the WTOAC or materials associated with the interpretive signage must be borne by the Sponsor.

The costs associated with the recording of the reburial location and updating of the relevant VAHR site record by the HA must be borne by the Sponsor.

## **Part 3: Other Information**

## References

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## **Appendices**

## **Appendix A: Notice of Intent and Response from the RAP**

## Notice of Intent to prepare a Cultural Heritage Management Plan for the purposes of the *Aboriginal Heritage Act 2006*

This form can be used by the Sponsor of a Cultural Heritage Management Plan to complete the notification provisions pursuant to s.54 of the *Aboriginal Heritage Act 2006* (the "Act").

For clarification on any of the following please contact Victorian Aboriginal Heritage Register (VAHR) enquiries on 1800-726-003.

### SECTION 1 - Sponsor information

Sponsor: TGM Group Pty Ltd  
 ABN/ACN: 11125568461  
 Contact Name: Chris Marshall  
 Postal Address: PO Box 1137, Geelong VIC 3220  
 Business Number: 5202 4600 Mobile: \_\_\_\_\_  
 Email Address: chrism@tgmgroup.com

### Sponsor's agent (if relevant)

Company: \_\_\_\_\_  
 Contact Name: \_\_\_\_\_  
 Postal Address: \_\_\_\_\_  
 Business Number: \_\_\_\_\_ Mobile: \_\_\_\_\_  
 Email Address: \_\_\_\_\_

### SECTION 2 - Description of proposed activity and location

Project Name: Ormond Street Bannockburn Subdivision  
 Municipal district: Golden Plains Shire Council

Clearly identify the proposed activity for which the cultural heritage management plan is to be prepared (ie. Mining, road construction, housing subdivision)

Subdivision \_\_\_\_\_

### SECTION 3 - Cultural Heritage Advisor

Catherine Webb Terraculture Pty Ltd cwebb@terraculture.com.au  
*Name Company Email address*

### SECTION 4 - Expected start and finish date for the cultural heritage management plan

Start Date: 19-Jun-2018 Finish Date: 01-Jul-2019

## SECTION 5 - Why are you preparing this cultural heritage management plan?

- A cultural heritage management plan is required by the Aboriginal Heritage Regulations 2007  
*What is the high Impact Activity as it is listed in the regulations?*  
 Subdivision  
 Is any part of the activity an area of cultural heritage sensitivity, as listed in the regulations? Yes
- Other Reasons (Voluntary)
- An Environment Effects Statement is required
- A Cultural Heritage Management Plan is required by the Minister for Aboriginal Affairs.
- An Impact Management Plan or Comprehensive Impact Statement is required for the activity

## SECTION 6 - List the relevant registered Aboriginal parties (if any)

*This section is to be completed where there are registered Aboriginal parties in relation to the management plan.*  
 Wathaurung Aboriginal Corporation

## SECTION 7A - List the relevant Aboriginal groups or Aboriginal people with whom the Sponsor intends to consult (if any)

*This section is to be completed only if the proposed activity in the management plan is to be carried out in an area where there is **no Registered Aboriginal Party**.*

## SECTION 7B - Describe the intended consultation process (if any)

*This section is to be completed only if the proposed activity in the management plan is to be carried out in an area where there is **no Registered Aboriginal Party**.*

## SECTION 8 – State who will be evaluating this plan (mandatory)

*The plan is to be evaluated by:*

- A Registered Aboriginal Party **AND / OR**  
 If checked, list the relevant Registered Aboriginal Party Evaluating: Wathaurung Aboriginal Corporation
- The Secretary **AND / OR**
- The Council

## SECTION 9 – Preliminary Aboriginal Heritage Tests (PAHTs)

*List the Reference Number(s) of any PAHTs conducted in relation to the proposed activity:*

## SECTION 10 - Notification checklist

Ensure that any relevant registered Aboriginal party/ies is also notified. A copy of this notice with a map attached may be used for this purpose.  
 (A registered Aboriginal party is allowed up to 14 days to provide a written response to a notification specifying whether or not it intends to evaluate the management plan.)

In addition to notifying the Deputy Director and any relevant registered Aboriginal party/ies, a Sponsor must also notify any owner and/or occupier of any land within the area to which the management plan relates. A copy of this notice with a map attached may be used for this purpose.

Ensure any municipal council, whose municipal district includes an area to which the cultural heritage management plan relates, is also notified. A copy of this notice, with a map attached, may also be used for this purpose.



## Wathaurung Aboriginal Corporation

ICN 3330  
trading as Wadawurrung  
ABN 11 312 302 330

20<sup>th</sup> June 2018

TGM Group Pty Ltd  
Chris Marshall  
PO Box 1137  
Geelong Vic 3220

To Whom It May Concern,

### **NOTICE OF INTENT TO PREPARE A CULTURAL HERITAGE MANAGEMENT PLAN**

I am writing to acknowledge your written notice of intention to prepare a management plan, received on the 20<sup>th</sup> June 2018, Ormond Street Bannockburn Subdivision CHMP 15813.

Wathaurung Aboriginal Corporation (WAC) trading as Wadawurrung is the Registered Aboriginal Party (RAP) for the proposed activity area and will:

1. Evaluate the plan when it is completed and
2. Pursuant to s.60 of the *Aboriginal Heritage Act 2006* give notice that the WAC will do all or any of the following-
  - (a) Consult with the sponsor in relation to the assessment of the area for the purposes of the plan.
  - (b) Consult with the sponsor in relation to the conditions to be included in the plan.
  - (c) Participate in the conduct of the assessment.

To aid in the development of the CHMP, the following process is requested as a minimum:

At least one pre-planning meeting with Sponsor and Heritage Advisor to determine process and methodology.

One post-investigation meeting to develop appropriate management recommendations.

And for the evaluation of the CHMP, the following is required:

1 hard copy, 1 electronic (PDF or word) copy and full payment to the Wadawurrung Office for evaluation.

Once all three are received the 30-day evaluation period will begin.

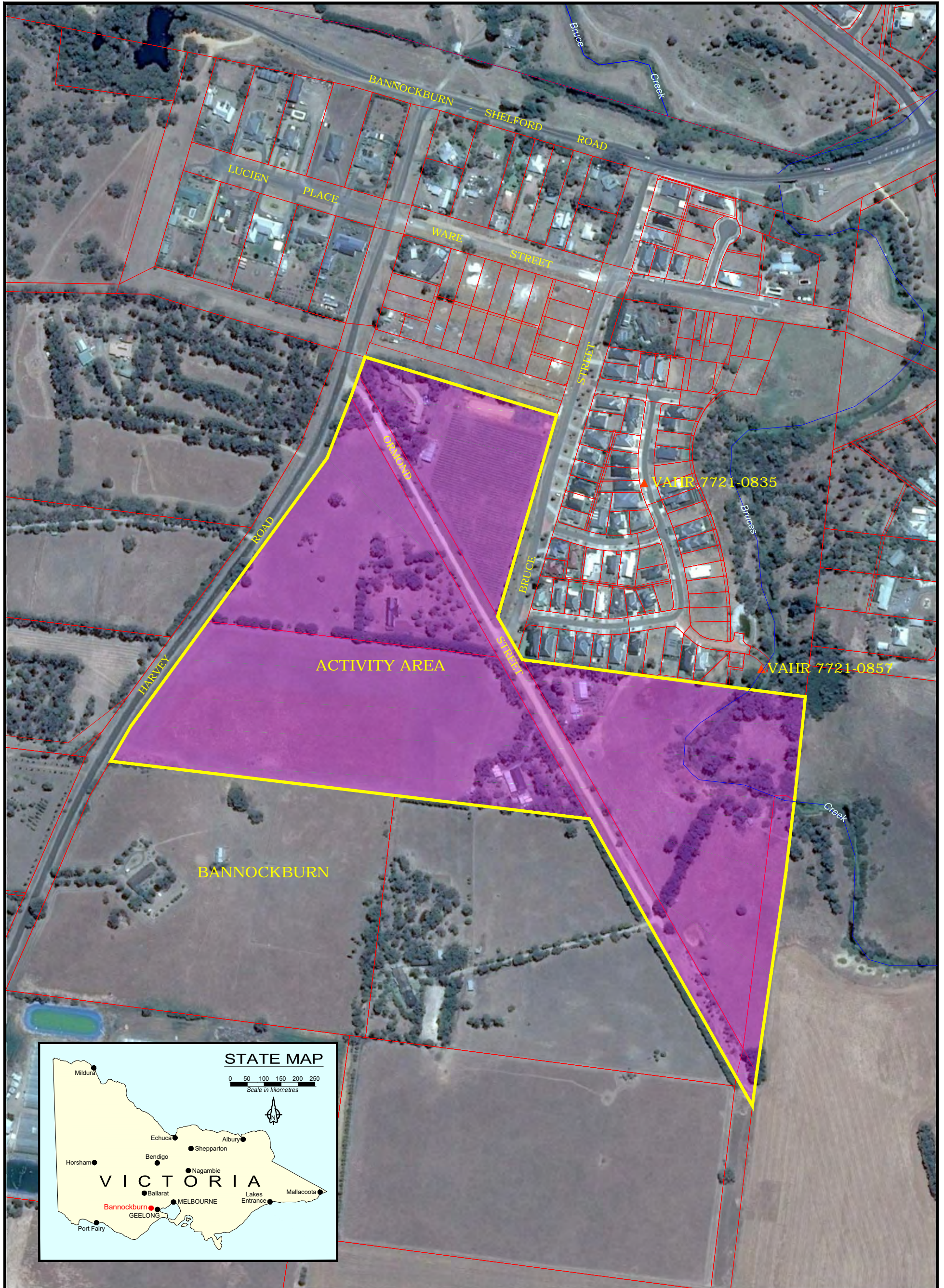
For further information regarding this advice, please contact

Paul Davis on:  
03 43080420  
[paul@wathcorp.com.au](mailto:paul@wathcorp.com.au)  
Yours sincerely,

**Paul Davis**  
**General Manager**  
Wathaurung Aboriginal Corporation  
Trading as Wadawurrung

99 Mair Street East  
BALLARAT VIC 3350

P: 03 4308 0420  
F: 03 4308 0421  
[www.wathcorp.com.au](http://www.wathcorp.com.au)



	<b>KEY</b> Activity Area Registered Aboriginal Cultural Heritage Place	<b>GOLDEN PLAINS SHIRE</b>  Scale in metres	 Heritage Consultants 113 Victoria Rd, Northcote, VIC 3070 Ph. 03 9486 4524 Fax. 03 9481 2078	Drawn: R.M. Datum: GDA94 Date: 27/9/2020 Heights: AHD Format: A3	<b>BRUCE STREET,          HARVEY AND ORMOND          ROADS, BANNOCKBURN          CHMP, ACTIVITY AREA</b> Drawing No.: Activity Area.dwg
				MGA94 Zone 55	

MAP 2: Showing the location of the Activity Area.



## For your reference- Submission of NOI for archaeological investigations in Bannockburn

Emily Knowles <[emily@terraculture.com.au](mailto:emily@terraculture.com.au)>

Thu 10/12/2020 3:21 PM

To: [contactus@geelongcity.vic.gov.au](mailto:contactus@geelongcity.vic.gov.au) <[contactus@geelongcity.vic.gov.au](mailto:contactus@geelongcity.vic.gov.au)>

Cc: Daniel Barker <[DBarker@terraculture.com.au](mailto:DBarker@terraculture.com.au)>

 2 attachments (762 KB)

herNoticeOfIntentForm-19Jun2018-120040116.pdf; Map 1.pdf;

Good Afternoon

Please find attached a Notice of Intent to prepare a Cultural Heritage Management Plan in Bannockburn, along with a map of the activity area.

Kind Regards,

**Emily Knowles**

Project Archaeologist

TERRACULTURE

Wednesday-Friday

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## Appendix B: Compliance Review Checklist

Task	Section within CHMP	Yes/No
Is a hard copy of approved CHMP 15813 containing this checklist kept onsite and referred to when necessary?	1.1.1	
Has an induction by the RAP been carried out prior to the commencement of the activity?	1.1.2	
Have compliance checks by the RAP been carried out before, during and after the activity, subject to OH&S requirements?	1.1.3	
Have the salvage excavations taken place following the pre-salvage meeting to develop the methodology?	1.3.1	
Has arrangement been made in consultation with the RAP for the repatriation of Aboriginal Cultural Heritage found during the CHMP and subsequent salvage?	1.2.1, 1.3.2, 1.4.1	
<b>Has all soil excavated during the conduct of the activity been retained within the Activity Area?</b>	1.1.5	
If unexpected Aboriginal cultural heritage or that changes the previously understood nature and extent of the registered place was identified during the activity, was the following undertaken:		
<ul style="list-style-type: none"> <li>▪ Have works in the immediate location of the Aboriginal cultural heritage or suspected Aboriginal cultural heritage been suspended and has a 10m exclusion zone been set up with an appropriate barrier and signage?</li> </ul>	2.4.1	
<ul style="list-style-type: none"> <li>▪ Has a Heritage Advisor been notified, and made an assessment within 48 hours of the discovery?</li> </ul>	2.4.2	
<ul style="list-style-type: none"> <li>▪ Has the Heritage Advisor taken all necessary steps to evaluate the nature and extent of the discovery and submitted all appropriate documentation with the VAHR within 2 weeks?</li> </ul>	2.4.3	
<ul style="list-style-type: none"> <li>▪ Has the appropriate course of action been determined and enacted according to the results of the evaluation of the discovery?</li> </ul>	2.4.4	

Task	Section within CHMP	Yes/No
<ul style="list-style-type: none"> <li>Have all conditions been met before recommencing activity?</li> </ul>	2.4.5	
<ul style="list-style-type: none"> <li>Have the custody and management arrangements determined in consultation with the RAP been completed?</li> </ul>	2.4.6	
If suspected human remains were discovered, was the following undertaken:		
<ul style="list-style-type: none"> <li>Were the RAP, Victoria Police and State Coroner's Office immediately notified? If the remains are reasonable suspected to be Aboriginal, has the Coronial Admissions and Enquiries hotline been immediately contacted on 1300 888 544?</li> </ul>	2.3	
<ul style="list-style-type: none"> <li>Has all activity in the vicinity stopped and the remains left in place?</li> </ul>	2.3.1	
<ul style="list-style-type: none"> <li>Have all relevant parties been notified of the discovery?</li> </ul>	2.3.2	
<ul style="list-style-type: none"> <li>Has an appropriate mitigation or salvage strategy as determined by the Victorian Aboriginal Heritage Council been implemented?</li> </ul>	2.3.3	
<ul style="list-style-type: none"> <li>Has the treatment of salvaged Aboriginal Ancestral remains been in accordance with the direction of the Victorian Aboriginal Heritage Council?</li> </ul>	2.3.4	
<ul style="list-style-type: none"> <li>Has the reburial site(s) been fully documented by an experienced and qualified archaeologist, clearly marked and all details provided to Aboriginal Victoria and appropriate management measures been implemented to ensure the remains are not disturbed in the future?</li> </ul>	2.3.5	

## Appendix C: Glossary of Terms

**Aboriginal Archaeological Place:** A site, place or area of land or of water that is of Cultural Heritage Significance to the Aboriginal people of Victoria.

**Aboriginal Archaeological Place Types:** Aboriginal archaeological Places can be classified into generic types according to their context, fabric and probable function. Aboriginal Victoria currently recognises some 10 site types including stone artefact scatters, shell middens and scarred trees.

**Aboriginal Artefact Scatter:** A collection of Aboriginal artefacts usually distributed across the surface of the ground. Stone artefacts are a common component and can be found in association with organic remains, shell, ochre and charcoal. Artefact scatters are the material remains of past Aboriginal use of a location and are generally referable to technological and economic behaviour. They are also called surface scatters.

**Aboriginal Burial:** Aboriginal interment consisting of human skeletal remains. Aboriginal burials occur in a wide range of forms and physical contexts and may be found with grave goods.

**Aboriginal Historic Place:** Aboriginal historic places are the locations of events, places or place names that were recorded in historical documents or in oral tradition during the *post contact period*. Unlike Aboriginal archaeological sites, Aboriginal historic places do not necessarily retain any physical evidence of any former structures, activities or specific events.

**Activity Area:** The area that is under investigation, also referred to as a study area.

**Angular Fragment:** Shatter or blocky pieces of stone produced during flaking processes.

**Archaeology:** Conventionally, the scientific study of the material remains of past human activity.

**Artefact:** Any object created or modified by humans.

**Assemblage:** Archaeological term used to describe a collection of artefacts associated by a particular place or time and assumed to have been generated by a single group of people. An assemblage can be made from different *artefact* types.

**AV:** Aboriginal Victoria, Department of Premier and Cabinet (Victoria).

**Blade:** A *flake* that is at least twice as long as it is wide.

**CHMP:** Cultural Heritage Management Plan

**Complex Assessment:** The subsurface excavation component of the Cultural Heritage Management Plan.

**Context:** Refers to the place of artefacts or archaeological features with regards to time and space.

**Core:** A piece of stone from which other stone artefacts are made. In *freehand flaking* the *core* would be struck with a *hammerstone* removing *flakes* and other fragments of stone often referred to as *debitage*.

**Core Tool:** A *core* displaying signs of use.

**Cortex:** The weathered external surface of a stone. Cortex often identifies the origins and original form of flaked stone, e.g. river pebbles.

**Debitage:** By-products produced during the flaking process.

**Desktop Assessment:** The background research component of a Cultural Heritage Management Plan.

**Excavation:** The systematic removal of archaeological deposits using archaeological techniques.

**Flake:** A piece of stone detached by percussion or pressure from a *core*. The flake will usually display characteristic features such as a *platform* and *bulb of percussion*. The *core* will display a negative flake scar. These features assist in distinguishing between stone that has been altered through human agency and that which has been naturally shaped.

**Ground Visibility:** A term used to describe the area of the ground's surface that is visible during archaeological field surveys. Effective ground visibility refers to the actual area of ground visible during a field survey calculated as the area of ground inspected multiplied by the percentage of ground visibility.

**HA:** Heritage Advisor.

**Hornfels:** Fine grained metamorphic stone, created by contact between sedimentary stones and intrusive igneous masses to produce a stone which is quite hard and durable.

**Industry:** A single class of artefacts that are consistent in their form and that can be credited to a single group of people.

**In situ:** In its original place.

**Layer:** A recognisable band of material of varying thickness, also known as a *stratum*.

**LDAD:** Low Density Artefact Distribution.

**Platform:** Face of core that is struck by a *hammerstone*, leaving remnants on both the *core* and the resultant *flake*.

**Pleistocene:** The geological period equivalent to the last ice age and preceding the *Holocene* from ca 2 million to 10,000 years ago. The late Pleistocene commonly refers to the last 40,000 years *BP*.

**RAP:** Registered Aboriginal Party

**Quartz:** A hard mineral that varies from white to blue in colour and in transparency from opaque to clear.

**Quartzite:** A metamorphic rock formed through the 're-crystallisation of quartz rich sandstone'.

**Retouch:** Secondary modifications to stone artefacts such as trimming or resharpener. Retouch often indicates use of a stone *flake* and therefore its identification as a stone tool.

**Salvage Excavation:** The systematic documentation and recovery of an archaeological site prior to its destruction, also known as rescue archaeology.

**Scarred Trees, Aboriginal:** Trees that were used as a source of bark to make canoes and other items. Bark was cut using a stone axe and then levered from the sapwood leaving a scar. The bark around the edge of this scar is called regrowth. Natural scarring is common on some trees and is often difficult to distinguish from scars made by Aborigines during the *pre-contact period*.

**Scraper:** A stone tool made on a *flake* or *core* with *retouch* along one or more edges.

**Silcrete:** A highly siliceous rock formed by the replacement of a parent rock (commonly sandstone) by silica in solution.

**Spit:** Arbitrary quantity of excavated ground.

**Standard Assessment:** The survey component of the Cultural Heritage Management Plan.

**Stratigraphy:** A geological term used to describe the sequence of vertical *layers* and *deposits* that comprise an archaeological site.

**Strata:** The distinct layers of earth in an archaeological site.

**Subsurface Testing:** The testing for buried archaeological material through manual or mechanical excavation.

**Survey, Pedestrian:** The systematic examination of the ground surface for archaeological material, also known as a foot survey.

**Test Pit:** A small excavation unit dug to investigate the depth of stratum and the presence or absence of archaeological material.

**VAHR:** Victorian Aboriginal Heritage Register.

**WTOAC:** Wadawurrung Traditional Owners Aboriginal Corporation.

## **Appendix D: Activity Plans**





Rev.	Revision	Date
-	-	-

TGM Group  
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Geelong Vic 3220  
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**TGM**  
Geelong | Melbourne | Ballarat  
JAS-ANZ Accredited: Quality ISO 9001 • OH&S AS/NZS 4801 • Environment ISO 14001

<b>PLAN OF PROPOSED SUBDIVISION</b>		Job Number: 17170-100	Date of Issue: 12/02/2018
5, 20, 25 & 30 ORMOND STREET BANNOCKBURN, 3331		Sheet: 1 of 1	Date of Survey: N/A
LENGTHS ARE IN METRES			
1:1250			
Survey: N/A	Drawn: RJD	Checked: RJD	
<b>DWG: 17170-100-PROPOSAL1 REV: 1</b>			

### Appendix E: Artefact Catalogue

Test Pit	Coordinates		Raw Material	Primary Form	Cortex %	% Edge of Retouch / Use-wear	Flake Platform	Flake Termination	Number of Complete Scars	Longest Scar (mm)	Formal Tool/Core type	Length (mm)	Width (mm)	Thickness (mm)	Max. Dimension (mm)
	MGA/GDA94 Zone 55 (Easting/Northing)	Depth (m)													
Surface	250972/5783988	0	Quartzite	Flake - Proximal	None	None	Flaked					23	20	11	23
Surface	250973/5783985	0	Quartz	Angular Fragment	None	None						14	8	2	14
Surface	251025/5783968	0	Quartz	Flake - Complete	None	None	Plain	Feather				27	12	10	27
TP2	250955/5783990	0.05	Silcrete	Flake - Proximal	None	1-32%	Crushed					10	11	2	13
TP2	250955/5783990	0.05	Quartz	Flake - Complete	None	None	Plain	Step				20	18	4	20
TP2	250955/5783990	0.1	Quartzite	Angular Fragment	None	None						13	13	4	15
TP2	250955/5783990	0.1	Quartzite	Core - Unidirectional	None	None			1	12		23	16	8	25
TP4	250702/5784370	0.15	Silcrete	Flake - Complete	None	33-66%	plain	feather			Backed - Geometric Microlith	19	10	4	20
TP4	250702/5784370	0.15	Silcrete	Flake - proximal	None	1-32%	plain					10	13	5	14
TP4	250702/5784370	0.25	Silcrete	Flake - proximal	None	none	plain					14	14	2	17
TP4	250702/5784370	0.25	Silcrete	Angular Fragment	None	none						11	5	5	11
TP4	250702/5784370	0.25	Silcrete	Flake - distal	None	1-32%		feather				9	13	3	15
TP4	250702/5784370	0.25	Silcrete	Flake - Complete	None	1-32%	crushed	feather				9	13	1	13
TP4	250702/5784370	0.25	Silcrete	Flake - proximal	None	1-32%	crushed					10	9	1	12
TP4	250702/5784370	0.25	Silcrete	Flake - Complete	None	none	plain	feather				13	10	2	19

TP4	250702/5784370	0.25	Silcrete	Blade - complete	None	1-32%	plain	feather				14	5	2	15	
TP4	250702/5784370	0.25	Silcrete	Angular Fragment	None	none						8	8	3	8	
TP4	250702/5784370	0.25	Silcrete	Core - unidirectional	None	none				1	11		18	7	5	18
TP4	250702/5784370	0.25	Silcrete	Flake - Complete	None	1-32%	plain	feather				13	8	1	15	
TP4	250702/5784370	0.25	Silcrete	Angular Fragment	None	none						16	8	7	16	
TP4	250702/5784370	0.2	Silcrete	Flake - Complete	None	1-32%	plain	feather				13	11	3	17	
TP4	250702/5784370	0.2	Silcrete	Flake - proximal	None	none	plain					10	10	3	12	
TP4	250702/5784370	0.2	Silcrete	Flake - Complete	None	none	plain	feather				6	7	2	7	
TP4	250702/5784370	0.2	Silcrete	Flake - Longitudinal Split	None	1-32%	plain	feather				24	15	5	25	
TP4	250702/5784370	0.2	Silcrete	Flake - proximal	None	1-32%	crushed					12	15	2	17	
TP4	250702/5784370	0.2	Silcrete	Flake - Complete	None	1-32%	crushed	feather				8	8	1	10	
TP4	250702/5784370	0.2	Silcrete	Flake - proximal	None	none	plain					7	8	2	10	
TP4	250702/5784370	0.2	Silcrete	Flake - Complete	None	1-32%	plain	feather				13	11	3	14	
TP4	250702/5784370	0.2	Silcrete	Core - Bifacial	None	none				3	10		12	20	14	23
TP4	250702/5784370	0.2	Silcrete	Core - Bidirectional	None	none				2	9		11	18	13	18
RTP4.3	250707/5784370	0.25	Quartzite	Flake - distal	None	1-32%		Step				20	11	4	20	
RTP4.3	250707/5784370	0.25	Quartzite	Flake - proximal	None	1-32%	plain					11	15	6	18	
MTP1	250620/5784335	0.24	Quartzite	Core - Bidirectional	none	None				3	12		26	17	10	31
MTP1	250620/5784335	0.24	Quartzite	Flake - proximal	none	1-32%	Plain					12	10	3	15	
MTP1	250620/5784335	0.24	Quartzite	Flake - medial	none	None						9	11	2	13	

MTP1	250620/5784335	0.24	Quartzite	Flake - complete	none	1-32%	Crushed	Feather				12	9	2	13
MTP1	250620/5784335	0.24	Quartzite	Flake - complete	none	33-66%	Plain	Feather				19	10	4	23
MTP2	250570/5784285	0.25	Quartzite	Blade - complete	None	33-66%	Plain	Feather				21	8	3	20
MTP2	250570/5784285	0.25	Quartzite	Flake - Complete	None	1-32%	Flaked	Plunge			Scraper - Steep-edged	28	13	8	29
MTP2	250570/5784285	0.15	Quartzite	Flake - Distal	None	1-32%		Feather				11	8	2	13
MTP2	250570/5784285	0.15	Quartzite	Flake - Longitudinal Split	None	1-32%	Plain	Feather				11	7	3	12
MTP2	250570/5784285	0.15	Quartzite	Flake - complete	None	1-32%	Plain	Feather				14	8	2	15
MTP2	250570/5784285	0.15	Quartzite	Flake - Distal	None	1-32%		Feather				12	14	3	21
MTP2	250570/5784285	0.15	Quartzite	Blade - complete	None	1-32%	Plain	Feather				17	7	2	20
MTP2	250570/5784285	0.15	Quartzite	Blade - complete	None	1-32%	Plain	Feather				32	9	7	32
MTP2	250570/5784285	0.15	Quartzite	Flake - proximal	none	1-32%	Plain					25	10	5	25
MTP2	250570/5784285	0.15	Quartzite	Core - unidirectional	1-32%	None			2	11		18	33	14	34
MTP11	250720/5784135	0.2	Quartz	Flake - complete	none	None	Plain	Feather				11	11	2	11
MTP16	250720/5784085	0.3	Quartzite	Blade - complete	none	1-32%	Plain	Feather				24	12	6	28
MTP19	250620/5784035	0.28	Quartzite	Flake - Distal	none	1-32%		Step			Notched Tool	24	32	8	32
MTP20	250670/5784035	0.35	Quartzite	Flake - Longitudinal Split	None	1-32%	Plain	Feather				21	15	4	21
MTP20	250670/5784035	0.18	Quartzite	Flake - Longitudinal Split	1-32%	33-66%	Plain	Feather				17	17	6	20
MTP22	250935/5784110	0.65	Quartzite	Core - Unidirectional	None	None			1	18		30	15	7	31

MTP2 2	250935/5784110	0.95	Quartzite	Flake - Complete	None	1-32%	Plain	Feather				30	29	12	35
MTP2 2	250935/5784110	0.95	Quartzite	Flake - Complete	None	1-32%	Plain	Feather				11	10	2	15
MTP2 2	250935/5784110	0.85	Quartzite	Blade - complete	None	33-66%	Plain	Feather				19	8	3	20
MTP2 2	250935/5784110	0.85	Quartzite	Flake - Complete	None	1-32%	Plain	Feather				12	5	2	12
MTP2 2	250935/5784110	0.85	Quartzite	Flake - Complete	None	1-32%	Plain	Feather				8	7	3	13
MTP2 2	250935/5784110	0.85	Quartzite	Angular Fragment	None	None						17	12	6	20
MTP2 2	250935/5784110	0.85	Quartz	Angular Fragment	None	None						9	5	10	3
MTP2 2	250935/5784110	0.85	Quartzite	Flake - Complete	None	None	Plain	Feather				12	8	2	14
MTP2 2	250935/5784110	0.85	Quartzite	Flake - Complete	None	1-32%	Plain	Feather				9	1	7	9
MTP2 2	250935/5784110	0.85	Quartzite	Flake - Complete	None	None	Plain	Hinge				13	5	5	13
MTP2 2	250935/5784110	0.85	Quartzite	Flake - Complete	None	1-32%	Plain	plunge				20	12	6	22
MTP2 2	250935/5784110	0.85	Quartz	Angular Fragment	None	None						12	5	3	12
MTP2 2	250935/5784110	0.85	Quartzite	Angular Fragment	None	None						12	9	6	12
MTP2 2	250935/5784110	1.3	Quartz	Angular Fragment	1-32%	None						32	16	10	32
MTP2 2	250935/5784110	1.3	Quartzite	Flake - Distal	None	1-32%		Feather				13	5	2	13
MTP2 2	250935/5784110	1.15	Quartzite	Flake - Proximal	None	1-32%	Flaked					15	5	3	16
MTP2 2	250935/5784110	1.15	Quartzite	Flake - Distal	None	1-32%		Feather				11	13	2	11
MTP2 2	250935/5784110	1.15	Quartzite	Flake - Complete	None	1-32%	Plain	Feather				8	7	1	11
MTP2 2	250935/5784110	1.15	Quartzite	Flake - medial	None	None						5	9	2	9
MTP2 2	250935/5784110	1.15	Quartzite	Flake - Complete	None	None	Plain	Feather				6	12	2	12

MTP2 2	250935/5784110	1.15	Quartzite	Flake - Proximal	None	None	Plain					8	9	2	14
MTP2 2	250935/5784110	1.15	Quartzite	Flake - Complete	None	1-32%	Crushed	Feather				9	12	1	12
MTP2 2	250935/5784110	0.55	Quartzite	Flake - Proximal	None	None	Plain					9	12	3	12
MTP2 2	250935/5784110	0.55	Quartzite	Flake - Proximal	None	None	Plain					14	17	5	20
MTP2 2	250935/5784110	0.55	Quartzite	Flake - Complete	None	1-32%	Plain	Hinge				27	19	8	28
MTP2 2	250935/5784110	1.2	Quartzite	Flake - Complete	None	33-66%	Plain	Feather			Scraper - Steep-edged	23	18	8	23
MTP2 2	250935/5784110	1.2	Quartz	Flake - medial	None	1-32%						11	8	4	12
MTP2 2	250935/5784110	1.05	Quartzite	Flake - Proximal	None	67-99%	Plain					31	26	5	32
MTP2 2	250935/5784110	1.05	Quartzite	Angular Fragment	None	None						11	5	3	11
MTP2 2	250935/5784110	1.05	Quartzite	Flake - Complete	None	None	Plain	Step				14	9	3	14
MTP2 2	250935/5784110	0.25	Quartzite	Flake - Complete	None	33-66%	Plain	Feather				17	18	2	22
MTP2 2	250935/5784110	0.25	Quartzite	Flake - Proximal	None	1-32%	Plain					24	12	5	25
MTP2 2	250935/5784110	0.25	Quartzite	Flake - Distal	None	1-32%		Feather				11	12	3	15
MTP2 2	250935/5784110	0.25	Quartzite	Flake - Complete	None	None	Plain	Feather				10	8	3	10
MTP2 2	250935/5784110	0.25	Quartzite	Angular Fragment	None	None						13	9	2	13
MTP2 2	250935/5784110	0.25	Quartzite	Flake - Complete	1-32%	1-32%	Plain	Feather			Notched Tool	43	22	10	44
MTP2 2	250935/5784110	0.25	Quartz	Angular Fragment	None	None						11	8	3	11
MTP2 3	250880/5784090	0.2	Quartz	Angular Fragment	None	None						12	9	2	12
MTP2 3	250880/5784090	0.15	Quartz	Angular Fragment	None	None						17	12	5	17
MTP2 3	250880/5784090	0.15	Quartz	Core - Unidirectional	1-32%	None				2	9	29	29	14	33

MTP2 5	250970/5784085	0.5	Silcrete	Flake - Proximal	None	None	Plain					15	12	5	23
MTP2 5	250970/5784085	0.5	Silcrete	Flake - Complete	None	1-32%	Crushe d	Feather				19	10	5	20
MTP2 5	250970/5784085	0.4	Silcrete	Flake - Complete	None	1-32%	Plain	Step				24	14	6	27
MTP2 5	250970/5784085	0.4	Silcrete	Blade - complete	None	1-32%	Plain	Feather				22	8	4	24
MTP2 5	250970/5784085	0.4	Silcrete	Flake - Complete	None	None	Plain	Step				27	12	6	28
MTP2 5	250970/5784085	0.4	Silcrete	Flake - Complete	None	1-32%	Plain	Feather				11	17	2	18
MTP2 5	250970/5784085	0.4	Silcrete	Flake - medial	None	None						6	10	2	10
MTP2 6	250880/5784065	0.25	Quartz	Angular Fragment	None	None						13	13	2	13
MTP2 7	250905/5784065	0.3	Quartz	Angular Fragment	1-32%	None						16	18	3	19
MTP2 8	250855/5784040	0.05	Quartz	Angular Fragment	33-66%	None						14	12	12	14
MTP2 8	250855/5784040	0.05	Quartz	Angular Fragment	1-32%	None						18	13	10	18
MTP2 8	250855/5784040	0.1	Quartz	Angular Fragment	None	None						13	10	4	15
MTP2 8	250855/5784040	0.1	Quartz	Angular Fragment	None	None						18	5	3	18
MTP2 8	250855/5784040	0.1	Quartz	Angular Fragment	None	None						12	8	8	12
MTP2 8	250855/5784040	0.1	Quartz	Flake - Complete	None	None	Plain	Feather				18	13	3	20
MTP2 8	250855/5784040	0.15	Quartz	Angular Fragment	None	None						13	10	3	13
MTP2 8	250855/5784040	0.15	Quartzite	Flake - Complete	None	1-32%	Flaked	Feather			Scraper - Steep- edged	25	21	11	29
MTP2 8	250855/5784040	0.05	Quartz	Flake - Complete	None	1-32%	Plain	Feather				13	11	4	15
MTP3 1	250880/5784015	0.25	Quartz	Core - Unidirection al	None	None				3	15	25	15	13	26
MTP3 1	250880/5784015	0.15	Silcrete	Flake - Proximal	None	None	Plain					19	12	3	20

MTP3 1	250880/5784015	0.15	Quartz	Angular Fragment	None	None						15	11	10	15
MTP3 1	250880/5784015	0.2	Quartzite	Flake - medial	None	None						28	24	7	33
MTP3 2	250905/5784015	0.2	Silcrete	Flake - Complete	None	67-99%	Plain	Feather				26	35	4	36
MTP3 2	250905/5784015	0.2	Quartz	Core - Unidirectional	None	None				3	9	13	25	22	26
MTP3 2	250905/5784015	0.1	Silcrete	Flake - Complete	None	67-99%	Flaked	Feather			Backed - Geometric Microlith	22	11	3	22
MTP3 2	250905/5784015	0.1	Quartz	Flake - Complete	None	1-32%	Plain	Feather				12	14	5	15
MTP3 2	250905/5784015	0.1	Silcrete	Core - Unidirectional	None	None				1	9	20	22	10	23
MTP3 3	250930/5784015	0.15	Quartzite	Flake - Distal	None	1-32%		Step				22	27	6	30
MTP3 4	250905/5783990	0.25	Quartz	Flake - Complete	None	1-32%	Plain	Feather				12	10	2	12
MTP3 4	250905/5783990	0.25	Quartz	Flake - Complete	None	None	Plain	Feather				12	13	3	14
MTP3 4	250905/5783990	0.25	Quartz	Flake - Complete	None	1-32%	Plain	Feather				13	10	2	13
MTP3 4	250905/5783990	0.2	Quartz	Angular Fragment	None	None						12	6	4	12
MTP3 4	250905/5783990	0.2	Quartz	Angular Fragment	None	None						8	8	4	8
MTP3 4	250905/5783990	0.2	Quartz	Angular Fragment	None	None						14	6	6	14
MTP3 4	250905/5783990	0.2	Quartz	Flake - Complete	None	None	Plain	Feather				9	8	2	9
MTP3 4	250905/5783990	0.2	Quartz	Angular Fragment	None	None						10	8	2	11
MTP3 4	250905/5783990	0.2	Quartz	Angular Fragment	None	None						15	7	4	15
MTP3 4	250905/5783990	0.2	Quartz	Angular Fragment	1-32%	None						25	17	11	25
MTP3 4	250905/5783990	0.2	Quartzite	Flake - Complete	None	33-66%	Plain	Feather				41	30	8	42



MTP3 4	250905/5783990	0.1	Quartz	Angular Fragment	1-32%	None						20	18	3	20
MTP3 4	250905/5783990	0.1	Quartz	Flake - Complete	None	1-32%	Plain	Feather				17	14	2	17
MTP3 4	250905/5783990	0.15	Quartz	Angular Fragment	None	None						11	10	2	12
MTP3 4	250905/5783990	0.15	Quartz	Angular Fragment	33-66%	None						10	12	2	12
MTP3 4	250905/5783990	0.15	Quartz	Angular Fragment	1-32%	None						10	8	3	10
MTP3 4	250905/5783990	0.15	Quartz	Angular Fragment	33-66%	None						17	13	3	17
MTP3 4	250905/5783990	0.15	Quartz	Flake - Distal	None	None		Feather				9	10	2	11
MTP3 4	250905/5783990	0.15	Quartz	Angular Fragment	None	None						8	5	3	8
MTP3 4	250905/5783990	0.15	Quartz	Angular Fragment	None	None						17	9	6	17
MTP3 4	250905/5783990	0.15	Quartz	Flake - Proximal	None	None	Crushe d					11	10	2	15
MTP3 4	250905/5783990	0.15	Quartz	Flake - Complete	33-66%	1-32%	Flaked	Feather				12	15	4	16
MTP3 4	250905/5783990	0.15	Quartz	Angular Fragment	1-32%	None						12	8	4	12
MTP3 4	250905/5783990	0.15	Quartz	Flake - Complete	None	None	Plain	Feather				9	9	3	11
MTP3 4	250905/5783990	0.15	Quartz	Angular Fragment	None	None						22	9	6	22
MTP3 4	250905/5783990	0.15	Quartz	Blade - complete	None	None	Plain	Step				22	8	3	23
MTP3 4	250905/5783990	0.15	Quartz	Angular Fragment	None	None						15	11	5	15
MTP3 4	250905/5783990	0.15	Quartz	Angular Fragment	1-32%	None						13	10	3	13
MTP3 5	250930/5783990	0.1	Quartz	Angular Fragment	None	None						20	13	5	20
MTP3 5	250930/5783990	0.15	Quartzite	Flake - Complete	None	1-32%	Plain	Feather				58	32	16	63
MTP3 5	250930/5783990	0.15	Silcrete	Flake - Distal	None	None		Step				30	24	8	32

MTP3 6	250905/5783965	0.2	Quartz	Angular Fragment	1-32%	None						15	8	2	15
MTP3 6	250905/5783965	0.2	Quartz	Angular Fragment	None	None						18	9	3	18
MTP3 6	250905/5783965	0.15	Quartz	Angular Fragment	None	None						15	8	3	15
MTP3 6	250905/5783965	0.25	Quartzite	Flake - Distal	None	None		Feather				16	20	10	20
MTP3 6	250905/5783965	0.25	Quartzite	Flake - Complete	None	None	Plain	Feather				23	13	5	23
MTP3 6	250905/5783965	0.25	Quartzite	Flake - Complete	None	33-66%	Plain	Hinge			Scraper - Steep-edged	32	17	4	33
MTP3 6	250905/5783965	0.25	Quartz	Angular Fragment	None	None						11	8	2	11
MTP3 7	250930/5783965	0.15	Quartzite	Flake - Complete	None	1-32%	Plain	Hinge				21	10	5	22
MTP3 7	250930/5783965	0.15	Quartzite	Angular Fragment	None	None						15	11	3	15
MTP3 7	250930/5783965	0.25	Quartzite	Core - Unidirectional	None	None				1	11	13	25	7	25
MTP3 7	250930/5783965	0.25	Quartzite	Flake - medial	None	None						23	18	6	27
MTP3 8	250955/5783965	0.25	Quartz	Flake - Complete	None	None	Plain	Feather				12	8	3	13
MTP3 8	250955/5783965	0.05	Quartz	Angular Fragment	None	None						15	19	4	19
MTP3 8	250955/5783965	0.05	Quartzite	Flake - Proximal	None	None	Plain					22	28	6	28
MTP3 8	250955/5783965	0.05	Quartz	Angular Fragment	None	None						27	25	12	27
MTP3 8	250955/5783965	0.3	Quartz	Flake - Complete	None	None	Plain	Feather				16	10	3	18
MTP3 8	250955/5783965	0.2	Quartzite	Flake - Proximal	None	None	Plain					31	15	6	31
MTP3 8	250955/5783965	0.2	Quartzite	Flake - Complete	None	33-66%	Flaked	Step				24	16	5	25
MTP3 8	250955/5783965	0.2	Quartzite	Blade - complete	None	1-32%	Plain	Feather				32	14	5	32
MTP3 8	250955/5783965	0.2	Quartzite	Flake - Complete	None	1-32%	Plain	Feather				21	13	5	21

MTP4 2	250930/5783940	0.1	Silcrete	Blade - Proximal	None	1-32%	Crushed					14	7	4	14
MTP4 2	250930/5783940	0.1	Silcrete	Flake - Proximal	None	1-32%	Plain					16	10	2	17
MTP4 2	250930/5783940	0.1	Quartz	Core - Unidirectional	None	None			2	10		16	30	13	32
MTP4 2	250930/5783940	0.15	Quartz	Angular Fragment	None	None						22	9	8	22
MTP4 2	250930/5783940	0.15	Quartz	Angular Fragment	None	None						12	7	3	12
MTP4 2	250930/5783940	0.15	Quartzite	Flake - Proximal	None	None	Crushed					18	20	5	21
MTP4 2	250930/5783940	0.15	Quartz	Flake - Proximal	None	None	Plain				Scraper - Steep-edged	25	15	9	28
MTP4 2	250930/5783940	0.15	Quartz	Flake - Distal	None	None		Feather				16	11	8	17
MTP4 2	250930/5783940	0.15	Quartzite	Flake - Complete	None	1-32%	Plain	Plunge				20	14	3	21
MTP4 2	250930/5783940	0.2	Quartzite	Flake - Complete	None	1-32%	Plain	Feather				25	27	6	28
MTP4 2	250930/5783940	0.2	Quartz	Flake - Complete	None	None	Plain	Feather				23	15	5	23
MTP4 2	250930/5783940	0.2	Quartz	Angular Fragment	None	None						22	13	11	22
MTP4 5	251030/5783940	0.1	Quartz	Blade - complete	None	None	Plain	Feather				21	9	4	22
MTP4 5	251030/5783940	0.1	Quartz	Angular Fragment	33-66%	None						14	11	3	14
MTP4 5	251030/5783940	0.3	Quartzite	Flake - Complete	None	1-32%	Plain	Feather				13	16	6	16
MTP4 5	251030/5783940	0.3	Quartz	Angular Fragment	None	None						10	8	3	10
MTP4 5	251030/5783940	0.3	Quartz	Angular Fragment	None	None						7	5	3	7
MTP4 5	251030/5783940	0.3	Quartz	Angular Fragment	None	None						12	8	6	12
MTP4 5	251030/5783940	0.3	Quartz	Angular Fragment	None	None						8	7	4	10
MTP4 5	251030/5783940	0.3	Quartz	Angular Fragment	1-32%	None						11	8	5	11

MTP4 5	251030/5783940	0.3	Quartz	Flake - Complete	None	None	Plain	Feather				13	7	4	14
MTP4 5	251030/5783940	0.65	Quartzite	Flake - Complete	None	None	Plain	Feather				10	7	2	11
MTP4 5	251030/5783940	0.65	Quartzite	Flake - Proximal	None	1-32%	Plain					14	9	4	16
MTP4 5	251030/5783940	0.4	Quartzite	Flake - Longitudinal Split	None	None	Plain	Feather				10	6	3	10
MTP4 5	251030/5783940	0.4	Quartzite	Flake - Proximal	None	1-32%	Plain				Scraper - Round-edged	15	16	6	18
MTP4 5	251030/5783940	0.4	Quartzite	Flake - Complete	None	1-32%	Plain	Hinge				13	19	5	22
MTP4 5	251030/5783940	0.4	Quartz	Angular Fragment	None	None						11	8	6	11
MTP4 5	251030/5783940	0.4	Silcrete	Flake - medial	None	1-32%						12	8	3	14
MTP4 5	251030/5783940	0.4	Silcrete	Flake - Proximal	None	1-32%	Plain					13	18	2	18
MTP4 5	251030/5783940	0.75	Quartz	Flake - Longitudinal Split	None	None	Plain	Feather				30	9	6	30
MTP4 5	251030/5783940	0.55	Quartz	Angular Fragment	None	None						12	6	5	12
MTP4 5	251030/5783940	0.55	Silcrete	Flake - Complete	None	33-66%	Flaked	Feather			Scraper - Thumbnail	17	15	4	17
MTP4 6	250930/5783915	0.25	Quartz	Flake - Complete	None	None	Crushed	Feather				22	13	6	22
MTP5 1	250955/5783890	0.15	Quartz	Blade - complete	None	None	Crushed	Plunge				20	6	4	20
MTP5 1	250955/5783890	0.15	Quartzite	Flake - Complete	None	None	Plain	Plunge				18	13	3	19
MTP5 3	251005/5783890	0.4	Quartz	Flake - Complete	None	None	Plain	Feather				42	20	12	42
MTP5 5	251005/5783865	0.15	Quartz	Flake - Complete	1-32%	1-32%	Plain	Feather			Scraper - Round-edged	33	27	15	35
MTP5 5	251005/5783865	0.15	Quartz	Flake - medial	None	None						10	8	6	13

MTP55	251005/5783865	0.15	Quartzite	Flake - Longitudinal Split	None	None	Plain	Feather				25	17	10	30
MTP55	251005/5783865	0.15	Quartzite	Blade - distal	None	33-66%		Feather				22	11	6	22
MTP55	251005/5783865	0.15	Quartzite	Flake - Complete	None	33-66%	Plain	Hinge			Scraper - Flat-edged	40	22	10	41
MTP55	251005/5783865	0.15	Quartzite	Flake - Distal	None	None		Feather				25	24	9	28
MTP55	251005/5783865	0.15	Silcrete	Core - Unidirectional	None	None				2	15	19	23	16	33
MTP55	251005/5783865	0.15	Silcrete	Flake - Proximal	None	None	Plain					15	10	5	17
MTP58	251005/5783840	0.2	Quartz	Flake - Proximal	1-32%	None	Plain					16	14	7	17
MTP58	251005/5783840	0.2	Quartz	Angular Fragment	None	None						9	6	4	9
MTP58	251005/5783840	0.2	Quartz	Flake - Complete	None	None	Plain	Feather				15	9	3	16
MTP58	251005/5783840	0.2	Quartz	Flake - Complete	33-66%	None	Plain	Feather				26	15	8	27
MTP58	251005/5783840	0.15	Quartzite	Flake - Complete	None	33-66%	Plain	Feather				30	16	7	35
MTP58	251005/5783840	0.15	Quartzite	Angular Fragment	None	None						20	18	5	20
MTP58	251005/5783840	0.15	Quartzite	Flake - Complete	None	33-66%	Plain	Feather			Scraper - Thumbnail	16	16	2	16
MTP58	251005/5783840	0.15	Quartz	Angular Fragment	33-66%	None						23	15	11	23
MTP58	251005/5783840	0.15	Quartz	Angular Fragment	None	None						19	15	6	19
MTP58	251005/5783840	0.15	Quartz	Flake - Complete	None	None	Plain	Feather				16	16	8	18
MTP58	251005/5783840	0.15	Quartz	Flake - Complete	None	None	Plain	Feather				24	16	8	25
MTP58	251005/5783840	0.15	Quartz	Angular Fragment	None	None						17	12	6	17
MTP58	251005/5783840	0.15	Quartz	Angular Fragment	None	None						18	9	5	18

MTP58	251005/5783840	0.15	Quartz	Flake - Complete	None	1-32%	Plain	Feather				7	10	2	10
MTP58	251005/5783840	0.15	Quartz	Flake - medial	None	None						7	12	3	12
MTP58	251005/5783840	0.1	Quartz	Blade - complete	1-32%	None	Crushed	Feather				26	9	5	27
MTP58	251005/5783840	0.1	Quartz	Angular Fragment	None	None						12	5	3	12
MTP58	251005/5783840	0.25	Quartzite	Flake - Complete	None	1-32%	Plain	Step				15	10	3	15
MTP59	251030/5783840	0.15	Quartz	Angular Fragment	1-32%	None						7	6	4	7
MTP59	251030/5783840	0.25	Other	Flake - Complete	None	None	Plain	Feather				15	7	3	15
MTP59	251030/5783840	0.3	Quartz	Flake - Complete	None	1-32%	Plain	Feather				16	9	2	16
MTP59	251030/5783840	0.1	Quartz	Angular Fragment	1-32%	None						17	11	3	17
MTP59	251030/5783840	0.1	Silcrete	Flake - Complete	None	1-32%	Plain	Feather				6	9	2	10
MTP61	251005/5783815	0.15	Quartz	Flake - Complete	None	None	Plain	Feather				11	8	2	11
MTP61	251005/5783815	0.15	Quartz	Flake - Complete	33-66%	None	Plain	Feather				8	10	3	10
MTP61	251005/5783815	0.15	Quartz	Flake - Complete	None	None	Plain	Step				11	16	4	16
MTP61	251005/5783815	0.15	Quartz	Angular Fragment	33-66%	None						20	15	5	20
MTP61	251005/5783815	0.15	Quartz	Angular Fragment	None	None						15	5	4	15
MTP61	251005/5783815	0.15	Quartz	Angular Fragment	None	None						21	12	6	21
MTP61	251005/5783815	0.15	Quartz	Angular Fragment	None	None						8	6	5	8
MTP61	251005/5783815	0.15	Quartz	Angular Fragment	None	None						11	5	1	11
MTP61	251005/5783815	0.15	Quartz	Flake - Complete	None	1-32%	Plain	Step				7	8	3	8
MTP61	251005/5783815	0.15	Quartz	Flake - Proximal	None	None	Plain					18	7	3	18

MTP6 1	251005/5783815	0.15	Quartz	Angular Fragment	None	None						16	10	3	16
MTP6 1	251005/5783815	0.15	Quartz	Angular Fragment	None	None						13	7	4	13
MTP6 1	251005/5783815	0.15	Quartz	Flake - Complete	None	None	Plain	Feather				15	7	3	15
MTP6 1	251005/5783815	0.15	Quartz	Flake - Complete	None	None	Plain	Feather				13	21	4	21
MTP6 1	251005/5783815	0.15	Quartz	Angular Fragment	None	None						8	8	2	8
MTP6 1	251005/5783815	0.15	Quartz	Angular Fragment	None	None						11	6	3	11
MTP6 1	251005/5783815	0.15	Quartz	Angular Fragment	None	None						9	5	2	9
MTP6 1	251005/5783815	0.15	Quartz	Flake - Complete	None	None	Plain	Feather				17	18	5	18
MTP6 1	251005/5783815	0.35	Quartz	Flake - Complete	None	None	Plain	Feather				10	8	3	11
MTP6 1	251005/5783815	0.35	Quartz	Flake - Complete	None	None	Plain	Feather				11	7	2	11
MTP6 1	251005/5783815	0.35	Quartz	Angular Fragment	None	None						16	12	13	18
MTP6 1	251005/5783815	0.35	Quartz	Flake - medial	None	None						19	10	5	22
MTP6 1	251005/5783815	0.35	Quartz	Flake - Distal	None	1-32%		Feather				30	16	7	30
MTP6 1	251005/5783815	0.3	Quartzite	Core - Bidirectional	None	None				2	15	25	20	20	32
MTP6 1	251005/5783815	0.3	Quartzite	Flake - Complete	None	None	Plain	Feather				11	10	5	16
MTP6 1	251005/5783815	0.3	Quartz	Flake - Complete	1-32%	None	Plain	Feather				20	11	7	20
MTP6 1	251005/5783815	0.3	Quartz	Angular Fragment	None	None						19	11	3	19
MTP6 1	251005/5783815	0.3	Quartz	Flake - Complete	None	None	Crushed	Step				8	7	2	15
MTP6 1	251005/5783815	0.3	Quartz	Flake - Complete	None	None	Plain	Feather				10	5	5	13
MTP6 1	251005/5783815	0.2	Quartzite	Flake - Complete	1-32%	1-32%	Plain	Hinge			Scraper - Steep- edged	29	19	18	30

MTP6 1	251005/5783815	0.2	Quartz	Flake - Proximal	None	None	Plain					12	11	3	14
MTP6 1	251005/5783815	0.2	Quartz	Core - Unidirectional	None	None			1	13		14	10	6	17
MTP6 1	251005/5783815	0.2	Quartz	Angular Fragment	None	None						18	7	5	18
MTP6 1	251005/5783815	0.2	Quartz	Flake - Complete	None	None	Plain	Feather				13	18	5	18
MTP6 1	251005/5783815	0.2	Quartz	Flake - Proximal	None	None	Crushed					14	9	2	15
MTP6 1	251005/5783815	0.2	Quartz	Flake - Complete	None	None	Plain	Feather				8	7	3	14
MTP6 1	251005/5783815	0.2	Quartz	Flake - Complete	None	None	Plain	Feather				9	6	3	10
MTP6 1	251005/5783815	0.2	Quartz	Flake - Complete	None	33-66%	Plain	Feather				8	8	2	11
MTP6 1	251005/5783815	0.2	Quartz	Flake - Proximal	None	None	Plain					12	7	2	14
MTP6 1	251005/5783815	0.2	Quartz	Angular Fragment	None	None						15	10	2	15
MTP6 1	251005/5783815	0.2	Quartz	Flake - Complete	None	None	Plain	Feather				7	6	2	9
MTP6 1	251005/5783815	0.2	Quartz	Flake - Proximal	1-32%	None	Plain					10	13	3	25
MTP6 1	251005/5783815	0.2	Quartz	Angular Fragment	None	None						18	12	7	18
MTP6 1	251005/5783815	0.2	Quartz	Flake - Complete	1-32%	1-32%	Plain	Feather			Scraper - Steep-edged	21	8	5	22
MTP6 1	251005/5783815	0.2	Quartz	Angular Fragment	None	None						8	7	2	8
MTP6 1	251005/5783815	0.2	Quartz	Angular Fragment	None	None						10	7	5	8
MTP6 1	251005/5783815	0.2	Quartz	Flake - Complete	None	1-32%	Plain	Feather			Scraper - Round-edged	15	10	5	18
MTP6 1	251005/5783815	0.2	Quartz	Flake - Complete	None	1-32%	Plain	Feather				10	5	3	10
MTP6 1	251005/5783815	0.2	Quartz	Angular Fragment	None	None						9	6	2	10



MTP6 1	251005/5783815	0.2	Quartz	Angular Fragment	1-32%	None						12	7	4	12	
MTP6 1	251005/5783815	0.2	Quartz	Flake - Complete	None	1-32%	Plain	Feather				16	10	3	17	
MTP6 1	251005/5783815	0.2	Quartz	Flake - Complete	None	None	Plain	Feather				8	7	2	10	
MTP6 1	251005/5783815	0.2	Quartz	Angular Fragment	67-99%	None						10	7	4	10	
MTP6 1	251005/5783815	0.2	Quartz	Angular Fragment	None	None						16	5	3	16	
MTP6 1	251005/5783815	0.2	Quartz	Flake - Complete	None	1-32%	Plain	Hinge			Scraper - Steep-edged	27	21	13	28	
MTP6 1	251005/5783815	0.2	Quartz	Flake - Proximal	None	1-32%	Plain					20	14	7	23	
MTP6 1	251005/5783815	0.2	Quartz	Angular Fragment	None	None						14	8	7	14	
MTP6 1	251005/5783815	0.2	Quartz	Angular Fragment	None	None						4	3	1	4	
MTP6 1	251005/5783815	0.2	Quartz	Flake - Complete	None	None	Plain	Feather				7	7	2	8	
MTP6 1	251005/5783815	0.2	Quartz	Flake - Distal	None	None		Step				12	9	2	12	
MTP6 1	251005/5783815	0.2	Quartz	Angular Fragment	None	None						7	7	5	7	
MTP6 1	251005/5783815	0.25	Quartz	Flake - Complete	None	1-32%	Plain	Hinge				21	5	5	22	
MTP6 1	251005/5783815	0.25	Quartzite	Core - Bidirectional	None	None				5	19	Core - Horseho of	34	43	30	45
MTP6 1	251005/5783815	0.25	Quartzite	Core - Bidirectional	1-32%	None				5	18		25	36	24	49
MTP6 1	251005/5783815	0.25	Quartz	Angular Fragment	None	None						11	6	4	12	
MTP6 1	251005/5783815	0.25	Quartz	Flake - Complete	None	None	Plain	Feather				10	10	3	11	
MTP6 1	251005/5783815	0.25	Quartz	Angular Fragment	None	None						25	11	9	25	
MTP6 1	251005/5783815	0.25	Quartz	Core - Unidirectional	None	None				2	10		14	16	7	19

MTP6 3	251005/5783790	0.35	Quartzite	Flake - Complete	None	None	Plain	Feather				35	26	11	36	
MTP6 3	251005/5783790	0.35	Silcrete	Flake - Complete	None	1-32%	Plain	Feather				14	9	4	18	
MTP6 3	251005/5783790	0.35	Silcrete	Flake - Complete	None	1-32%	Plain	Feather				16	9	2	16	
MTP6 3	251005/5783790	0.15	Quartz	Flake - Complete	None	1-32%	Plain	Feather				15	11	2	16	
MTP6 3	251005/5783790	0.15	Quartz	Angular Fragment	None	None						12	8	5	12	
MTP6 4	251030/5783790	0.25	Silcrete	Core - Unidirectional	None	None				1	13		22	23	14	30
MTP6 4	251030/5783790	0.1	Quartzite	Core - Bidirectional	None	None				2	15		29	37	8	37
MTP6 4	251030/5783790	0.1	Quartz	Flake - Complete	None	1-32%	Plain	Feather				13	12	3	15	

## Appendix F: Site Gazetteer

VAHR Site Number	Place Name	Archaeological Place Type	Primary Location GDA94 Zone 55 (Easting/Northing)	Cadastral Details
7721-1436	Ormond Street LDAD	Low Density Artefact Distribution	250720/5784135	Allotment 11 Section 22B and Lot 1 TP174543, 20 and 30 Ormond Street, Bannockburn, City of Greater Geelong, Parish of Murgheboluc.
7721-1435	Bruces Creek Artefact Scatter	Artefact Scatter	250905/5783990	Allotment 10 Section 22B, 25 Ormond Street, Bannockburn, City of Greater Geelong, Parish of Murgheboluc.
7721-1434	Manifold Street Artefact Scatter	Artefact Scatter	250702/5784370	Allotment 12 Section 22B, 5 Ormond Street, Bannockburn, City of Greater Geelong, Parish of Murgheboluc.

## Appendix G: Dispute Notification Form

<b>Date:</b>	
<b>Cultural Heritage Management Plan:</b>	
<b>Relevant Party Making the Dispute:</b>	
<b>Contact Person:</b>	
<b>Contact Details:</b>	
<b>Other Relevant Parties Involved in the Dispute:</b>	
<b>Nature of Notification (Fax/Email):</b>	
<b>Date of Notification:</b>	
<b>Proposed Meeting Time and Place:</b>	
<b>Nature of the Dispute:</b>	

# Bruce Street, Harvey Road and Ormond Road Bannockburn

## Vegetation Assessment and Native Vegetation Removal Report

A Report to  
TGM Group P/L

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Prepared by

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**Mark Trengove Ecological Services**  
**PO Box 1502 Geelong 3220**  
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**ph 0428 298087**

July 2018

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# 1 INTRODUCTION

## 1.1 *Project Background*

Land at Bruce Street, Harvey Road and Ormond Road Bannockburn, is proposed to be rezoned for high-density residential sub-division. This report was commissioned by TGM Group P/L to assess the quantity and significance of any indigenous flora and fauna habitat that might be present in the subject site.

Under Clause 52.17 of the Victorian Planning Scheme, the State has gazetted the Native Vegetation Removal Regulations (revised in December 2017). The reforms ‘introduce a risk based approach to assessing applications to remove native vegetation’ (DELWP Website i) Refer to Section 4.2 for further discussion.

## 1.2 *Objectives*

The objectives of this investigation are to:

- Describe the flora and fauna habitat values of the study area.
- Evaluate the conservation significance of the study area.
- Assess any potential impacts of the proposed development.
- Determine the implications of any native vegetation removal for the relevant government policy and legislation.
- Determine any vegetation offset implications.

## 1.3 *Study Area*

The study area is comprised of approximately 19 ha of land at Bruce Street, Harvey Road and Ormond Road Bannockburn, located within the Golden Plains Shire. The site is within the Victorian Volcanic Plains bioregion and is located within the Corangamite Catchment Management Authority region (DELWP website ii). The study area is currently zoned Farm Zone (FZ) and is in part (i.e. the Bruces Creek corridor) subject to Environment Significance Overlay 2 under the Golden Plains Shire Planning Scheme (DPCD website i).

The site appears to have a history of disturbance. Small areas of degraded indigenous vegetation, including areas of partially intact native vegetation within the Bruces Creek corridor, occur.

The adjacent areas of the Bruce Street, Harvey Road and Ormond Road roadside reserves were inspected and were found to be comprised, in part, of native vegetation.

The location of the study area is shown on Figure 1.

## 1.4 Proposed Development

The proposed use is to rezone the land for medium-density residential use. It is anticipated that the proposed use will impact upon the majority of the study area. The area of Bruce Creek corridor is proposed to be retained and designated as a reserve.

**Figure 1 Study area location**



**Figure 1.** Study area location and proposed sub-division layout.



## **2 METHODS**

### **2.1 Taxonomy**

Scientific names for plants follow the Flora of Victoria (RBG Website i). Common names for plants follow the Flora of Victoria Vols 2-4 (Walsh and Entwisle 1994-1999).

### **2.2 Literature and Database Review**

Relevant literature, online resources and databases were reviewed to provide an up to date assessment of ecological values associated with the study area and surrounds, including:

- The Victorian Department of Environment, Land, Water and Planning (DELWP) Naturekit Interactive Map (DELWP website ii) for:
  - Modelled data for remnant vegetation patches and habitat for rare or threatened species and
  - the extent of historic and current Ecological Vegetation Classes (EVC)s.
- The Victorian Biodiversity Atlas (VBA) (DELWP website iii) for previously documented flora and fauna records within the project locality (to approximately 10 kilometres of the study area)
- Aerial photography of the study area (Google maps).

### **2.3 Field Survey**

The site was inspected on foot on the 3rd of July 2018. The entire site was traversed. Records were made of all indigenous vascular plant species. Records were made of the existing faunal habitat values and dominant exotic vascular plant species.

### **2.4 Limitations**

The assessment was conducted winter, a time of year that is suitable for the detection of most, but not all, flora species likely to occur on site. Due to the relatively degraded nature of the understorey vegetation of the majority of the study area, the site inspection (with the exception of the roadside reserves) is considered to be sufficient to assess the ecological values of the site. As a result, there are not considered to be any significant limitations to the study.

The survey includes only vascular flora. Habitat Hectare assessments were not undertaken. Consequently, non-vascular flora (mosses, lichens, fungi, etc.) were not recorded. Fauna was not surveyed.

### **2.5 Defining Significance**

A number of criteria are applied in order to assess the significance of flora species and vegetation communities. The definition of the criteria is detailed in Appendix 1.

## **2.6 Defining and Assessing Vegetation**

Native vegetation in Victoria has been defined by DELWP as belonging to two categories. These are:

### **Patch native vegetation**

Patch native vegetation is either:

- any area of vegetation where at least 25 per cent of the total perennial understorey plant cover is native
- any area with three or more native canopy trees where the canopy foliage cover is continuous.

### **Scattered Tree native vegetation**

Scattered tree native vegetation is:

- a native canopy tree that does not form part of a patch.

(DELWP website ii).

### **Habitat Hectares**

Habitat hectares (Vegetation Quality Assessment) is a site-based measure that combines extent and condition of native vegetation. The current condition of native vegetation is assessed against a benchmark for its Ecological Vegetation Class (EVC). EVCs are classifications of native vegetation types. The benchmark for an EVC describes the attributes of the vegetation type in its mature natural state, which reflects the pre-settlement circumstances. The condition score of native vegetation at a site can be determined through undertaking a habitat hectare assessment. The habitat hectares of native vegetation is calculated by multiplying the current condition of the vegetation (condition score) by the extent of native vegetation.

(DELWP website ii).

## **3 RESULTS**

### **3.1 Vegetation Condition**

The study area carries predominately exotic vegetation. Small areas of native vegetation consisting of isolated River Red Gum (*Eucalyptus camaldulensis*) and Manna Gum (*Eucalyptus viminalis*) mature trees occur. The majority of the study area appears to have been subject to intensive agriculture (improved pasture, intensive grazing, vineyards, etc.) and rural residential use.

With the exception of the areas of mature Eucalypts and associated understorey vegetation, the vegetation of the study area is assessed to be substantially modified as a result of disturbance and is assessed to be of negligible ecological value.

Areas of native vegetation were recorded on Ormond Street.

Areas of non-indigenous native trees and exotic Cypress and Pine trees have been planted, mostly as shelter belts and in association with the existing residences.

Refer to Figure 4 for the location of the native vegetation. Refer to Plates 1-7 for photographs of the vegetation existing conditions.

### **3.2 Faunal Habitat Values**

No fauna assessment was undertaken. Given the degraded nature of the surrounding area and the substantially modified understorey, the River Red Gum, Manna Gum and the planted specimens of non-indigenous native trees are assessed as being likely to provide habitat and a food source for locally significant faunal species.

The majority of the study area, being exotic pasture, is unlikely to provide more than negligible faunal habitat value.

### 3.3 Ecological Vegetation Class

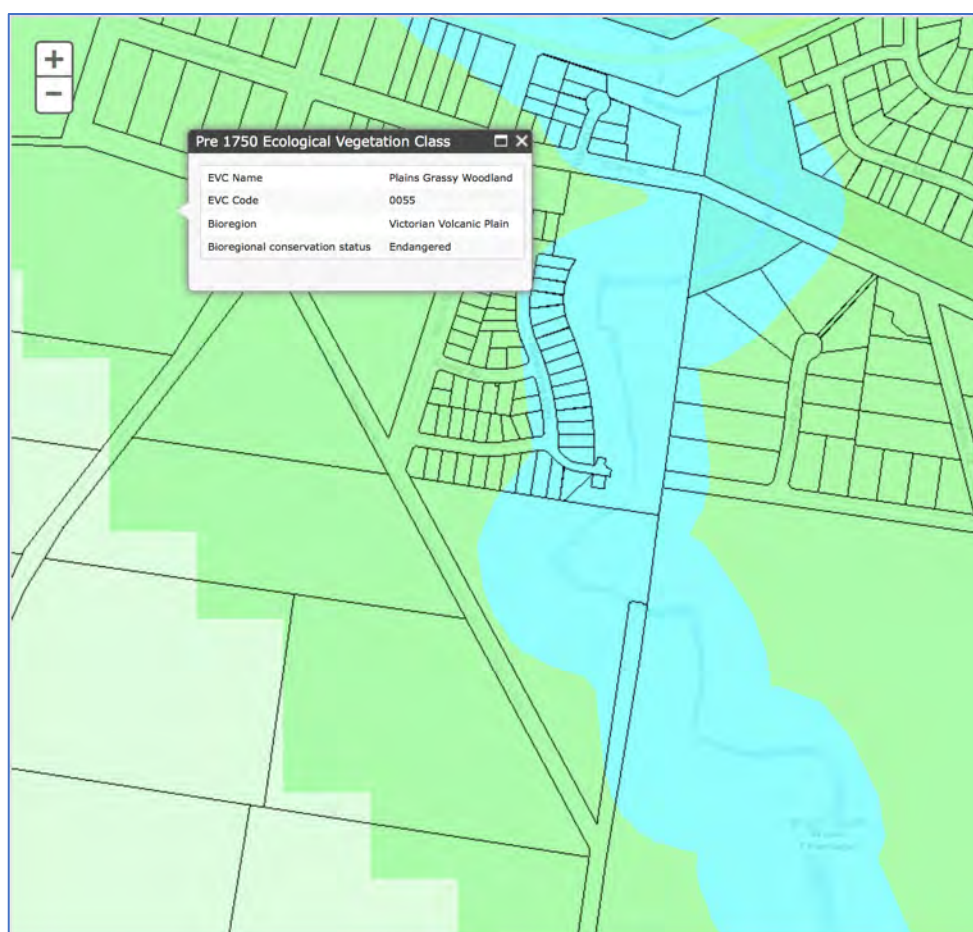
Ecological Vegetation Classes (EVCs) are the primary level of classification of vegetation communities within Victoria. An EVC contains one or more plant (floristic) community, and represents a grouping of vegetation communities with broadly similar ecological attributes. Classification of EVCs in this report follows Oates and Taranto (2002).

The pre-1750 EVC mapping of the study area undertaken by DELWP (DELWP website i) indicates that the study area was comprised of EVC 55 Plains Grassy Woodland (the majority of the study area), EVC 68 Creekline Grassy Woodland (Bruces Creek riparian zone) and EVC 132 Plains Grassland.

The current study records vegetation that accords with EVC 55 Plains Grassy Woodland and EVC 68 Creekline Grassy Woodland.

EVC 55 Plains Grassy Woodland and EVC 68 Creekline Grassy Woodland are both listed as 'Endangered' in the Victorian Volcanic Plain bioregion (DELWP website ii). Endangered refers to an EVC that has less than 10% of its pre-european distribution remaining within the bioregion. Refer to Figure 2 for DELWP EVC mapping.

**Figure 2 EVC Distribution**



**Figure 2.** Distribution of EVCs pre-1750. Data by DELWP (DELWP website ii).

### 3.4 Flora

A total of 12 indigenous vascular plant species was recorded from the study area.

Refer to Table 1 for a list of indigenous vascular plant species, location and conservation significance recorded during this survey. Refer to Table 2 for a list of dominant exotic vascular plant species recorded during this survey.

Refer to Figure 4 for the location of vegetation. Refer to Plates 1-7 for photographs of vegetation existing conditions.

**Table 1 Indigenous Vascular Plant Species, Location and Conservation Significance**

Botanical Name	Common Name	Private Property	Roadside Reserve	Creek Reserve	Significance
<i>Acacia mearnsii</i>	Late Black Wattle	✓	✓		Local
<i>Acacia paradoxa</i>	Hedge Wattle	✓		✓	Local
<i>Acacia pycnantha</i>	Golden Wattle		✓		Local
<i>Austrostipa mollis</i>	Spear-grass	✓	✓		Local
<i>Dianella revoluta</i>	Black-anther Flax-lily		✓		Local
<i>Eucalyptus camaldulensis</i>	River Red Gum	✓		✓	Local
<i>Eucalyptus viminalis</i>	Manna Gum	✓	✓		Local
<i>Lomandra filiformis</i>	Wattle mat-rush		✓		Local
<i>Microleana stipoides</i>	Weeping Grass	✓	✓		Local
<i>Phragmites australis</i>	Common Reed			✓	Local
<i>Rytidosperma caespitosum</i>	Common Wallaby-grass	✓	✓		Local
<i>Themeda triandra</i>	Kangaroo Grass		✓		Local

**Table 2 Dominant Exotic Vascular Plant Species**

Botanical Name	Common Name
<i>Acetosella vulgare</i>	Sheep Sorrel
<i>Arctotheca calendula</i>	Capeweed
<i>Argrostis stolonifera</i>	Creeping Bent-grass
<i>Cirsium vulgare</i>	Spear-thistle
<i>Cynodon dactylon</i>	Couch Grass
<i>Dactylis glomeratus</i>	Cock's-foot Grass
<i>Ehrharta calycina</i>	Veldt-grass
<i>Galenia pubescens</i>	Blanket Weed
<i>Juncus acuta</i>	Spiny-rush
<i>Lolium sp</i>	Rye-grass
<i>Lycium ferrocissimum</i>	Boxthorn
<i>Marubium vulgare</i>	Horehound
<i>Nassella neesiana</i>	Chilean Needle-grass
<i>Nassella trichotoma</i>	Serrated Tussock

<i>Oxalis pes-caprae</i>	Soursob
<i>Phalaris aquatica</i>	Canary-grass
<i>Pinus radiata</i>	Monterey Pine
<i>Plantago lanceolata</i>	Ribwort
<i>Romulea sp</i>	Onion-grass
<i>Schinus molle</i>	Pepper Tree

### **3.5 Flora Significance**

The 12 recorded indigenous vascular plant species are all assessed to be of local conservation significance. Refer to Table 1 for significance. Refer to Appendix 1 for the rational for assessing conservation significance.

## **4 LEGISLATION AND GOVERNMENT POLICY**

### **4.1 Commonwealth**

#### **4.1.1 Environment Protection and Biodiversity Conservation Act (1999)**

The Environment Protection and Biodiversity Conservation (EPBC) Act (1999) was established to ‘promote the conservation of biodiversity by providing strong protection for listed species and communities in the Commonwealth and for protected areas, Ramsar sites, Commonwealth Reserves, conservation zones and World Heritage sites, etc’.

The EPBC Act applies to developments and associated activities that have the potential to significantly impact on matters protected under the Act. Under the Act, unless exempt, actions require approval from the Australian Government Minister for Environment and Heritage if they are likely to significantly impact on a ‘matter of national environmental significance’. There are currently seven matters of national environmental significance (NES):

- World Heritage properties;
- National Heritage properties;
- nationally listed threatened species and ecological communities;
- listed migratory species;
- Ramsar wetlands of international significance;
- Commonwealth marine areas; and
- nuclear actions (including uranium mining).

Any person proposing to take an action that may, or will, have a significant impact on a matter of national environmental significance must refer the action to the Australian Government Minister for Environment and Water Resources for determination as to whether the action is a ‘controlled action’ or is not approved.

Grassy Eucalypt Woodland of the Victorian Volcanic Plain is an ecological community that is listed as ‘Critically Endangered’ under the EPBC Act (EPBC Website i). The study area once carried vegetation that may have been considered part of this community.

#### **4.1.2 Implications**

Due to the relatively small and degraded nature of the native vegetation of the study area there are not likely to be any implications for the Grassy Eucalypt Woodland of the Victorian Volcanic Plain community for the current proposal under the EPBC Act.

## **4.2 State Native Vegetation Permitted Clearing Regulations**

Under Particular Provision (Native Vegetation Clause 52.17) the State has gazetted the Native Vegetation Permitted Clearing Regulations (the ‘Guidelines’), revised in December 2017. The reforms introduce a risk-based approach to assessing applications to remove native vegetation.

The purpose of Clause 52.17 is to ensure that there is no net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation. This means permitted clearing has a neutral impact on Victoria’s biodiversity. This is achieved by applying the following three step approach in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation* (Department of Environment, Land, Water and Planning, 2017):

1. Avoid the removal, destruction or lopping of native vegetation.
2. Minimise impacts from the removal, destruction or lopping of native vegetation that cannot be avoided.
3. Provide an offset to compensate for the biodiversity impact if a permit is granted to remove, destroy or lop native vegetation.

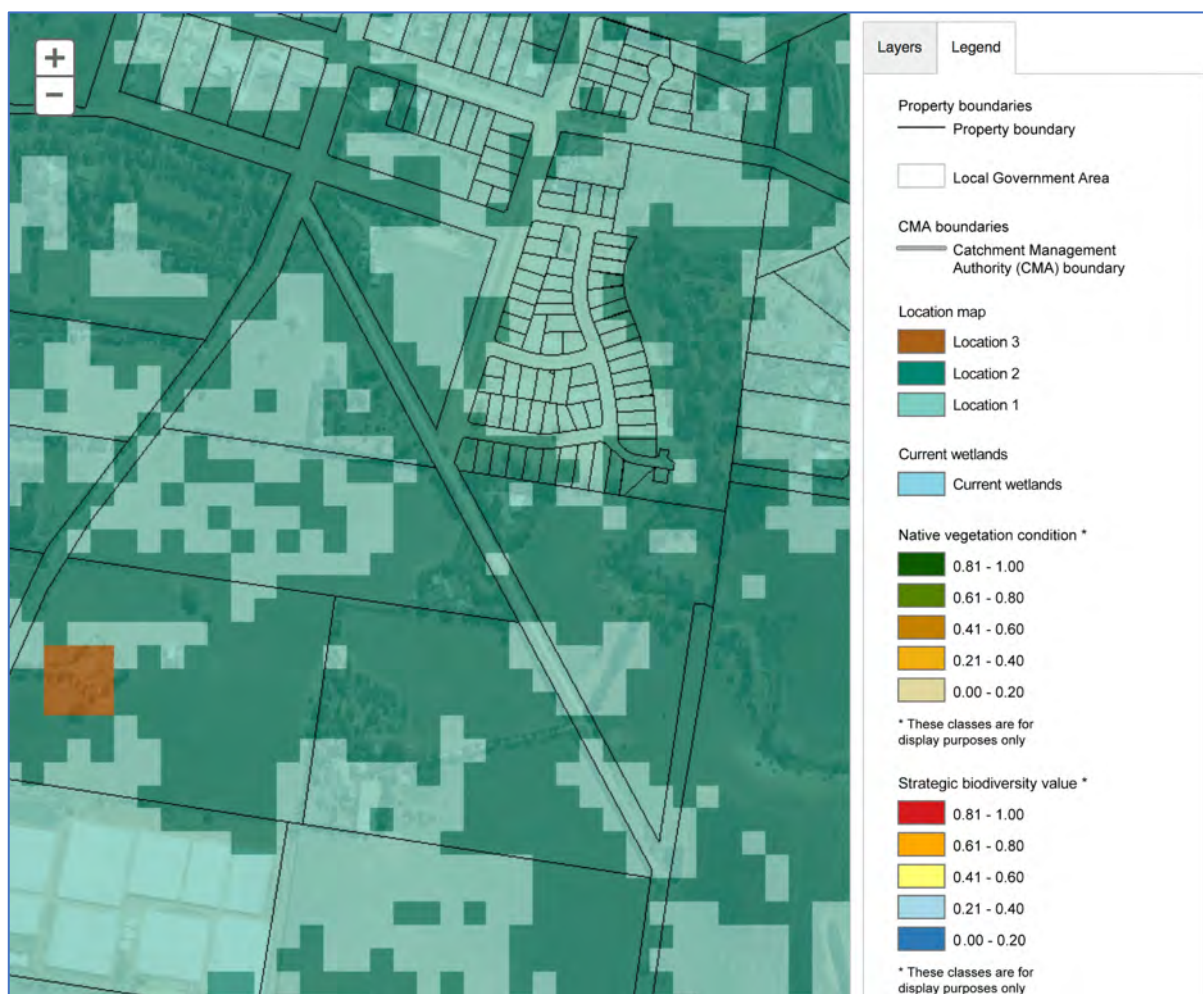
To manage the removal, destruction or lopping of native vegetation to minimise land and water degradation. (DELWP Website i).

When native vegetation removal is permitted, an offset must be secured which achieves a no net loss outcome for biodiversity. To achieve this the offset makes a contribution to Victoria’s biodiversity that is equivalent to the contribution made by the native vegetation that was removed. The type and amount of offset required depends on the native vegetation being removed and the contribution it makes to Victoria’s biodiversity.

Implications for the current proposal are discussed as follows. Refer to Figure 3 for Location mapping (DELWP data).



**Figure 3 Vegetation Location**



**Figure 3.** Distribution of vegetation according to 'Location'. Light green equates to 'Location 1' (i.e. least risk). Dark green equates to 'Location 2' (i.e. medium risk) (DELWP Website i). The study area is sited within areas of both Location 1 and 2.

#### 4.2.1 Patch native vegetation

Under the Regulations, any areas of remnant patch native vegetation that are proposed to be removed are subject to protection/and or recruitment offsets, depending upon the characteristics of the site.

Two areas of patch native vegetation were recorded for the study area. These are:

- The Bruces Creek linear riparian zone dominated by River Red Gum. This vegetation is proposed to be retained and incorporated into the creek corridor reserve system.
- One area of Manna Gum dominated vegetation, comprised of 9 small trees and Wallaby-grass.

Note that patch native vegetation also occurs on Ormond Street roadside reserve.

## 4.2.2 Scattered Tree native vegetation

Under the Regulations, any scattered native canopy trees that are proposed to be removed are subject to protection/and or recruitment offsets, depending upon the characteristics of the site.

Within the VVP bioregion, EVC 55 and ECV 68 have *Eucalyptus* spp as ‘canopy trees’.

For practicality, standard extent amounts has been developed for scattered trees, based tree size and the habitat hectare assessment method.

A total of 1 scattered tree was recorded for the study area.

Table 3 gives the following data for the recorded trees, tree number, species name, diameter at breast height and Tree Protection Zone. Figure 4 shows the location of the scattered trees.

**Table 3 Scattered trees recorded for the study area**

Tree #	Botanical Name	DBH (cm)	TPZ (m)
1	<i>Eucalyptus camaldulensis</i>	42	5

Tree protection zones are calculated in accordance with Australian Standard AS4970-2009 *Protection of trees on development sites*. Refer to Appendix 3.

## 4.2.3 Implications

The results show that the current native vegetation condition is confined to one scattered tree and two patches of native vegetation. Of that vegetation one scattered tree and one patch of vegetation is proposed to be removed. The larger patch of native vegetation, the Bruces Creek riparian corridor is proposed to be retained.

The total extent of native vegetation proposed to be removed is 0.092 ha (one patch and one small scattered tree).

An application to remove one scattered tree and one patch of native vegetation is proposed. The remaining areas of native vegetation on private land are intended to be retained and given appropriate protection measures. An application to remove this one scattered tree and one patch of native vegetation would be classified a intermediate risk-based application.

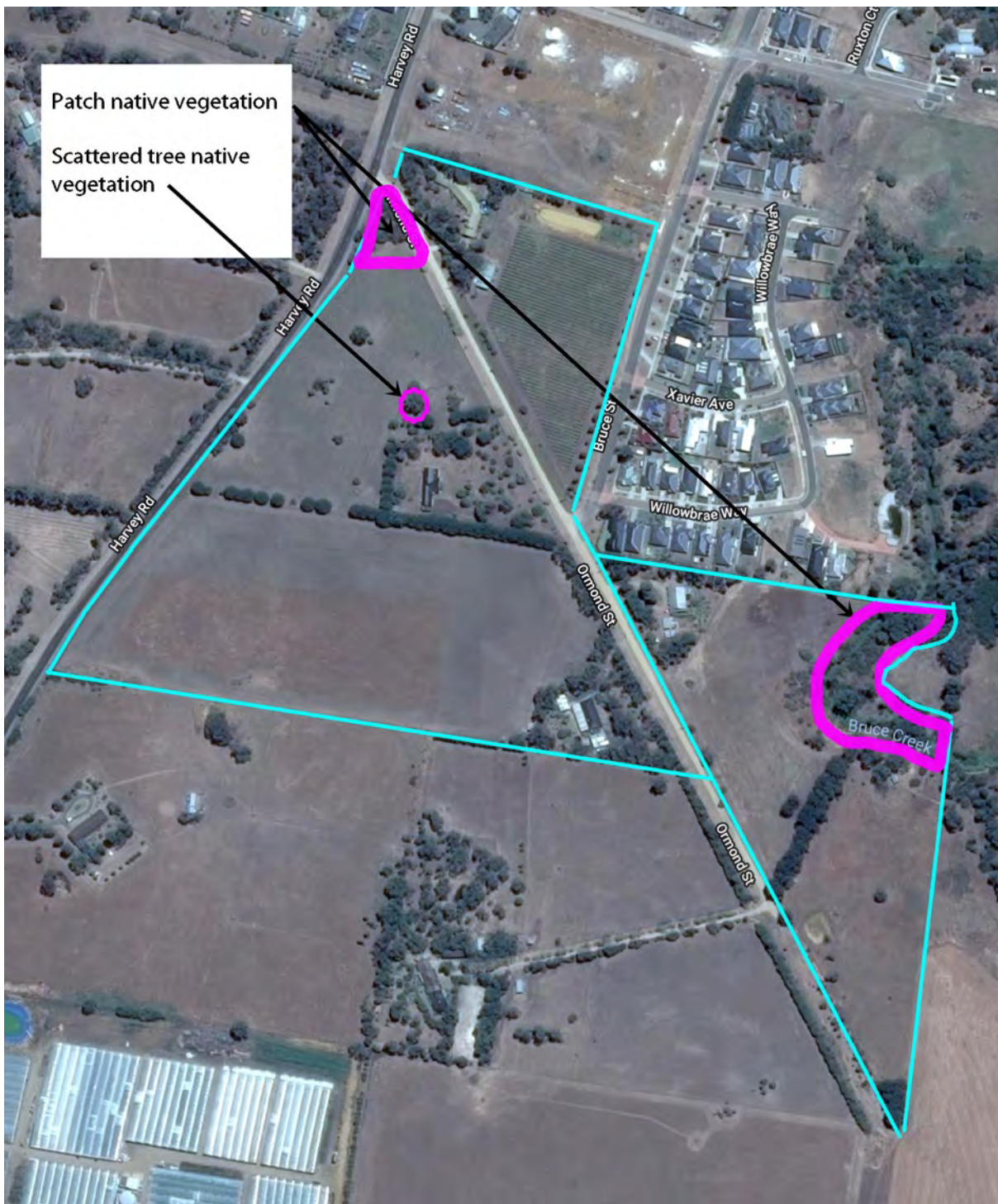
Should a permit to remove this native vegetation be granted the vegetation offset requirements would be to generate:

- 0.068 general biodiversity equivalence units
- to be achieved within the Corangamite CMA area
- with a minimum strategic biodiversity score of 0.464.

Refer to Appendix 2 for the Native vegetation removal report.

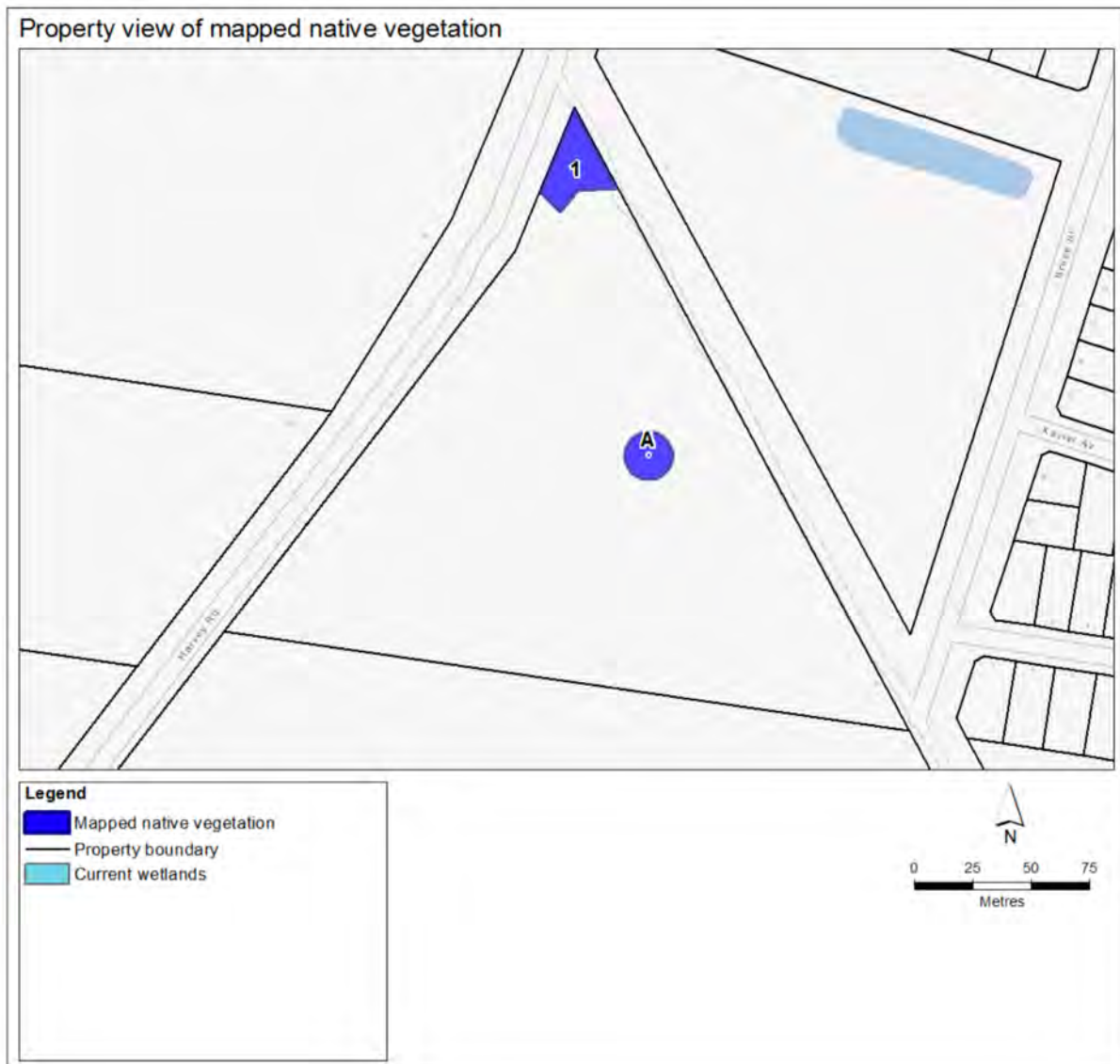
Refer to Figure 4 for the location of native vegetation. Refer to Figure 5 for the location of native vegetation proposed to be removed. Refer to Plates 1-7 for photographs of vegetation existing conditions.

**Figure 4** Location of native vegetation



**Figure 4.** Location of recorded patch and scattered tree native vegetation.

**Figure 5 Location of native vegetation proposed to be removed**



**Figure 5.** Location of the patch and scattered tree native vegetation proposed to be removed.

## 5 CONCLUSIONS

### Description

The privately owned land of approximately 19 ha of land at Bruce Street, Harvey Road and Ormond Road Bannockburn, that is the subject of this report, is proposed to be rezoned for residential sub-division. It is anticipated that the majority of the site will be impacted upon.

### Results

The majority of the site carries exotic vegetation.

Small areas of native vegetation were recorded. The native vegetation is assessed as follows:

- Partially intact riparian patch vegetation, dominated by River Red Gum located along Bruces Creek corridor, proposed to be retained.
- One scattered River Red Gum tree, proposed to be removed.
- One patch dominated by Manna Gum, proposed to be removed.

A total of 12 indigenous locally significant vascular plant species was recorded from the study area.

The current study records native vegetation that accords with EVC 55 Plains Grassy Woodland and EVC 68 Creekline Grassy Woodland. EVC 55 Plains Grassy Woodland and EVC 68 Creekline Grassy Woodland are both listed as 'Endangered' in the Victorian Volcanic Plain bioregion.

Faunal habitat values are of local significance.

Due to the relatively small and degraded nature of the native vegetation of the study area there are not likely to be any implications for the Grassy Eucalypt Woodland of the Victorian Volcanic Plain community for the current proposal under the EPBC Act.

If, under Clause 52.17, a permit was sought to remove the single scattered tree and patch native vegetation as described, the application would be assessed as a intermediate assessment pathway application.

Should a permit to remove a single dead scattered tree be granted the vegetation offset requirements would be to generate 0.068 general biodiversity equivalence units, to be achieved within the Corangamite CMA area, with a minimum strategic biodiversity score of 0.464.

### Limitations

There are not considered to be any significant limitations to this study.



## **Appendix 1 - ASSESSING CONSERVATION SIGNIFICANCE**

Conservation significance is assessed at a range of scales, including global, international, national, state, regional and local. Criteria used for determining the conservation significance of flora at national to local scales are presented below for botanical conservation significance.

### ***Botanical Significance***

**National** botanical significance applies to an area when it supports one or more of the following attributes:

a population of at least one nationally threatened plant species listed by Briggs and Leigh (1996) or plant species listed on the schedules to the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

A nationally threatened ecological community listed on the schedules of the *Environment Protection and Biodiversity Conservation Act 1999*.

**State** botanical significance applies to an area when it supports one or more of the following attributes:

A population of at least one plant species threatened in Victoria, as listed by Gullan et al. (1990), NRE (2000a) or more recently in the unpublished records of the Flora Information System (NRE), or on the schedules to the Victorian *Flora and Fauna Guarantee Act 1988*.

An ecological community considered threatened in Victoria through its listing on the schedules of the *Flora and Fauna Guarantee Act 1988*.

**Regional** botanical significance applies to an area that supports one or more of the following attributes:

Supports a population of one or more regionally depleted species defined in a valid regional assessment of biodiversity (eg. Regional Native Vegetation Plan, Environment Conservation Council Report or Comprehensive Regional Assessment documents).

An ecological vegetation class that is considered endangered or vulnerable in a particular bioregion (based on Conn 1993 and the Regional Native Vegetation Plan), in which case the area is of **High Regional** significance.

An ecological vegetation class that is considered depleted in a particular bioregion (based on Conn 1993 and the Regional Native Vegetation Plan), in which case it is of **Regional** significance.

**Local** botanical significance applies to all remnant native vegetation that does not meet the above criteria. In much of Victoria native vegetation has been so depleted by past clearing and disturbance that all remaining vegetation must be considered to be of at least local conservation significance.



## Appendix 2 Native Vegetation Removal Report

Native vegetation removal report	
<p>A report to support an application to remove, destroy or lop native vegetation in the <b>Intermediate Assessment Pathway</b> using the modelled condition score</p> <p>This report provides information to support an application to remove native vegetation in accordance with the <i>Guidelines for the removal, destruction or lopping of native vegetation</i>. The report is <u>not</u> an assessment by DELWP or local council of the proposed native vegetation removal. Biodiversity information and offset requirements have been calculated using modelled condition scores contained in the <i>Native vegetation condition map</i>.</p> <p><b>Date and time:</b> 17 July 2018 14:21 PM</p> <p><b>Lat./Long.:</b> -38.0545190178997, 144.1579249582</p> <p><b>Address:</b> 20 ORMOND STREET BANNOCKBURN 3331</p> <p style="text-align: right;"><b>Native vegetation report ID:</b> 324-20180717-016</p>	
<b>Assessment pathway</b>	
<b>The assessment pathway and reason for the assessment pathway</b>	
Assessment pathway	Intermediate Assessment Pathway
Extent of past plus proposed native vegetation removal	0.092 hectares
No. large trees	0 large tree(s)
Location category	Location 2 The native vegetation is in an area mapped as an Endangered Ecological Vegetation Class. Removal of less than 0.5 hectares of native vegetation will not have a significant impact on any habitat for a rare or threatened species.
<b>Offset requirement</b>	
<b>The offset requirement that will apply if the native vegetation is approved to be removed</b>	
Offset type	General offset
Offset amount	0.068 general habitat units
Offset attributes	
Vicinity	Corangamite Catchment Management Authority (CMA) or Golden Plains Shire Council
Minimum strategic biodiversity value score	0.464
Large trees	0 large tree(s)
Native vegetation removal report – report ID 324-20180717-016	

# Native vegetation removal report

## Biodiversity information about the native vegetation

### Description of any past native vegetation removal

Any native vegetation that was approved to be removed, or was removed without the required approvals, on the same property or on contiguous land in the same ownership, in the five year period before the application to remove native vegetation is lodged is detailed below.

Permit/PIN number	Extent of native vegetation (hectares)
None entered	0 hectares

### Description of the native vegetation proposed to be removed

Extent of all mapped native vegetation	0.092 hectares
Condition score of all mapped native vegetation	0.623
Strategic biodiversity value score of all mapped native vegetation	0.580
Extent of patches native vegetation	0.061 hectares
1	0.061 hectares
Extent of scattered trees	0.031 hectares
No. large trees within patches	0 large tree(s)
No. large scattered trees	0 large tree(s)
No. small scattered trees	1 small tree(s)

### Additional information about trees to be removed, shown in Figure 1

Tree ID	Tree circumference (cm)	Benchmark circumference (cm)	Scattered / Patch	Tree size
A	140	251	Scattered	Small

## Other information

Applications to remove, destroy or lop native vegetation must include all the below information. If an appropriate response has not been provided the application is not complete.

### Photographs of the native vegetation to be removed

Recent, dated photographs of the native vegetation to be removed must be provided with the application. All photographs must be clear, show whether the vegetation is a patch of native vegetation or scattered trees, and identify any large trees. If the area of native vegetation to be removed is large, provide photos that are indicative of the native vegetation.

Ensure photographs are attached to the application. If appropriate photographs have not been provided the application is not complete.

### Topographical and land information

Description of the topographic and land information relating to the native vegetation to be removed, including any ridges, crests and hilltops, wetlands and waterways, slopes of more than 20 percent, drainage lines, low lying areas, saline discharge areas, and areas of existing erosion, as appropriate. This may be represented in a map or plan. **This is an application requirement and your application will be incomplete without it.**

Study area includes relatively flat land and one drainage line, Bruces Creek.

### Avoid and minimise statement

This statement describes what has been done to avoid the removal of, and minimise impacts on the biodiversity and other values of native vegetation. **This is an application requirement and your application will be incomplete without it.**

The majority of native vegetation, is to be retained, some removal may be required , subject to permit conditions.

### Defendable space statement

Where the removal of native vegetation is to create defendable space, a written statement explaining why the removal of native vegetation is necessary. This statement must have regard to other available bushfire risk mitigation measures. This statement is not required if your application also includes an application under the Bushfire Management Overlay.

Not applicable.

### Offset statement

An offset statement that demonstrates that an offset is available and describes how the required offset will be secured. **This is an application requirement and your application will be incomplete without it.**

Offset to be secured by appropriate 3rd party purchase, there is reasonable assurance that offsets will be available.

## Next steps

Applications to remove, destroy or lop native vegetation must address all the application requirements specified in *Guidelines for the removal, destruction or lopping of native vegetation*. If you wish to remove the mapped native vegetation you are required to apply for a permit from your local council. This *Native vegetation removal report* must be submitted with your application and meets most of the application requirements. The following needs to be added as applicable.

### Property Vegetation Plan

Landowners can manage native vegetation on their property in the longer term by developing a Property Vegetation Plan (PVP) and entering in to an agreement with DELWP.

If an approved PVP applies to the land, ensure the PVP is attached to the application.

### Applications under Clause 52.16

An application to remove, destroy or lop native vegetation is under Clause 52.16 if a Native Vegetation Precinct Plan (NVPP) applies to the land, and the proposed native vegetation removal is not in accordance with the relevant NVPP. If this is the case, a statement that explains how the proposal responds to the NVPP considerations must be provided.

If the application is under Clause 52.16, ensure a statement that explains how the proposal responds to the NVPP considerations is attached to the application.

---

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Authorised by the Victorian Government, 8 Nicholson Street, East Melbourne.

For more information contact the DELWP Customer Service Centre 136 186

[www.delwp.vic.gov.au](http://www.delwp.vic.gov.au)

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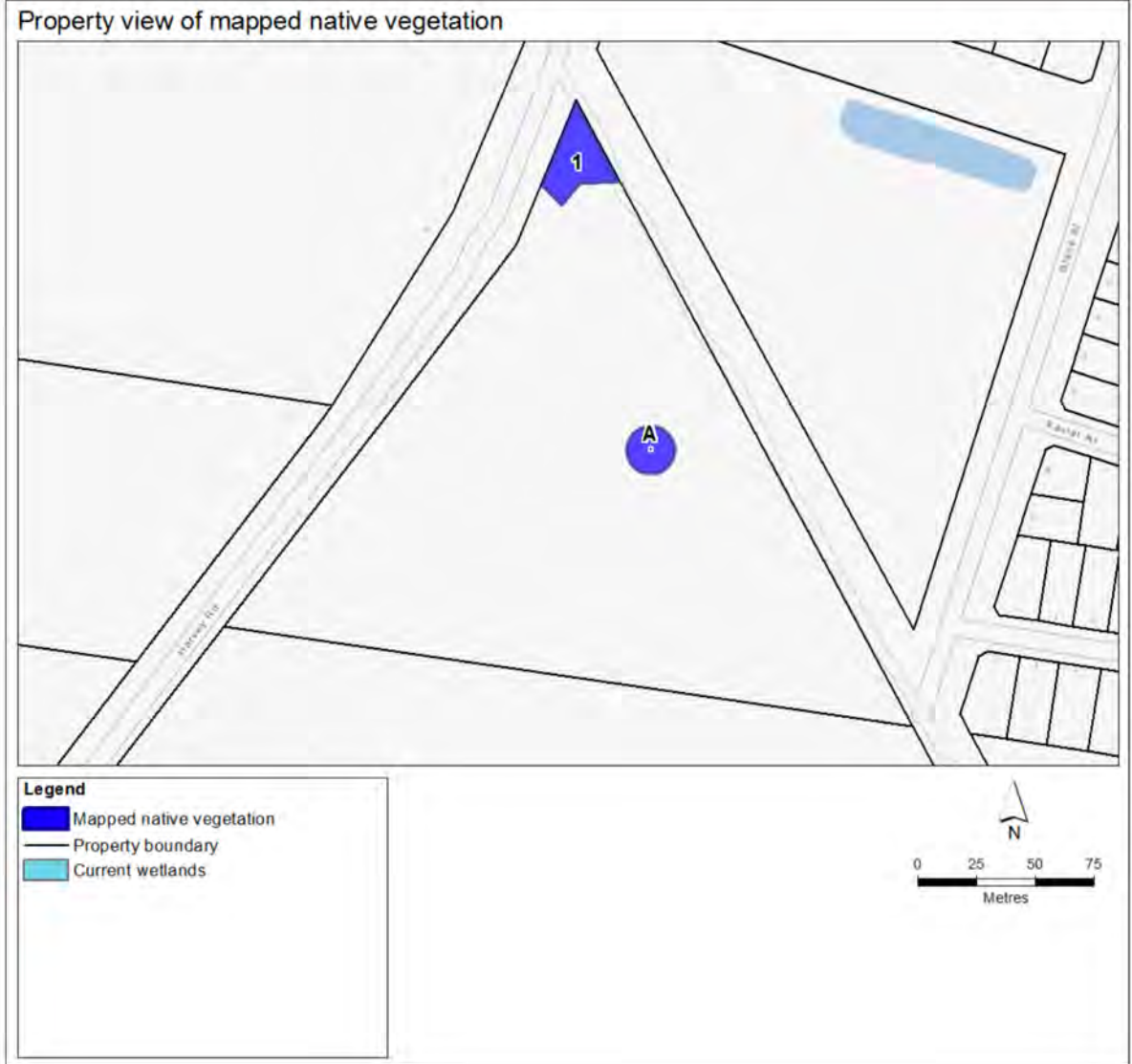
Obtaining this publication does not guarantee that an application will meet the requirements of Clauses 52.16 or 52.17 of planning schemes in Victoria or that a permit to remove native vegetation will be granted.

Notwithstanding anything else contained in this publication, you must ensure that you comply with all relevant laws, legislation, awards or orders and that you obtain and comply with all permits, approvals and the like that affect, are applicable or are necessary to undertake any action to remove, lop or destroy or otherwise deal with any native vegetation or that apply to matters within the scope of Clauses 52.16 or 52.17 of planning schemes in Victoria.

Figure 1 – Map of native vegetation to be removed, destroyed or lopped

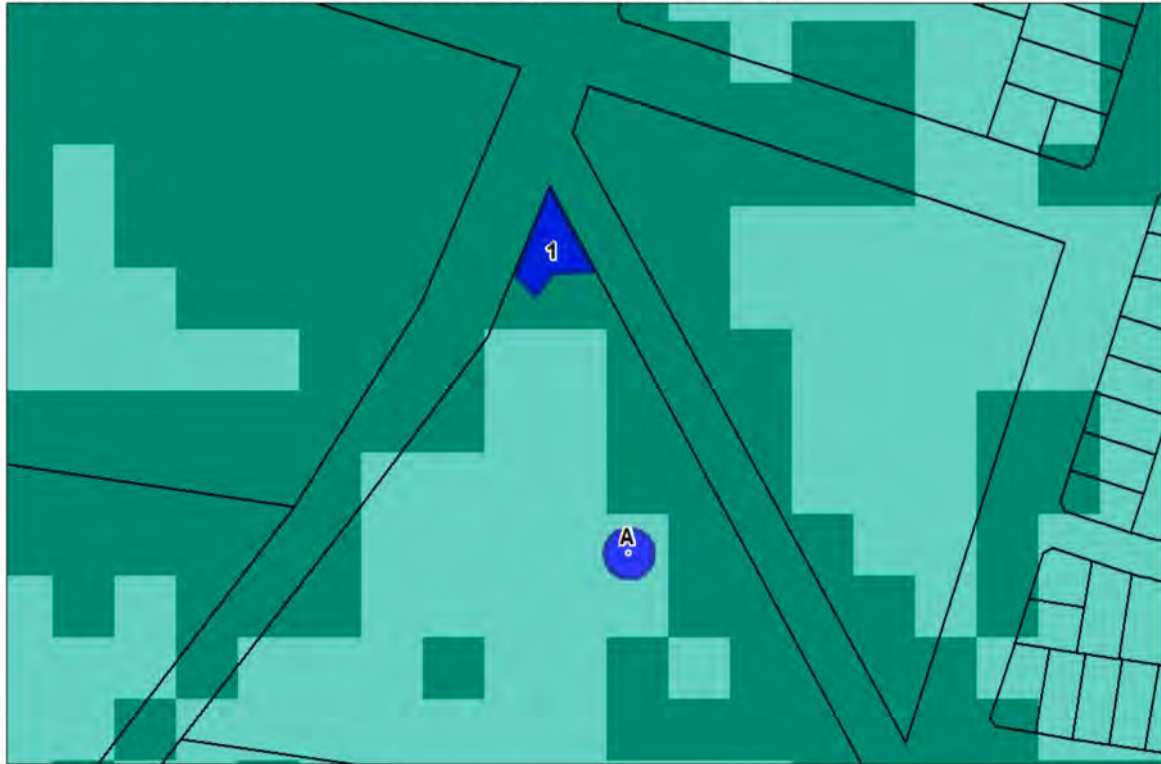


Figure 2 – Map of property in context



**Figure 3 – Biodiversity information maps**

Mapped native vegetation and the *Native vegetation location map*



**Legend**

- Mapped native vegetation
- Property boundary

Native vegetation location category

- Location 3
- Location 2
- Location 1

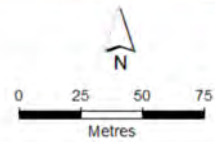
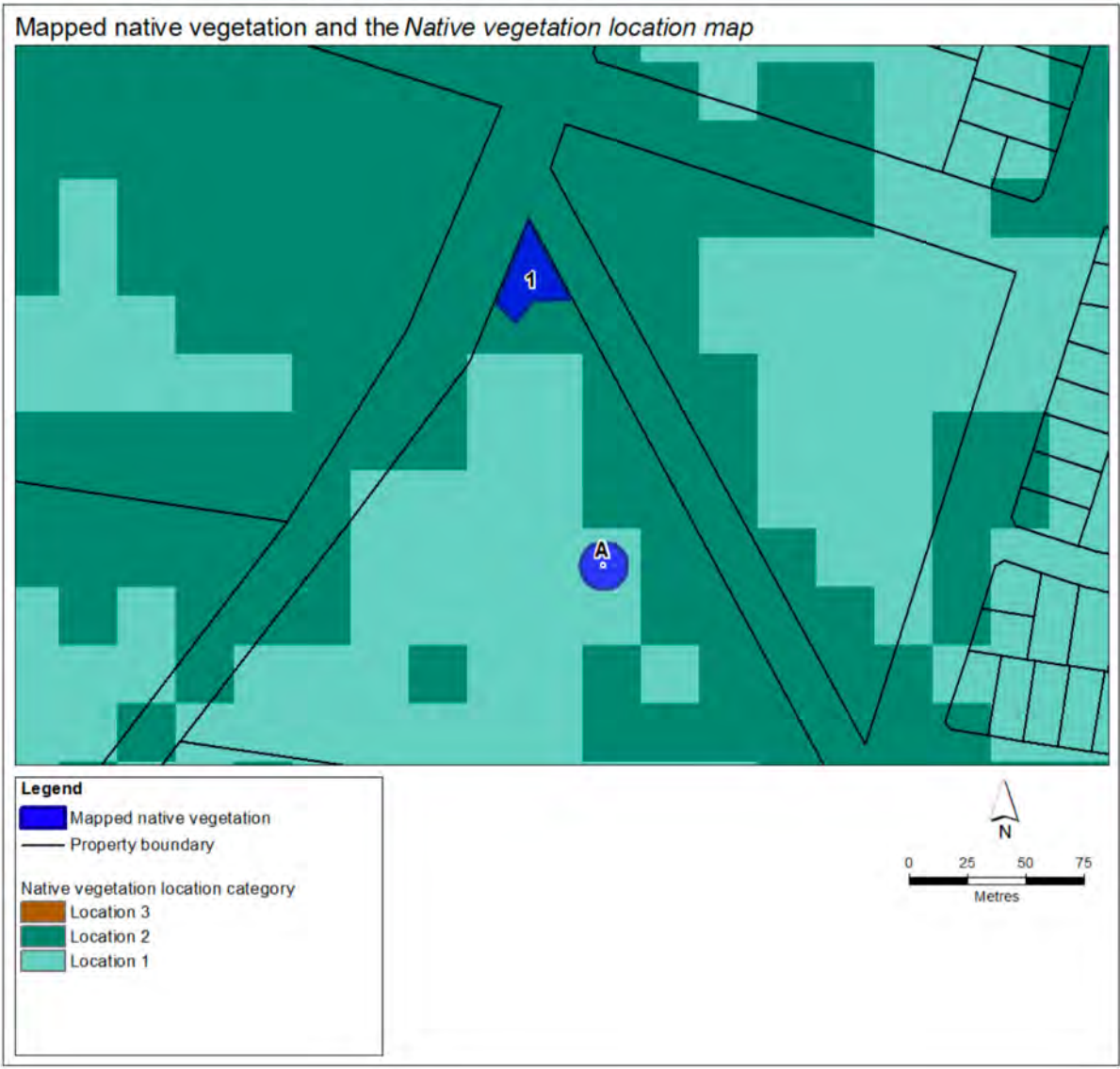


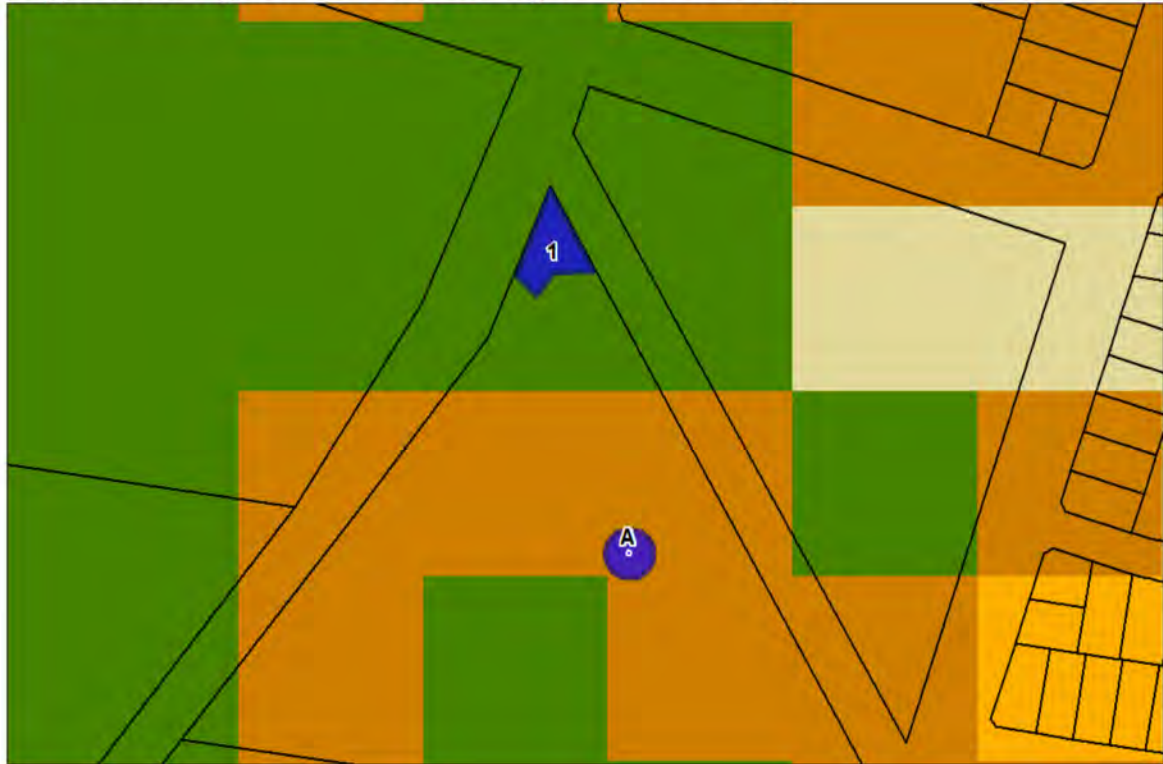
Figure 3 – Biodiversity information maps





# Native vegetation removal report

Mapped native vegetation and the *Native vegetation condition map*



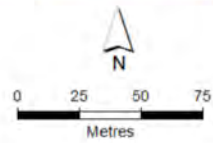
**Legend**

- Mapped native vegetation
- Property boundary

Native vegetation condition\*

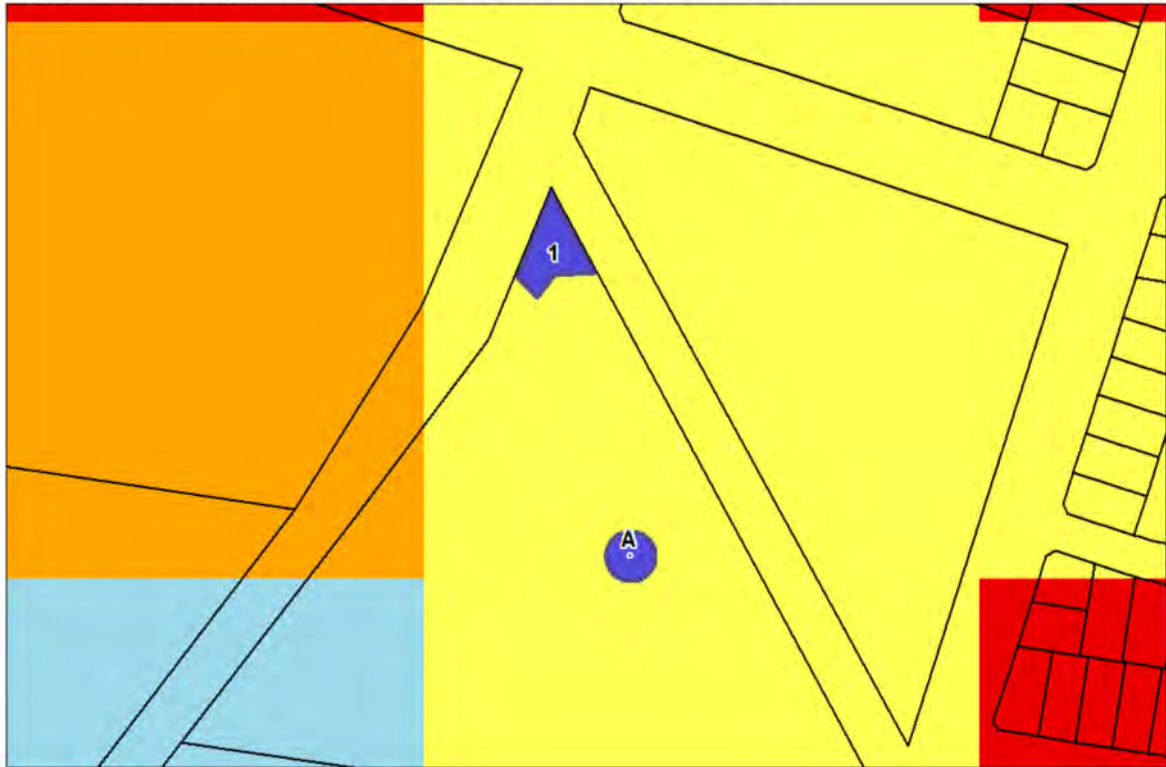
- 0.81 - 1.00
- 0.61 - 0.80
- 0.41 - 0.60
- 0.21 - 0.40
- 0.00 - 0.20

\* These classes are for display purposes only



# Native vegetation removal report

Mapped native vegetation and the *Strategic biodiversity value map*



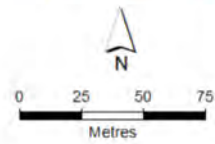
**Legend**

- Mapped native vegetation
- Property boundary

**Strategic biodiversity value\***

- 0.81 - 1.00
- 0.61 - 0.80
- 0.41 - 0.60
- 0.21 - 0.40
- 0.00 - 0.20

\* These classes are for display purposes only



## Appendix 1 - Details of offset requirements

### Native vegetation to be removed

<b>Extent of all mapped native vegetation (for calculating habitat hectares)</b>	0.092	The area of land covered by a patch of native vegetation and/or a scattered tree, measured in hectares. Where the mapped native vegetation includes scattered trees, each tree is assigned a standard extent and converted to hectares. A small scattered tree is assigned a standard extent defined by a circle with a 10 metre radius and a large scattered tree a circle with a 15 metre radius.  The extent of all mapped native vegetation is an input to calculating the habitat hectares.
<b>Condition score*</b>	0.623	The condition score of native vegetation is a site-based measure that describes how close native vegetation is to its mature natural state. The condition score is the weighted average condition score of the mapped native vegetation calculated using the <i>Native vegetation condition map</i> .
<b>Habitat hectares</b>	0.057	Habitat hectares is a site-based measure that combines extent and condition of native vegetation. It is calculated by multiplying the extent of native vegetation by the condition score:  <b><i>Habitat hectares = extent x condition score</i></b>
<b>Strategic biodiversity value score</b>	0.580	The strategic biodiversity value score represents the complementary contribution to Victoria's biodiversity of a location, relative to other locations across the state. This score is the weighted average strategic biodiversity value score of the mapped native vegetation calculated using the <i>Strategic biodiversity value map</i> .
<b>General landscape factor</b>	0.790	The general landscape factor is an adjusted strategic biodiversity value score. It has been adjusted to reduce the influence of landscape scale information on the general habitat score.
<b>General habitat score</b>	0.045	The general habitat score combines site-based and landscape scale information to obtain an overall measure of the biodiversity value of the native vegetation. The general habitat score is calculated as follows:  <b><i>General habitat score = habitat hectares x general landscape factor</i></b>

\* **Offset requirements for partial removal:** If your proposal is to remove parts of the native vegetation in a patch (for example only understorey plants) the condition score must be adjusted. This will require manual editing of the condition score and an update to the calculations that the native vegetation removal tool has provided: habitat hectares, general habitat score and offset amount.

### Offset requirements

<b>Offset type</b>	General offset	A general offset is required when the removal of native vegetation does not have a significant impact on any habitat for rare or threatened species. All proposals in the Basic and Intermediate assessment pathways will only require a general offset.
<b>Offset multiplier</b>	1.5	This multiplier is used to address the risk that the predicted outcomes for gain will not be achieved, and therefore will not adequately compensate the biodiversity loss from the removal of native vegetation.
<b>Offset amount (general habitat units)</b>	0.068	The general habitat units are the amount of offset that must be secured if the application is approved. This offset requirement will be a condition to any permit or approval for the removal of native vegetation.  <b><i>General habitat units required = general habitat score x 1.5</i></b>
<b>Minimum strategic biodiversity value score</b>	0.464	The offset site must have a strategic biodiversity value score of at least 80 per cent of the strategic biodiversity value score of the native vegetation to be removed. This is to ensure offsets are located in areas with a strategic biodiversity value that is comparable to the native vegetation to be removed.
<b>Vicinity</b>	Corangamite CMA or Golden Plains Shire Council	The offset site must be located within the same Catchment Management Authority boundary or municipal district as the native vegetation to be removed.
<b>Large trees</b>	0 large tree (s)	The offset site must protect at least one large tree for every large tree removed. A large tree is a native canopy tree with a Diameter at Breast Height greater than or equal to the large tree benchmark for the local Ecological Vegetation Class. A large tree can be either a large scattered tree or a large patch tree.

## Appendix 3 Determining the Tree Protection Zone

### Determining the Tree Protection Zone (TPZ)

The radius of the TPZ is calculated for each tree by multiplying its DBH x 12.  $TPZ = DBH \times 12$  (Australian Standard AS4970-2009 *Protection of trees on development sites*)

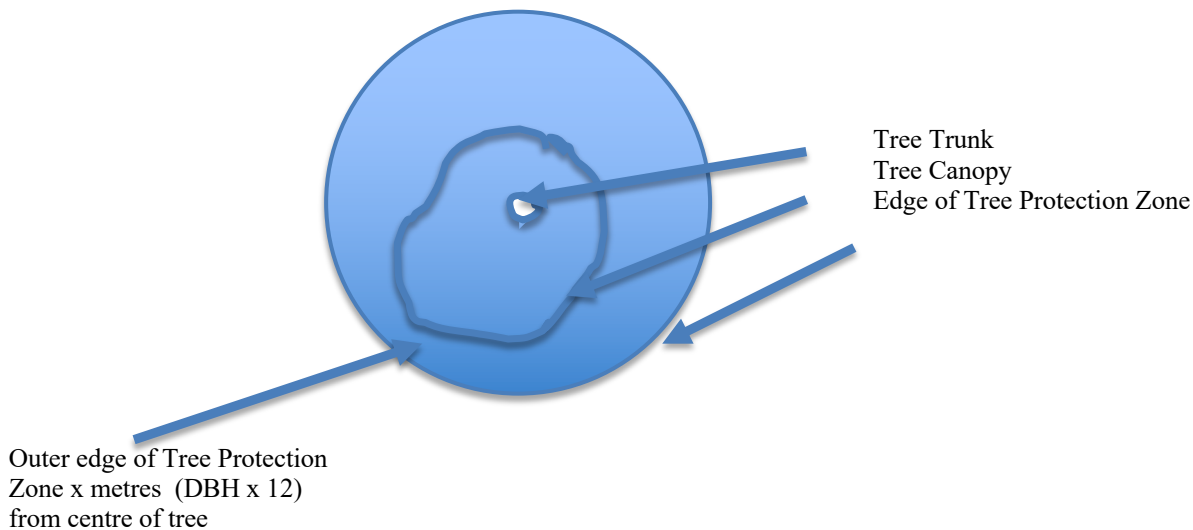
Where

DBH = trunk diameter measured at 1.4 metres above ground Radius is measured from the centre of the stem at ground level.

A TPZ should not be less than 2 metres no greater than 15 metres (except where crown protection is required). Some instances may require variations to the TPZ.

A tree is deemed to be impacted upon if greater than 10% of the TPZ area is to be disturbed.

### Indicative Size of Tree Protection Zone



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EPBC Website iii.

[http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon\\_id=744](http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=744)

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## Plates 1-7 Vegetation existing conditions



**Plate 1.** Degraded Farmed land, Ormond Street, typical conditions.



**Plate 2.** Degraded Farmed land, Harveys Road, typical conditions.



**Plate 3.** Ormond Street roadside reserve, patch native vegetation.



**Plate 4.** Riparian patch native vegetation dominated by River Red Gum, Bruce's Creek.



**Plate 5.** Scattered tree native vegetation, River Red Gum.



**Plate 6.** Patch native vegetation dominated by Manna Gum.



**Plate 7.** Non-indigenous native planted native trees (non-native vegetation per Clause 52.17).

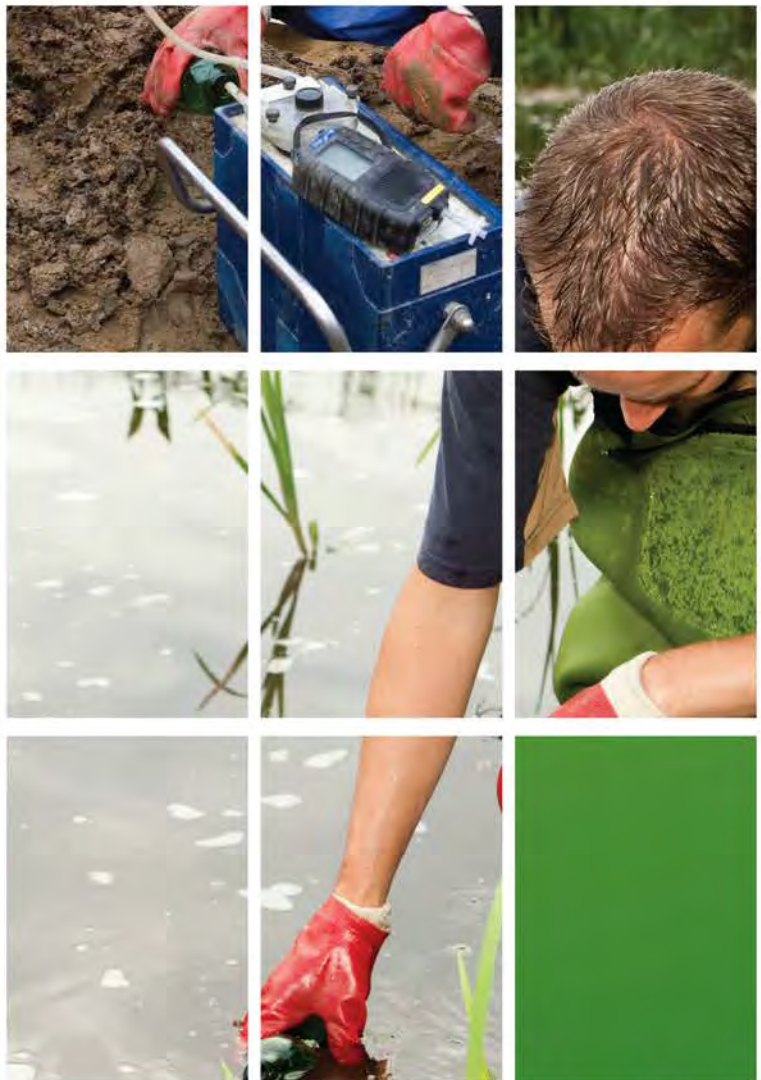




# ENVIRONMENTAL ASSESSMENT

5, 20, 25 & 30 Ormond Street,  
Bannockburn

*Prepared for*  
TGM GROUP PTY LTD





Environmental  
Site Assessments

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<b>Report Title</b>	Environmental Assessment – 5, 20, 25 & 30 Ormond Street Bannockburn	
<b>Doc. Ref</b>	ESA/247/2018	
<b>Client</b>	TGM Group PTY LTD	
<b>Signatures</b>	Prepared by:    Andrew Koster BSc. <i>Deak</i> . Technical Officer	Authorised by:    Seton Lillas BSc <i>Waik</i> . Senior Environmental Consultant

### Revision Status

Revision #	Status	Date	Writer	Reviewer
1	Final	May 9, 2018	Andrew Koster	Seton Lillas

### Documents Distribution

Revision #	Number of copies	Type	Recipient	Position and Company
1	1	Email	Nicole Dixon	Town Planner, TGM Group Pty. Ltd.

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## APPENDICES

**Appendix 1 – Sample Locations**

**Appendix 2 – PID Calibration Sheet**

**Appendix 3 – Comparison Tables**

**Appendix 4 – Laboratory Chain of Custody Documents, Certificates of Analysis and QA/QC**

## 1.0 EXECUTIVE SUMMARY

### 1.1 Background

Ministerial Direction No. 1 – Potentially Contaminated Land ('Direction No. 1') requires planning authorities when preparing planning scheme amendments, to satisfy themselves that the environmental conditions of land proposed to be used for a sensitive use (defined as residential, child-care centre, pre-school centre or primary school), agriculture or public open space are, or will be, suitable for that use.

The planning system is the primary means for regulating land use and approving development and is an important mechanism for triggering the consideration of potentially contaminated land.

Potentially contaminated land is defined in Ministerial Direction No. 1 – Potentially Contaminated Land, as land used or known to have been used for industry, mining or the storage of chemicals, gas, wastes or liquid fuel (if not ancillary to another use of land). This practice note also deals with land that may have been contaminated by other means such as by ancillary activities, contamination from surrounding land, fill using contaminated soil or agricultural uses.

Contamination of land is often a result of current or historical activities that have taken place at a site, or adjacent to it. To identify the potential for contamination, the following steps may assist:

- Consider any available information about the site:
- The current and previous zoning, ownership or activities carried out on the site (for example council, rail, other utility or defence); and
- Any potential contamination from surrounding land uses (for example, an adjacent service station known to be causing off-site contamination).
- Inspect the site. Observations should be made regarding evidence of contamination or historical activities that may give rise to contamination (for example, fuel tanks).

This Environmental Assessment will cover the previously mentioned criteria and also provide a conclusion regarding the likely contamination status of the site.

### 1.2 Environmental Assessment Conclusions

<b>Conclusions</b>	<p>There is a Low likelihood of chemical contamination of soil in the paddocks due to application of fertilisers and/or herbicides.</p> <p>There is a Low likelihood of contamination of soil at the site due to other chemicals.</p> <p>There is a Low likelihood of contamination of soil at the site due to industrial waste.</p> <p>There is a Low probability of occurrence of Acid Sulfate soils on site.</p> <p>The site is surrounded by low risk properties.</p> <p>There is no apparent soil staining, soil discolouration or odours at the site.</p> <p>There is no apparent asbestos contamination.</p> <p>There is no apparent Prescribed Industrial Waste or Putrescible Waste.</p> <p>There is no apparent imported fill on site.</p>
<b>Risk of Contamination</b>	<p>Based on all available information, this soil at the site has a Low risk of contamination.</p> <p>All soils analysed were BELOW the upper thresholds for NEPM HIL A, HSL A/B, ESLs (Urban Residential) and Management Limits (Residential/Parkland). They are therefore considered suitable for conventional residential purposes.</p>

## 2.0 INTRODUCTION, OBJECTIVES, SCOPE OF WORKS

### 2.1 Introduction

Environmental Site Assessments Pty Ltd ('ESA') was engaged by TGM Group Pty Ltd (the 'Client') to undertake an Environmental Assessment including a limited soil sampling program at 5, 20, 25 & 30 Ormond Street Bannockburn (the 'Site'). Currently, the site consists of four houses and associated garage buildings, sheds, one former vineyard and several vacant paddocks.

### 2.2 Project Objective

The purpose of the environmental assessment is to establish:

- Whether known previous or current land uses may have caused contamination on the site; and
- What the contaminants of concern are likely to be and where they are located.

### 2.3 Scope of Works

Environmental Site Assessments provided the following services as part of the scope of works:

- A physical site inspection noting areas of potential contamination;
- The collection of targeted and grid-based soil samples;
- Analysis of soil samples for contaminants of potential concern; and
- Preparation of a report which summarises the likely contamination status of the site.

## 3.0 THE SITE

The site is zoned as Farming Zone ('FZ') and is located in Bannockburn. Currently, the site consists of vacant paddocks, one paddock containing unused grapevines, four houses and garages, and 8 sheds of varying sizes. The soil profile was checked at forty-five points across the site and there was no indication of chemical or other contamination.

### 3.1 Potential Contaminants of Concern

According to AS4482.1<sup>1</sup>, the site has the following potential contaminants of concern due to its previous land uses:

- Fertilisers – Copper, Cadmium;
- Herbicides – Arsenic, Mercury, Organochlorines, Organophosphates; and
- Fuels/Oils – Hydrocarbons, Metals.

There were no instances of Asbestos Containing Material ('ACM') observed on site.

## 4.0 SITE INSPECTION

4.1 Land Parcel Site Inspection Details	
Date and Time of Inspection	30 April 2018, 09:00
Weather Conditions	Fine and sunny
Current Site Use	Agistment.
Previous Site Uses	Farming, Agistment.
Site Coverage incl. condition and type of ground cover, e.g. bare ground, asphalt, concrete, gravel, etc.	The site is predominantly comprised of paddocks with grass, and some established trees. One paddock contained grapevines. Gravel was present on residential driveways. No soil staining or odours were apparent.
Current Adjacent Land Uses incl. the apparent condition of adjacent properties	Residential/Farming. All properties appear to be in good condition.
Details of Structures on site incl. location and condition of all visible features, including foundations, positions of former buildings, tanks, pits, wells, drains and bores.	Water tanks were present in the vicinity of the residential buildings at 5 and 30 Ormond Street. Each property had at least one shed, ranging in size from a small garden shed to large farming shed. All sheds were located in proximity to the residential buildings on each property.

<sup>1</sup> AS 4482.1-2005 Guide to the investigation and sampling of sites with potentially contaminated soil - Non-volatile and Semi-Volatile compounds

<b>Process Details (in relation to current site use)</b>	There are currently no processes on site.
<b>Details of Chemical use incl. chemical storage and transfer areas, including the presence of waste or chemical containers</b>	Chemical signs were present on a shed at 5 Ormond Road. One paddock on this property contains grapevines. These signs would likely refer to pesticides used on the vineyard.
<b>Presence of above ground storage tanks</b>	Water tanks were present in the vicinity of the residential buildings at 5 and 30 Ormond Street.
<b>Presence of underground storage tanks</b>	Nil apparent.
<b>Presence of septic tanks</b>	Nil apparent.
<b>Details of waste handling</b>	Nil apparent.
<b>Evidence of burning of burying of waste</b>	Nil apparent.
<b>Spill Incidents</b>	Nil apparent.
<b>Spill control systems, e.g. bund (materials of construction should be noted)</b>	Nil apparent.
<b>Locations of dispensing or fill points</b>	Nil apparent.
<b>Evidence of Fill Materials</b>	Nil apparent.
<b>Evidence of Scrap and industrial or chemical waste</b>	Nil apparent.
<b>Evidence of settlement, subsidence and disturbed ground</b>	Nil apparent.
<b>Evidence of on site or adjacent cut and fill activities or quarrying</b>	Nil apparent.
<b>Evidence of Contamination (discoloured soil, polluted water, affected plant growth)</b>	Nil apparent.
<b>Potential Asbestos containing material</b>	Nil apparent.
<b>Animal populations</b>	Horses, ponies, rabbits.
<b>Significant odours</b>	Nil apparent.
<b>Assessment of soil loss or deposition that has occurred in the past and evaluation of the future erosion potential</b>	Nil apparent.
<b>Transformers</b>	Nil apparent.

#### 4.2 Site Inspection Conclusions and Recommendations

<b>Conclusions</b>	<p>There is a Medium likelihood of chemical contamination of surface soils in the paddocks due to application of fertilisers and/or herbicides.</p> <p>There is a Medium likelihood of chemical contamination of surface soils in the vicinity of the small buildings.</p> <p>There is a Low likelihood of contamination of soil at the site due to industrial waste.</p> <p>There is a Low probability of occurrence of Acid Sulfate soils on site.</p> <p>The site is surrounded by low risk properties.</p>
--------------------	--

	<p>There is no apparent soil staining, soil discolouration or odours at the site.</p> <p>There is no apparent asbestos contamination.</p> <p>There is no apparent Prescribed Industrial Waste or Putrescible Waste.</p> <p>There is no apparent imported fill on site.</p>
<b>Risk of Contamination</b>	Based on information collected to this point, soils at the site have a Low-Medium risk of contamination.
<b>Recommendations</b>	<p>Surface soil samples from the paddocks are required to discount impacts due to fertiliser/herbicide contamination.</p> <p>Additional samples of soil are required to be collected from around the small buildings. These would be the likely areas where chemical/hydrocarbon impacts would be found due to vehicle traffic and potential capacity for fuel/oil/chemical storage.</p>

## 5.0 SOIL SAMPLING PROGRAM

This sampling program was undertaken on site on the 30<sup>th</sup> of April, 2018. Samples were collected by ESA staff from the surface soils (0-0.15m BGL) by hand auger. The auger was cleaned between samples with phosphate free detergent and rinsed with deionised water. The approximate sampling points for the site are shown in **Appendix 1**.

Table 5.0 illustrates the samples that were collected. The samples that were collected consisted of SANDY SILT: Low Plasticity, Brown, Fine Grains, Dry.

A Photoionisation Detector ('PID') was employed to screen samples for Volatile Organic Compounds ('VOC'). The following methodology was employed:

- A sample of soil was carefully collected with minimal disturbance that could cause loss of volatile constituents;
- The sample was immediately extruded into a plastic bag and sealed;
- The sealed bag containing the sample was crushed between the fingers to disperse the sample and release volatile constituents;
- The inlet tube of the PID was then inserted through a small opening in the bag into the headspace over the sample; and
- The PID response (in ppm) was measured within 2-3 seconds and the result recorded on the field form.

The PID calibration form is attached as **Appendix 2**.

Table 5.0

Sample ID	Sampling Point	Depth of Sample (m BGL)	Lab Analysis	PID (PPM)/Odour
SP01/0-0.15	SP01	0-0.15	NEPM Suite*	0.0/Nil
SP02/0-0.15	SP02	0-0.15	OC/OP Pesticides including Dieldrin and 15 Metals**	0.0/Nil
SP03/0-0.15	SP03	0-0.15	OC/OP Pesticides including Dieldrin and 15 Metals**	0.0/Nil
SP04/0-0.15	SP04	0-0.15	OC/OP Pesticides including Dieldrin and 15 Metals**	0.0/Nil
SP05/0-0.15	SP05	0-0.15	NEPM Suite*	0.0/Nil
SP06/0-0.15	SP06	0-0.15	OC/OP Pesticides including Dieldrin and 15 Metals**	0.0/Nil

Sample ID	Sampling Point	Depth of Sample (m BGL)	Lab Analysis	PID (PPM)/Odour
SP07/0-0.15	SP07	0-0.15	OC/OP Pesticides including Dieldrin and 15 Metals**	0.0/Nil
SP08/0-0.15	SP08	0-0.15	NEPM Suite*	0.0/Nil
SP09/0-0.15	SP09	0-0.15	OC/OP Pesticides including Dieldrin and 15 Metals**	0.0/Nil
SP10/0-0.15	SP10	0-0.15	OC/OP Pesticides including Dieldrin and 15 Metals**	0.0/Nil
SP11/0-0.15	SP11	0-0.15	NEPM Suite*	0.0/Nil
SP12/0-0.15	SP12	0-0.15	NEPM Suite*	0.0/Nil
SP13/0-0.15	SP13	0-0.15	OC/OP Pesticides including Dieldrin and 15 Metals**	0.0/Nil
SP14/0-0.15	SP14	0-0.15	OC/OP Pesticides including Dieldrin and 15 Metals**	0.0/Nil
SP15/0-0.15	SP15	0-0.15	NEPM Suite*	0.0/Nil
SP16/0-0.15	SP16	0-0.15	NEPM Suite*	0.0/Nil
SP17/0-0.15	SP17	0-0.15	OC/OP Pesticides including Dieldrin and 15 Metals**	0.0/Nil
QC06	SP17	0-0.15	OC/OP Pesticides including Dieldrin and 15 Metals**	0.0/Nil
QC07	SP17	0-0.15	OC/OP Pesticides including Dieldrin and 15 Metals**	0.0/Nil
SP18/0-0.15	SP18	0-0.15	OC/OP Pesticides including Dieldrin and 15 Metals**	0.0/Nil
SP19/0-0.15	SP19	0-0.15	OC/OP Pesticides including Dieldrin and 15 Metals**	0.0/Nil
SP20/0-0.15	SP20	0-0.15	OC/OP Pesticides including Dieldrin and 15 Metals**	0.0/Nil
SP21/0-0.15	SP21	0-0.15	OC/OP Pesticides including Dieldrin and 15 Metals**	0.0/Nil
SP22/0-0.15	SP22	0-0.15	NEPM Suite*	0.0/Nil



Sample ID	Sampling Point	Depth of Sample (m BGL)	Lab Analysis	PID (PPM)/Odour
SP23/0-0.15	SP23	0-0.15	OC/OP Pesticides including Dieldrin and 15 Metals**	0.0/Nil
SP24/0-0.15	SP24	0-0.15	OC/OP Pesticides including Dieldrin and 15 Metals**	0.0/Nil
SP25/0-0.15	SP25	0-0.15	OC/OP Pesticides including Dieldrin and 15 Metals**	0.0/Nil
SP26/0-0.15	SP26	0-0.15	OC/OP Pesticides including Dieldrin and 15 Metals**	0.0/Nil
SP27/0-0.15	SP27	0-0.15	NEPM Suite*	0.0/Nil
SP28/0-0.15	SP28	0-0.15	OC/OP Pesticides including Dieldrin and 15 Metals**	0.0/Nil
SP29/0-0.15	SP29	0-0.15	OC/OP Pesticides including Dieldrin and 15 Metals**	0.0/Nil
SP30/0-0.15	SP30	0-0.15	OC/OP Pesticides including Dieldrin and 15 Metals**	0.0/Nil
SP31/0-0.15	SP31	0-0.15	OC/OP Pesticides including Dieldrin and 15 Metals**	0.0/Nil
SP32/0-0.15	SP32	0-0.15	NEPM Suite*	0.0/Nil
SP33/0-0.15	SP33	0-0.15	OC/OP Pesticides including Dieldrin and 15 Metals**	0.0/Nil
SP34/0-0.15	SP34	0-0.15	OC/OP Pesticides including Dieldrin and 15 Metals**	0.0/Nil
SP35/0-0.15	SP35	0-0.15	OC/OP Pesticides including Dieldrin and 15 Metals**	0.0/Nil
TP01/0-0.15	TP01	0-0.15	TRH C6-C40, 15 Metals**	0.0/Nil
TP02/0-0.15	TP02	0-0.15	TRH C6-C40, 15 Metals**	0.0/Nil
TP03/0-0.15	TP03	0-0.15	TRH C6-C40, 15 Metals**	0.0/Nil
TP04/0-0.15	TP04	0-0.15	TRH C6-C40, 15 Metals**	0.0/Nil
TP05/0-0.15	TP05	0-0.15	TRH C6-C40, 15 Metals**	0.0/Nil

Sample ID	Sampling Point	Depth of Sample (m BGL)	Lab Analysis	PID (PPM)/Odour
TP06/0-0.15	TP06	0-0.15	TRH C6-C40, 15 Metals**	0.0/Nil
TP07/0-0.15	TP07	0-0.15	TRH C6-C40, 15 Metals**	0.0/Nil
QC08	TP07	0-0.15	TRH C6-C40, 15 Metals**	0.0/Nil
QC09	TP07	0-0.15	TRH C6-C40, 15 Metals**	0.0/Nil
TP08/0-0.15	TP08	0-0.15	TRH C6-C40, 15 Metals**	0.0/Nil
TP09/0-0.15	TP09	0-0.15	TRH C6-C40, 15 Metals**	0.0/Nil
TP10/0-0.15	TP10	0-0.15	TRH C6-C40, 15 Metals**	0.0/Nil

\* = 15 Metals including As, Ba, Be, B, Cd, Cr, Co, Cu, Hg, Mn, Ni, Pb, Se V, Zn, TRH (C6-C36 or 40) / BTEXN, PAH/Phenols (16 PAHs & 12 Phenols), OC/OP Pesticides Including Triazine, Pesticides (Atrazine) and Bifenthrin, PCB, Cyanide – WAD, Chromium – Hexavalent (Alkaline Leach)

\*\* = 15 Metals including As, Ba, Be, B, Cd, Cr, Co, Cu, Hg, Mn, Ni, Pb, Se V, Zn

The following sections describe the guidelines, standards and investigation methods adopted for the soil sampling program.

## 5.1 Relevant Guidelines and Standards

The sampling program was undertaken in accordance with the following guidelines, standards and policies:

- Australia Standard (AS 4482.1) - Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil, Part 1: Non-volatile and Semi-volatile compounds (Standards Australia, 2005);
- Australia Standard (AS 4482.2) - Guide to the Sampling and Investigation of Potentially Contaminated Soil, Part 2: Volatile Substances (Standards Australia, 1999);
- National Environment Protection (Assessment of Site Contamination) Measure 1999 (Amended); and
- State Environment Protection Policy (Prevention and Management of Contamination of Land) No. S95, EPA Victoria, June 2002.

## 5.2 Quality Assurance / Quality Control

### 5.2.1 Environmental Site Assessments Quality Assurance ('QA') Program

Environmental Site Assessments has developed and implemented a Quality Assurance Program in general accordance with the following guidelines:

- Australia Standard (AS 4482.1) - Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil, Part 1: Non-volatile and Semi-volatile compounds (Standards Australia, 2005); and
- National Environment Protection Council (NEPC) - National Environment Protection (Assessment of Site Contamination) Measure (NEPM) - Schedule B3 Guideline on Laboratory Analysis of Potentially Contaminated Soils, 1999 (Amended).

As part of the Quality Assurance Program, Environmental Site Assessments ensures that the following methodology is employed:

- The use of appropriately qualified and trained environmental scientists to perform intrusive works;
- The use of standardised field sheets to record the findings of the site investigations;
- The collection and analysis of Quality Control samples as per AS 4482.1;
- The use of Chain of Custody procedures to ensure that sample integrity is maintained through the transport and handling stages; and
- Only using NATA accredited laboratories for the analysis of samples collected during the investigation activities.

As per the Environmental Site Assessments Quality Assurance Program, the following data quality indicators were used for the assessment of the laboratory analytical data:

- All sample analysis to be conducted using NATA registered methods in accordance with NEPM 1999 (Amended) guidelines;
- Laboratory method blank analysis required to be below the Limit of Reporting (LOR); and
- Surrogate compound concentrations required to be spiked at similar concentration to sample result.

### 5.2.2 Environmental Site Assessments Quality Control ('QC') Program

The overall precision of field quality control samples, laboratory split samples and laboratory duplicates is generally assessed by their Relative Percentage Difference (RPD), given by:

$$\frac{(C1 - C2) \times 100}{\frac{(C1 + C2)}{2}}$$

Where:

C1 is the primary sample concentration.

C2 is the duplicate sample concentration.

The Relative Percentage Difference (RPD) of duplicated analysis were calculated and compared to the following criteria for acceptability. The acceptance criteria are listed in AS4482.1 (2005):

- Less than 30-50% for field duplicates (blind replicate and split samples);
- Less than 30% for laboratory duplicates where the detection is less than 10 times the LOR;
- Less than 20% for laboratory duplicates where the detection is greater than 10 times the LOR;
- RPDs for control spike duplicates will be compared to an acceptable limit of 20%;
- RPDs for matrix spike duplicates will be compared to an acceptable limit of 20%; and
- Percentage recoveries of control spikes and matrix spikes will be compared to an acceptable range of 70% – 130%. Where this range is exceeded, reference to the laboratories internal data quality objective limits will be made. In addition, percentage recoveries of surrogates will also be compared to the USEPA surrogate recovery limits.

### 5.2.3 Sample Documentation

All samples collected were labelled in a clear and precise way for proper identification in the field and for tracking in the laboratory.

The samples had identifiable and unique numbers. The sample labels contained the following information:

- Company name;
- Name of sampler;
- Sample ID; and
- Date/Time sample was collected.

Chain-of-custody forms were used to document sample collection and transport to laboratories for analysis. All sample transports for analysis were accompanied by a chain-of-custody form.

The chain-of-custody forms identified the contents of each transport and maintained the custodial integrity of the samples. The coolers in which samples were stored were sealed with self-adhesive custody seals. All custody seals were signed.

### 5.2.4 Packaging and Transport

All sample containers were placed in a plastic cooler. The following outlines the packaging procedures that were followed for samples:

- When ice was used, it was packed in zip-locked, double plastic bags. The drain plug of the cooler was sealed with fiberglass tape to prevent melting ice from leaking out of the cooler;
- The bottom of the cooler was lined with bubble wrap to prevent breakage during transport;
- All glass sample containers were enclosed in bubble wrap to prevent breakage;
- Where required, empty space in the cooler was filled with bubble wrap to prevent movement and breakage during transport;
- Ice used to cool samples was placed on top and around the samples to chill them to the correct temperature; and
- Each cooler was securely taped shut with signed custody seals.

### 5.2.5 Field Notes

The following information was recorded during the collection of each sample:

- Sample location and description;
- Sampling area sketch showing sample location and measured distances (where required);

- Sampler's name(s);
- Date and time of sample collection;
- Sample ID;
- Type of soil/material encountered (Fill, Natural etc.);
- PID readings;
- Field observations and details related to analysis or integrity of samples (e.g., weather conditions, noticeable odours, colours etc.);
- Soil descriptions as per AS1726-1993; and
- Sample preservation details.

In addition to the sampling information, the following specific information was also recorded in the field logbook:

- Team members and their responsibilities;
- Time of arrival/entry on site and time of site departure;
- Other personnel on site;
- Summary of any meetings or discussions;
- Deviations from sampling plans;
- Changes in personnel and responsibilities with reasons for the changes; and
- Calibration readings for any equipment used and equipment model and serial number.

### 5.3 Results of Analysis

**Investigation levels** and **screening levels** are the concentrations of a contaminant above which further appropriate investigation and evaluation will be required.

Investigation and screening levels provide the basis of Tier 1 risk assessment. A Tier 1 assessment is a risk-based analysis comparing site data with generic investigation and screening levels for various land uses to determine the need for further assessment or development of an appropriate management strategy. The application of investigation and screening levels is subject to a range of limitations.

**Health investigation levels ('HILs')** have been developed for a broad range of metals and organic substances. The HILs are applicable for assessing human health risk via all relevant pathways of exposure. The HILs are generic to all soil types and apply generally to a depth of 3m below the surface for residential use. Site-specific conditions should determine the depth to which HILs apply for other land uses.

**Health screening levels ('HSLs')** have been developed for selected petroleum compounds and fractions and are applicable to assessing human health risk via the inhalation and direct contact pathways. The HSLs depend on specific soil physicochemical properties, land use scenarios, and the characteristics of building structures. They apply to different soil types, and depths below surface to >4m.

**Ecological screening levels ('ESLs')** have been developed for selected petroleum hydrocarbon compounds and total petroleum hydrocarbon (TPH) fractions and are applicable for assessing risk to terrestrial ecosystems. ESLs broadly apply to coarse- and fine-grained soils and various land uses. They are generally applicable to the top 2m of soil.

**Petroleum hydrocarbon management limits ('management limits')** are applicable to petroleum hydrocarbon compounds only. They are applicable as screening levels following evaluation of human health and ecological risks and risks to groundwater resources. They are relevant for operating sites where significant sub-surface leakage of petroleum compounds has occurred and when decommissioning industrial and commercial sites.

The laboratories used for conducting the soil analysis were Australian Laboratory Services Pty Ltd ('ALS') and Eurofins MGT ('MGT'). Both ALS and MGT are NATA certified for the analysis undertaken.

The comparison tables for laboratory results are attached in **Appendix 3**. All chain of custody forms, certificates of analysis and laboratory QA/QC documents are in **Appendix 4**. The laboratory report number is EM1716327.

The laboratory results were compared with NEPM 1999 (Amended) guidelines for HIL A, HSL A/B, ESLs (Urban Residential) and Management Limits (Residential/Parkland).

The comparison results were as follows:

- There were no results in excess of NEPM HIL A, HSL A/B, ESLs (Urban Residential) and Management Limits (Residential/Parkland) upper thresholds.

### 5.4 Laboratory QA/QC

As part of their NATA accreditation, ALS and MGT perform internal duplicate analysis of samples for comparison of results to demonstrate precision. Laboratory standards including matrix spike samples, laboratory control samples and surrogates are also conducted as a basis to demonstrate accuracy. In addition, internal laboratory blank samples are run to assess the potential for laboratory equipment errors. The laboratory QA/QC results are attached in **Appendix 4**.

### 5.4.1 ALS Environmental Laboratory

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outlier occurred.
- For all matrices, no Surrogate Recovery outliers occur.

### 5.4.2 Eurofins MGT Laboratory

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outlier occurred.
- For all matrices, no Surrogate Recovery outliers occur.

### 5.4.3 Sample Holding Times and Sample Receipt Temperature

Sample holding times were within acceptable ranges from collection to extraction. The documented temperature of samples upon receipt at the respective laboratory was within an acceptable range.

### 5.4.4 Conclusion

A review of the laboratory reports indicates that ALS and MGT have met their internal acceptance criteria for the quality control samples.

## 5.5 Field Quality Control Samples

### 5.5.1 Blind Replicate and Split samples

The relative percentage difference was calculated for the blind (QC06 and QC08) and split samples (QC07 and QC09). The comparison table is attached to **Appendix 3**. There were two RPDs (Manganese and Zinc) for the split sample QC09 that were greater than 50%. This was likely due to the difference in interlab testing methodology and will not affect the outcome of this investigation.

### 5.5.2 Trip, Field and Rinsate Blanks

Trip blanks (QC01, QC02, QC03 & QC04) evaluate if the transport and handling procedures are introducing contaminants into the samples, and if cross contamination in the form of VOC migration has occurred between the collected samples. Field blanks (QC05) evaluate whether contaminants have been introduced into the samples during the sampling due to contamination from sample containers. Equipment rinsate blanks (QC10) evaluate field sampling and decontamination procedures.

Analysis of these Quality Control samples indicate that transport and handling, sample containers and decontamination procedures have not resulted in cross-contamination of the collected soil samples. The table of results is attached in **Appendix 3**.

## 6.0 CONCLUSION OF ENVIRONMENTAL ASSESSMENT

<b>Conclusions</b>	<p>There is a Low likelihood of chemical contamination of soil in the paddocks due to application of fertilisers and/or herbicides.</p> <p>There is a Low likelihood of contamination of soil at the site due to other chemicals.</p> <p>There is a Low likelihood of contamination of soil at the site due to industrial waste.</p> <p>There is a Low probability of occurrence of Acid Sulfate soils on site.</p> <p>The site is surrounded by low risk properties.</p> <p>There is no apparent soil staining, soil discolouration or odours at the site.</p> <p>There is no apparent asbestos contamination.</p> <p>There is no apparent Prescribed Industrial Waste or Putrescible Waste.</p> <p>There is no apparent imported fill on site.</p>
<b>Risk of Contamination</b>	<p>Based on all available information, this soil at the site has a Low risk of contamination.</p>

	All soils analysed were BELOW the upper thresholds for NEPM HIL A, HSL A/B, ESLs (Urban Residential) and Management Limits (Residential/Parkland). They are therefore considered suitable for conventional residential purposes.
--	--

## 7.0 REFERENCES

- Ministerial Direction No. 1 – Potentially Contaminated Land ('Direction No. 1')
- Environment Protection Authority of Victoria. Priority Sites Register. <http://www.epa.vic.gov.au/your-environment/land-and-groundwater/~media/Files/land/docs/PSRaccessregister.pdf>
- Environment Protection Authority of Victoria issued certificates and statements of environmental audits. <http://www.epa.vic.gov.au/our-work/environmental-auditing/53v-reports-certificates-statements-of-environmental-audit>
- National Environment Protection Council 1999 (As Amended) - National Environment Protection (Assessment of Site Contamination) Measure – Guideline on Investigation Levels for Soil and Groundwater.
- Standards Australia. 2005. AS 4482.1, Guide to the sampling and investigation of potentially contaminated soil, Part 1: Non-volatile compounds. Standards Association of Australia
- Standards Australia. 1999. AS4482.1, Guide to the sampling and investigation of potentially contaminated soil Part 2: Volatile substances. Standards Association of Australia
- Australian Soil Resource Information System (ASRIS), CSIRO Australia 2006, [http://www.asris.csiro.au/index\\_ie.html#](http://www.asris.csiro.au/index_ie.html#)
- Department of Sustainability and Environment, Victoria's Planning Scheme, State Government of Victoria, <http://www.dpi.vic.gov.au/>
- Land Channel. Victorian Government Online Channel, State Government of Victoria,
- GeoVic ([http://er-info.dpi.vic.gov.au/sd\\_weave/registered.htm](http://er-info.dpi.vic.gov.au/sd_weave/registered.htm))

## DISCLAIMER

This disclaimer, together with any limitations specified in the report, applies to use of this report.

This report was prepared in accordance with a contracted scope of services. There were a series of cost, time and other constraints which have affected the accuracy and completeness of investigations undertaken.

This report has been prepared solely for use by, and is confidential to; the client who contracted the scope of services and Environmental Site Assessments accepts no responsibility for its use by other persons.

The contract for the preparation of this report contains express limitations upon the liability of Environmental Site Assessments which should be considered carefully. This report is subject to copyright protection and the copyright owner reserves its rights. This report does not constitute legal advice.

This report must be read in conjunction with the Statement of Qualifications and Limitations contained within it.

## STATEMENT OF QUALIFICATIONS AND LIMITATIONS

It is not possible to identify all contamination or potential contaminants in or under the surface of the site. This is an intrinsic risk when investigating potentially contaminated sites. As such, Environmental Site Assessments has prepared the following information which details the limitations of this environmental report.

In preparing this report, Environmental Site Assessments has relied on client/ third party information which was not verified by Environmental Site Assessments and Environmental Site Assessments does not accept responsibility for omissions or inaccuracies in the client/ third party information.

This report is based solely on the specific instructions received from its client and/or the scope of work agreed between Environmental Site Assessments and its client. Those instructions and/or scope of work may not be fully described in this report.

This report is based on the site conditions identified at the time of inspection. It is not possible to identify all contamination or potential contaminants in or under the surface of the site.

Investigations undertaken in respect of this report may have been constrained by the particular site conditions, such as the location of buildings, services and vegetation. Further, changes that may have occurred after inspection.

As a result of these matters, not all relevant site history, contaminants or potential for contamination may have been identified in this report.

No warranties express or implied, as to the accuracy or completeness of the matters contained within it are made.

Although normal standards of professional practice have been applied, the absence of any identified potential for air, soil or groundwater impacts on the subject property should not be interpreted as a conclusion that impacts do not exist on the site.

Subsurface conditions can vary across a particular site, which cannot be wholly defined by investigation.

As a result, it is unlikely that the results and estimations presented in this report will reflect the extremes of conditions within the site. Subsurface conditions including impact concentrations can change in a limited period of time. Any information provided may be based on "spot" tests. Conditions may vary between or beyond those locations from the interpreted conditions based on the actual data.

The analyses, evaluations, opinions and conclusions presented in this report are based on the information provided, and they could change if the information is in fact found to be unrepresentative of conditions between sampling and analysis locations.

The assessment and remediation of contamination is a developing science. Clean Up technology is constantly changing as scientific information on data collection, risk assessment, toxicology and remediation technologies are published. Further, opinions can vary as to the criterion for whether particular conditions constitute contamination, and if so how that contamination should be addressed or remediated. Different persons might reasonably or otherwise form opinions different to those of Environmental Site Assessments.

Use of the site for any purpose may require planning and other approvals and, in some cases, EPA and accredited site auditor approvals. Environmental Site Assessments offers no opinion as to the likelihood of obtaining any such approvals, or the conditions and obligations which such approvals may impose, which may include the requirement for significant environment works.

The ongoing use of the site or use of the site for a different purpose may require the owner/ user to manage and/ or remediate site conditions, such as contamination and other conditions, including but not limited to conditions referred to in this report.

This report is not intended to be used for the purposes of tendering, programming of works, refurbishment works or demolition works unless used in conjunction with a specification detailing the extent of the works.

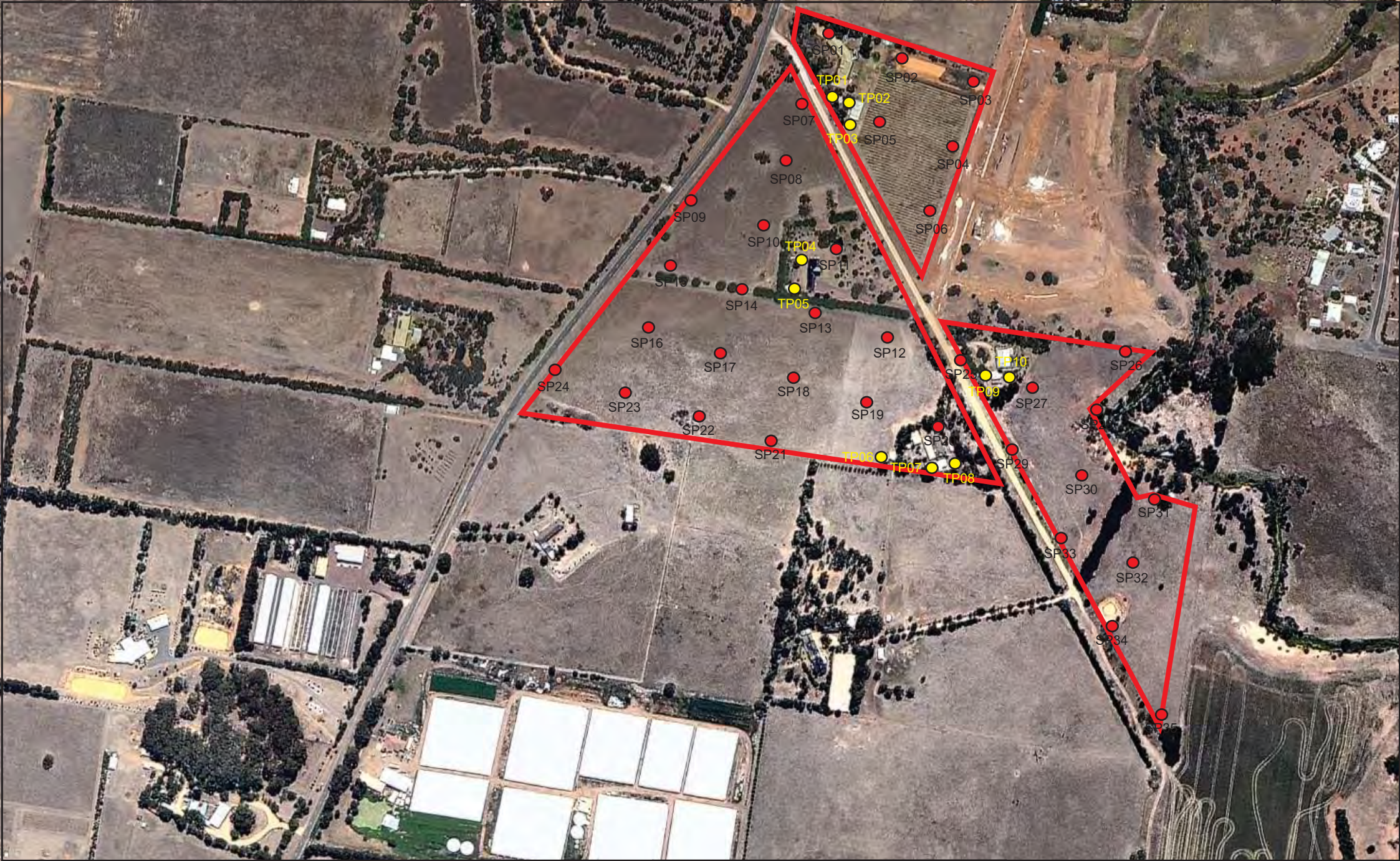
To ensure its contextual integrity, the report must be read in its entirety and should not be copied, distributed or referred to in part only.

Environmental Site Assessments makes no determination or recommendation regarding a decision whether to acquire or provide financing with respect to the site.



## **Appendix 1 – Sample Locations**






  
 Phone: 03 5221 8136
   
 office@esagroup.com.au
   
 PO Box 3106,
   
 Waurn Ponds, VIC 3216
   
 www.esagroup.com.au

- Legend**
- Grid Based Sample Points
  - Targeted Sample Points
  - Site Boundary

Designed:	S.Lillas	Revision:	1
Drawn:	S.Lillas	Date:	26.03.18
File:	Sample Locations.pdf		



Title:	Sample Locations
Project:	Environmental Assessment
Location:	5, 20, 25 & 30 Ormond Street, Bannockburn
Client:	TGM Group

Aerial sourced from Nearmap



## **Appendix 2 – PID Calibration Sheet**



# AES

ACTIVE ENVIRONMENTAL SOLUTIONS

## Calibration Certificate

Sensor	Type	Serial No.	Span Gas	Concentration	Traceability Lot #	CF	Reading	
							Zero	Span
PID	10.6eV	1062R129024	Isobutylene	100 PPM	S110317-1		0	100

Calibrated/Repaired by: DARREN FRANCALANZA

Date: 17.04.2018

Next Due: 17.10.2018

**Melbourne**    **Head Office**    2 Merchant Avenue    THOMASTOWN VIC 3074    T: +(613) 9464 2300    F: + (613) 9464 3421  
**Sydney**        S14 Lvl 2            6-8 Holden Street    ASHFIELD NSW 2131    T: +(612) 9716 5966    F: + (612) 9716 5988  
**Perth**         Unit 6                41 Holder Way        MALAGA WA 6090        T: +(618) 9249 5663    F: + (618) 9249 5362  
**Brisbane**      Unit 17               23 Ashtan Place      BANYO QLD 4014        T: +(617) 3267 1433    F: + (617) 3267 3559



## **Appendix 3 – Comparison Tables**



Tokuthion	BTEX								Cyanides	Halogenated Benzenes	Ha	
	Benzene	Ethylbenzene	Toluene	Total BTEX	Xylene (m & p)	Xylene (o)	Xylene Total	C6-C10 less BTEX (F1)			Cyanide (WAD)	Hexachlorobenzene
mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.2	0.5	0.5	0.2	0.5	0.5	0.5	10	1	0.05	0.5	0.5
NEPM 2013 Table 1A(1) HILs Res A Soil										10		
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion												
0-1m	0.5 0.6 0.7	NL NL 55	160 390 480				40 95 110	40 45 50				
NEPM 2013 Table 1B(6) ESLs for Urban Res	65 65		105 105									
0-2m	50	70 125 125	85				45 45 105					
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland												

Field_ID	LocCode	Sample_Depth_Range	Sampled_Date-Time	Env_Stds	Conditional	Matrix_Type											
QC06	SP17	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	<0.05	-	-
QC07	SP17	0-0.15	30-Apr-18	SILT	<0.2	-	-	-	-	-	-	-	-	-	<0.05	-	-
QC08	TP07	0-0.15	30-Apr-18	SILT	-	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	-	-	-	-
QC09	TP07	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	<20	-	-	-	-
SP01/0-0.15	SP01	0-0.15	30-Apr-18	SILT	-	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	<1	<0.05	<0.5	<0.5
SP02/0-0.15	SP02	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	<0.05	-	-
SP03/0-0.15	SP03	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	<0.05	-	-
SP04/0-0.15	SP04	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	<0.05	-	-
SP05/0-0.15	SP05	0-0.15	30-Apr-18	SILT	-	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	<1	<0.05	<0.5	<0.5
SP06/0-0.15	SP06	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	<0.05	-	-
SP07/0-0.15	SP07	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	<0.05	-	-
SP08/0-0.15	SP08	0-0.15	30-Apr-18	SILT	-	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	<1	<0.05	<0.5	<0.5
SP09/0-0.15	SP09	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	<0.05	-	-
SP10/0-0.15	SP10	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	<0.05	-	-
SP11/0-0.15	SP11	0-0.15	30-Apr-18	SILT	-	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	<1	<0.05	<0.5	<0.5
SP12/0-0.15	SP12	0-0.15	30-Apr-18	SILT	-	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	<1	<0.05	<0.5	<0.5
SP13/0-0.15	SP13	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	<0.05	-	-
SP14/0-0.15	SP14	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	<0.05	-	-
SP15/0-0.15	SP15	0-0.15	30-Apr-18	SILT	-	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	<1	<0.05	<0.5	<0.5
SP16/0-0.15	SP16	0-0.15	30-Apr-18	SILT	-	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	1	<0.05	<0.5	<0.5
SP17/0-0.15	SP17	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	<0.05	-	-
SP18/0-0.15	SP18	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	<0.05	-	-
SP19/0-0.15	SP19	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	<0.05	-	-
SP20/0-0.15	SP20	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	<0.05	-	-
SP21/0-0.15	SP21	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	<0.05	-	-
SP22/0-0.15	SP22	0-0.15	30-Apr-18	SILT	-	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	<1	<0.05	<0.5	<0.5
SP23/0-0.15	SP23	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	<0.05	-	-
SP24/0-0.15	SP24	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	<0.05	-	-
SP25/0-0.15	SP25	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	<0.05	-	-
SP26/0-0.15	SP26	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	<0.05	-	-
SP27/0-0.15	SP27	0-0.15	30-Apr-18	SILT	-	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	<1	<0.05	<0.5	<0.5
SP28/0-0.15	SP28	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	<0.05	-	-

	BTEX								Cyanides	Halogenated Benzenes	Ha		
	Toluene	Benzene	Ethylbenzene	Toluene	Total BTEX	Xylene (m & p)	Xylene (o)	Xylene Total	C6-C10 less BTEX (F1)	Cyanide (WAD)	Hexachlorobenzene	2,4,5-trichlorophenol	2,4,6-trichlorophenol
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL		0.2	0.5	0.5	0.2	0.5	0.5	0.5	10	1	0.05	0.5	0.5
NEPM 2013 Table 1A(1) HILs Res A Soil											10		
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion													
0-1m		0.5 0.6 0.7	NL NL 55	160 390 480				40 95 110	40 45 50				
NEPM 2013 Table 1B(6) ESLs for Urban Res		65 65		105 105									
0-2m		50	70 125 125	85				45 45 105					
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland													

Field_ID	LocCode	Sample_Depth_Range	Sampled_Date-Time	Env_Stds_Conditional_Matrix_Type													
SP29/0-0.15	SP29	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	<0.05	-	-
SP30/0-0.15	SP30	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	<0.05	-	-
SP31/0-0.15	SP31	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	<0.05	-	-
SP32/0-0.15	SP32	0-0.15	30-Apr-18	SILT	-	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	<1	<0.05	<0.5	<0.5
SP33/0-0.15	SP33	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	<0.05	-	-
SP34/0-0.15	SP34	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	<0.05	-	-
SP35/0-0.15	SP35	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	<0.05	-	-
TP01/0-0.15	TP01	0-0.15	30-Apr-18	SILT	-	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	-	-	-	-
TP02/0-0.15	TP02	0-0.15	30-Apr-18	SILT	-	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	-	-	-	-
TP03/0-0.15	TP03	0-0.15	30-Apr-18	SILT	-	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	-	-	-	-
TP04/0-0.15	TP04	0-0.15	30-Apr-18	SILT	-	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	-	-	-	-
TP05/0-0.15	TP05	0-0.15	30-Apr-18	SILT	-	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	-	-	-	-
TP06/0-0.15	TP06	0-0.15	30-Apr-18	SILT	-	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	-	-	-	-
TP07/0-0.15	TP07	0-0.15	30-Apr-18	SILT	-	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	-	-	-	-
TP08/0-0.15	TP08	0-0.15	30-Apr-18	SILT	-	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	-	-	-	-
TP09/0-0.15	TP09	0-0.15	30-Apr-18	SILT	-	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	-	-	-	-
TP10/0-0.15	TP10	0-0.15	30-Apr-18	SILT	-	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<10	-	-	-	-



	logenated Phenols				Herbicides	Inorganics	Lead	Metals															
	2,4-dichlorophenol	2,6-dichlorophenol	2-chlorophenol	Pentachlorophenol				Atrazine	Moisture	Moisture Content (dried @ 103°C)	Lead	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium (hexavalent)	Chromium (III+VI)	Chromium (Trivalent)	Cobalt	Copper	Manganese	Mercury
EQL	0.5	0.5	0.5	2	0.05	1		5	2	10	1	10	0.4	0.5	2			2	5	5	0.1		
NEPM 2013 Table 1A(1) HILs Res A Soil				100	320			300	100		60	4500	20	100				100	6000	3800	40		
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion 0-1m																							
NEPM 2013 Table 1B(6) ESLs for Urban Res 0-2m																							
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland																							

Field_ID	LocCode	Sample_Depth_Range	Sampled_Date-Time	Env_Stds	Conditional	Matrix_Type																					
QC06	SP17	0-0.15	30-Apr-18	SILT			-	-	-	-	-	4.7	-	7	40	10	<1	<50	<1	-	20	-	3	<5	32	<0.1	
QC07	SP17	0-0.15	30-Apr-18	SILT			-	-	-	-	-	4.6	6.9	29	15	<2	<10	<0.4	<1	20	20	<5	<5	36	<0.1		
QC08	TP07	0-0.15	30-Apr-18	SILT			-	-	-	-	3.9	-	<5	21	10	<1	<50	<1	-	12	-	<2	<5	19	<0.1		
QC09	TP07	0-0.15	30-Apr-18	SILT			-	-	-	-	-	4.4	7.3	22	15	<2	<10	<0.4	<1	15	15	<5	<5	51	<0.1		
SP01/0-0.15	SP01	0-0.15	30-Apr-18	SILT			<0.5	<0.5	<0.5	<2	<0.05	2.9	-	<5	<5	<10	<1	<50	<1	<0.5	7	-	<2	<5	12	<0.1	
SP02/0-0.15	SP02	0-0.15	30-Apr-18	SILT			-	-	-	-	3.6	-	<5	6	<10	<1	<50	<1	-	9	-	<2	<5	5	<0.1		
SP03/0-0.15	SP03	0-0.15	30-Apr-18	SILT			-	-	-	-	3.6	-	5	6	10	<1	<50	<1	-	13	-	<2	<5	26	<0.1		
SP04/0-0.15	SP04	0-0.15	30-Apr-18	SILT			-	-	-	-	2.5	-	<5	8	<10	<1	<50	<1	-	12	-	<2	<5	16	<0.1		
SP05/0-0.15	SP05	0-0.15	30-Apr-18	SILT			<0.5	<0.5	<0.5	<2	<0.05	7.2	-	<5	5	<10	<1	<50	<1	<0.5	9	-	<2	<5	18	<0.1	
SP06/0-0.15	SP06	0-0.15	30-Apr-18	SILT			-	-	-	-	4.1	-	6	12	10	<1	<50	<1	-	18	-	2	<5	20	<0.1		
SP07/0-0.15	SP07	0-0.15	30-Apr-18	SILT			-	-	-	-	3.7	-	<5	11	<10	<1	<50	<1	-	12	-	<2	<5	6	<0.1		
SP08/0-0.15	SP08	0-0.15	30-Apr-18	SILT			<0.5	<0.5	<0.5	<2	<0.05	2.2	-	6	10	<10	<1	<50	<1	<0.5	14	-	<2	<5	6	<0.1	
SP09/0-0.15	SP09	0-0.15	30-Apr-18	SILT			-	-	-	-	3.7	-	7	27	20	<1	<50	<1	-	19	-	3	<5	24	<0.1		
SP10/0-0.15	SP10	0-0.15	30-Apr-18	SILT			-	-	-	-	4.6	-	6	17	<10	<1	<50	<1	-	22	-	<2	<5	7	<0.1		
SP11/0-0.15	SP11	0-0.15	30-Apr-18	SILT			<0.5	<0.5	<0.5	<2	<0.05	4.8	-	6	10	20	<1	<50	<1	<0.5	16	-	2	<5	42	<0.1	
SP12/0-0.15	SP12	0-0.15	30-Apr-18	SILT			<0.5	<0.5	<0.5	<2	<0.05	3.7	-	<5	15	10	<1	<50	<1	<0.5	11	-	<2	<5	16	<0.1	
SP13/0-0.15	SP13	0-0.15	30-Apr-18	SILT			-	-	-	-	4.3	-	6	15	10	<1	<50	<1	-	14	-	3	<5	24	<0.1		
SP14/0-0.15	SP14	0-0.15	30-Apr-18	SILT			-	-	-	-	3.6	-	5	15	10	<1	<50	<1	-	14	-	2	<5	21	<0.1		
SP15/0-0.15	SP15	0-0.15	30-Apr-18	SILT			<0.5	<0.5	<0.5	<2	<0.05	5.1	-	6	15	20	<1	<50	<1	<0.5	18	-	4	<5	21	<0.1	
SP16/0-0.15	SP16	0-0.15	30-Apr-18	SILT			<0.5	<0.5	<0.5	<2	<0.05	7.4	-	7	26	30	<1	<50	<1	<0.5	17	-	3	<5	48	<0.1	
SP17/0-0.15	SP17	0-0.15	30-Apr-18	SILT			-	-	-	-	4.7	-	7	30	10	<1	<50	<1	-	21	-	3	<5	29	<0.1		
SP18/0-0.15	SP18	0-0.15	30-Apr-18	SILT			-	-	-	-	4.7	-	6	24	10	<1	<50	<1	-	19	-	3	<5	16	<0.1		
SP19/0-0.15	SP19	0-0.15	30-Apr-18	SILT			-	-	-	-	3.5	-	5	24	20	<1	<50	<1	-	14	-	3	<5	25	<0.1		
SP20/0-0.15	SP20	0-0.15	30-Apr-18	SILT			-	-	-	-	4.1	-	<5	19	20	<1	<50	<1	-	13	-	3	<5	51	<0.1		
SP21/0-0.15	SP21	0-0.15	30-Apr-18	SILT			-	-	-	-	4.1	-	6	24	20	<1	<50	<1	-	18	-	4	<5	30	<0.1		
SP22/0-0.15	SP22	0-0.15	30-Apr-18	SILT			<0.5	<0.5	<0.5	<2	<0.05	6.6	-	<5	18	10	<1	<50	<1	<0.5	15	-	2	<5	24	<0.1	
SP23/0-0.15	SP23	0-0.15	30-Apr-18	SILT			-	-	-	-	5.9	-	6	24	10	<1	<50	<1	-	19	-	4	<5	29	<0.1		
SP24/0-0.15	SP24	0-0.15	30-Apr-18	SILT			-	-	-	-	6	-	7	42	10	<1	<50	<1	-	27	-	4	<5	30	<0.1		
SP25/0-0.15	SP25	0-0.15	30-Apr-18	SILT			-	-	-	-	4.4	-	7	21	20	<1	<50	<1	-	16	-	6	<5	28	<0.1		
SP26/0-0.15	SP26	0-0.15	30-Apr-18	SILT			-	-	-	-	5.7	-	<5	24	10	<1	<50	<1	-	15	-	7	<5	91	<0.1		
SP27/0-0.15	SP27	0-0.15	30-Apr-18	SILT			<0.5	<0.5	<0.5	<2	<0.05	5.3	-	<5	47	30	<1	<50	<1	<0.5	19	-	10	<5	73	<0.1	
SP28/0-0.15	SP28	0-0.15	30-Apr-18	SILT			-	-	-	-	7.2	-	6	25	20	<1	<50	<1	-	18	-	5	<5	76	<0.1		



	logenated Phenols				Herbicides	Inorganics		Lead	Metals											
	2,4-dichlorophenol	2,6-dichlorophenol	2-chlorophenol	Pentachlorophenol	Atrazine	Moisture	Moisture Content (dried @ 103°C)	Lead	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium (hexavalent)	Chromium (III+VI)	Chromium (Trivalent)	Cobalt	Copper	Manganese	Mercury
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.5	0.5	0.5	2	0.05	1		5	2	10	1	10	0.4	0.5	2		2	5	5	0.1
NEPM 2013 Table 1A(1) HILs Res A Soil				100	320			300	100		60	4500	20	100			100	6000	3800	40
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion 0-1m																				
NEPM 2013 Table 1B(6) ESLs for Urban Res 0-2m																				
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland																				

Field_ID	LocCode	Sample_Depth_Range	Sampled_Date-Time	Env_Stds_Conditional_Matrix_Type	2,4-dichlorophenol	2,6-dichlorophenol	2-chlorophenol	Pentachlorophenol	Atrazine	Moisture	Moisture Content (dried @ 103°C)	Lead	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium (hexavalent)	Chromium (III+VI)	Chromium (Trivalent)	Cobalt	Copper	Manganese	Mercury
SP29/0-0.15	SP29	0-0.15	30-Apr-18	SILT	-	-	-	-	-	5.6	-	5	24	30	<1	<50	<1	-	18	-	4	<5	41	<0.1
SP30/0-0.15	SP30	0-0.15	30-Apr-18	SILT	-	-	-	-	-	13.9	-	8	43	60	1	<50	<1	-	37	-	10	<5	122	<0.1
SP31/0-0.15	SP31	0-0.15	30-Apr-18	SILT	-	-	-	-	-	10.9	-	7	26	60	<1	<50	<1	-	22	-	10	<5	184	<0.1
SP32/0-0.15	SP32	0-0.15	30-Apr-18	SILT	<0.5	<0.5	<0.5	<2	<0.05	4.2	-	<5	28	20	<1	<50	<1	<0.5	17	-	4	<5	84	<0.1
SP33/0-0.15	SP33	0-0.15	30-Apr-18	SILT	-	-	-	-	-	4.3	-	<5	32	30	<1	<50	<1	-	16	-	4	<5	37	<0.1
SP34/0-0.15	SP34	0-0.15	30-Apr-18	SILT	-	-	-	-	-	7.2	-	7	43	60	1	<50	<1	-	25	-	14	<5	88	<0.1
SP35/0-0.15	SP35	0-0.15	30-Apr-18	SILT	-	-	-	-	-	7.2	-	<5	26	20	<1	<50	<1	-	14	-	2	<5	24	<0.1
TP01/0-0.15	TP01	0-0.15	30-Apr-18	SILT	-	-	-	-	-	3.9	-	<5	7	10	<1	<50	<1	-	9	-	<2	<5	11	<0.1
TP02/0-0.15	TP02	0-0.15	30-Apr-18	SILT	-	-	-	-	-	3.3	-	<5	5	10	<1	<50	<1	-	9	-	<2	<5	14	<0.1
TP03/0-0.15	TP03	0-0.15	30-Apr-18	SILT	-	-	-	-	-	2.8	-	7	<5	<10	<1	<50	<1	-	11	-	<2	7	15	<0.1
TP04/0-0.15	TP04	0-0.15	30-Apr-18	SILT	-	-	-	-	-	3.7	-	<5	7	<10	<1	<50	<1	-	9	-	<2	<5	11	<0.1
TP05/0-0.15	TP05	0-0.15	30-Apr-18	SILT	-	-	-	-	-	4.1	-	8	14	10	<1	<50	<1	-	15	-	<2	<5	21	<0.1
TP06/0-0.15	TP06	0-0.15	30-Apr-18	SILT	-	-	-	-	-	5.6	-	7	50	10	<1	<50	<1	-	23	-	4	<5	31	<0.1
TP07/0-0.15	TP07	0-0.15	30-Apr-18	SILT	-	-	-	-	-	3.8	-	<5	21	<10	<1	<50	<1	-	12	-	2	<5	16	<0.1
TP08/0-0.15	TP08	0-0.15	30-Apr-18	SILT	-	-	-	-	-	11.8	-	12	40	20	1	<50	<1	-	29	-	13	6	85	<0.1
TP09/0-0.15	TP09	0-0.15	30-Apr-18	SILT	-	-	-	-	-	5.6	-	10	50	40	<1	<50	<1	-	21	-	10	<5	45	<0.1
TP10/0-0.15	TP10	0-0.15	30-Apr-18	SILT	-	-	-	-	-	7	-	11	56	20	<1	<50	<1	-	26	-	8	<5	35	<0.1





	Organochlorine Pesticides																			
	Nickel	Selenium	Vanadium	Zinc	4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	chlordane	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan	Endosulfan I	Endosulfan II
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	2	5	5	5	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
NEPM 2013 Table 1A(1) HILs Res A Soil	400	200		7400				6		50						240		270		
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion 0-1m																				
NEPM 2013 Table 1B(6) ESLs for Urban Res 0-2m																				
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland																				

Field_ID	LocCode	Sample_Depth_Range	Sampled_Date-Time	Env_Stds_Conditional_Matrix_Type	Nickel	Selenium	Vanadium	Zinc	4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	chlordane	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan	Endosulfan I	Endosulfan II
QC06	SP17	0-0.15	30-Apr-18	SILT	5	<5	46	<5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
QC07	SP17	0-0.15	30-Apr-18	SILT	5.3	-	44	<5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05
QC08	TP07	0-0.15	30-Apr-18	SILT	3	<5	34	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC09	TP07	0-0.15	30-Apr-18	SILT	<5	-	39	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP01/0-0.15	SP01	0-0.15	30-Apr-18	SILT	<2	<5	18	<5	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05
SP02/0-0.15	SP02	0-0.15	30-Apr-18	SILT	2	<5	23	<5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05
SP03/0-0.15	SP03	0-0.15	30-Apr-18	SILT	4	<5	28	5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05
SP04/0-0.15	SP04	0-0.15	30-Apr-18	SILT	2	<5	33	<5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05
SP05/0-0.15	SP05	0-0.15	30-Apr-18	SILT	2	<5	23	<5	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05
SP06/0-0.15	SP06	0-0.15	30-Apr-18	SILT	5	<5	48	<5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05
SP07/0-0.15	SP07	0-0.15	30-Apr-18	SILT	3	<5	33	<5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05
SP08/0-0.15	SP08	0-0.15	30-Apr-18	SILT	<2	<5	49	<5	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05
SP09/0-0.15	SP09	0-0.15	30-Apr-18	SILT	5	<5	56	<5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05
SP10/0-0.15	SP10	0-0.15	30-Apr-18	SILT	4	<5	52	<5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05
SP11/0-0.15	SP11	0-0.15	30-Apr-18	SILT	4	<5	37	<5	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05
SP12/0-0.15	SP12	0-0.15	30-Apr-18	SILT	3	<5	32	<5	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05
SP13/0-0.15	SP13	0-0.15	30-Apr-18	SILT	5	<5	38	<5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05
SP14/0-0.15	SP14	0-0.15	30-Apr-18	SILT	4	<5	41	<5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05
SP15/0-0.15	SP15	0-0.15	30-Apr-18	SILT	5	<5	61	<5	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05
SP16/0-0.15	SP16	0-0.15	30-Apr-18	SILT	4	<5	52	<5	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05
SP17/0-0.15	SP17	0-0.15	30-Apr-18	SILT	5	<5	49	<5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05
SP18/0-0.15	SP18	0-0.15	30-Apr-18	SILT	5	<5	44	<5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05
SP19/0-0.15	SP19	0-0.15	30-Apr-18	SILT	4	<5	38	<5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05
SP20/0-0.15	SP20	0-0.15	30-Apr-18	SILT	4	<5	40	<5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05
SP21/0-0.15	SP21	0-0.15	30-Apr-18	SILT	4	<5	49	<5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05
SP22/0-0.15	SP22	0-0.15	30-Apr-18	SILT	5	<5	42	<5	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05
SP23/0-0.15	SP23	0-0.15	30-Apr-18	SILT	6	<5	54	<5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05
SP24/0-0.15	SP24	0-0.15	30-Apr-18	SILT	7	<5	71	<5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05
SP25/0-0.15	SP25	0-0.15	30-Apr-18	SILT	7	<5	40	<5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05
SP26/0-0.15	SP26	0-0.15	30-Apr-18	SILT	6	<5	46	6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05
SP27/0-0.15	SP27	0-0.15	30-Apr-18	SILT	9	<5	53	6	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05
SP28/0-0.15	SP28	0-0.15	30-Apr-18	SILT	6	<5	56	5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05

	Organochlorine Pesticides																			
	Nickel	Selenium	Vanadium	Zinc	4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	chlordane	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan	Endosulfan I	Endosulfan II
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	2	5	5	5	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
NEPM 2013 Table 1A(1) HILs Res A Soil	400	200		7400				6		50						240		270		
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion 0-1m																				
NEPM 2013 Table 1B(6) ESLs for Urban Res 0-2m																				
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland																				

Field_ID	LocCode	Sample_Depth_Range	Sampled_Date-Time	Env_Stds_Conditional_Matrix_Type	Nickel	Selenium	Vanadium	Zinc	4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	chlordane	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan	Endosulfan I	Endosulfan II
SP29/0-0.15	SP29	0-0.15	30-Apr-18	SILT	5	<5	51	<5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05
SP30/0-0.15	SP30	0-0.15	30-Apr-18	SILT	17	<5	99	16	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05
SP31/0-0.15	SP31	0-0.15	30-Apr-18	SILT	8	<5	61	6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05
SP32/0-0.15	SP32	0-0.15	30-Apr-18	SILT	5	<5	49	5	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05
SP33/0-0.15	SP33	0-0.15	30-Apr-18	SILT	4	<5	46	<5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05
SP34/0-0.15	SP34	0-0.15	30-Apr-18	SILT	12	<5	73	6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05
SP35/0-0.15	SP35	0-0.15	30-Apr-18	SILT	3	<5	39	<5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05
TP01/0-0.15	TP01	0-0.15	30-Apr-18	SILT	3	<5	24	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP02/0-0.15	TP02	0-0.15	30-Apr-18	SILT	2	<5	21	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP03/0-0.15	TP03	0-0.15	30-Apr-18	SILT	4	<5	20	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP04/0-0.15	TP04	0-0.15	30-Apr-18	SILT	2	<5	26	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP05/0-0.15	TP05	0-0.15	30-Apr-18	SILT	3	<5	40	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP06/0-0.15	TP06	0-0.15	30-Apr-18	SILT	6	<5	69	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP07/0-0.15	TP07	0-0.15	30-Apr-18	SILT	3	<5	32	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP08/0-0.15	TP08	0-0.15	30-Apr-18	SILT	33	<5	63	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP09/0-0.15	TP09	0-0.15	30-Apr-18	SILT	10	<5	57	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP10/0-0.15	TP10	0-0.15	30-Apr-18	SILT	8	<5	83	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	γ-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Toxaphene	Azinophos methyl	Bolstar (Sulprofos)	Bromophos-ethyl	Carbophenothion	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Diazinon
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
NEPM 2013 Table 1A(1) HILs Res A Soil		10				6		300	20						160					
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion																				
0-1m																				
NEPM 2013 Table 1B(6) ESLs for Urban Res																				
0-2m																				
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland																				

Field_ID	LocCode	Sample_Depth_Range	Sampled_Date-Time	Env_Std	Cond	Matrix_Type																		
QC06	SP17	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05	
QC07	SP17	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2	-	-	<0.2	<0.2	<2	<0.2	<0.2	<0.2	
QC08	TP07	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
QC09	TP07	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SP01/0-0.15	SP01	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP02/0-0.15	SP02	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP03/0-0.15	SP03	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP04/0-0.15	SP04	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP05/0-0.15	SP05	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP06/0-0.15	SP06	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP07/0-0.15	SP07	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP08/0-0.15	SP08	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP09/0-0.15	SP09	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP10/0-0.15	SP10	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP11/0-0.15	SP11	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP12/0-0.15	SP12	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP13/0-0.15	SP13	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP14/0-0.15	SP14	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP15/0-0.15	SP15	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP16/0-0.15	SP16	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP17/0-0.15	SP17	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP18/0-0.15	SP18	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP19/0-0.15	SP19	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP20/0-0.15	SP20	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP21/0-0.15	SP21	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP22/0-0.15	SP22	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP23/0-0.15	SP23	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP24/0-0.15	SP24	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP25/0-0.15	SP25	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP26/0-0.15	SP26	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP27/0-0.15	SP27	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	0.06	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP28/0-0.15	SP28	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05

	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	γ-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Toxaphene	Azinophos methyl	Bolstar (Sulprofos)	Bromophos-ethyl	Carbophenothion	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Diazinon
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05		0.05		0.05	0.05	0.05	0.05	0.05				0.05
NEPM 2013 Table 1A(1) HILs Res A Soil		10				6		300	20						160					
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion 0-1m																				
NEPM 2013 Table 1B(6) ESLs for Urban Res 0-2m																				
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland																				

Field_ID	LocCode	Sample_Depth_Range	Sampled_Date-Time	Env_Stds_Conditional_Matrix_Type	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP29/0-0.15	SP29	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP30/0-0.15	SP30	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP31/0-0.15	SP31	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP32/0-0.15	SP32	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP33/0-0.15	SP33	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP34/0-0.15	SP34	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
SP35/0-0.15	SP35	0-0.15	30-Apr-18	SILT	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	<0.05
TP01/0-0.15	TP01	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP02/0-0.15	TP02	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP03/0-0.15	TP03	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP04/0-0.15	TP04	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP05/0-0.15	TP05	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP06/0-0.15	TP06	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP07/0-0.15	TP07	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP08/0-0.15	TP08	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP09/0-0.15	TP09	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP10/0-0.15	TP10	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



	Organophosphorous Pesticides																				
	Dichlorvos	Dimethoate	Disulfoton	Ethion	Ethoprop	Fenitrothion	Fensulfothion	Fenthion	Malathion	Merphos	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Naled (Dibrom)	Omethoate	Phorate	Prothiofos	Pyrazophos	Ronnel	Terbufos	
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.05	0.05		0.05				0.05	0.05		0.2		0.2				0.05				
NEPM 2013 Table 1A(1) HILs Res A Soil																					
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion																					
0-1m																					
NEPM 2013 Table 1B(6) ESLs for Urban Res																					
0-2m																					
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland																					

Field_ID	LocCode	Sample_Depth_Range	Sampled_Date-Time	Env_Stds	Conditional	Matrix_Type																				
QC06	SP17	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
QC07	SP17	0-0.15	30-Apr-18	SILT			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
QC08	TP07	0-0.15	30-Apr-18	SILT			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
QC09	TP07	0-0.15	30-Apr-18	SILT			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SP01/0-0.15	SP01	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP02/0-0.15	SP02	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP03/0-0.15	SP03	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP04/0-0.15	SP04	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP05/0-0.15	SP05	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP06/0-0.15	SP06	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP07/0-0.15	SP07	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP08/0-0.15	SP08	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP09/0-0.15	SP09	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP10/0-0.15	SP10	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP11/0-0.15	SP11	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP12/0-0.15	SP12	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP13/0-0.15	SP13	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP14/0-0.15	SP14	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP15/0-0.15	SP15	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP16/0-0.15	SP16	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP17/0-0.15	SP17	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP18/0-0.15	SP18	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP19/0-0.15	SP19	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP20/0-0.15	SP20	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP21/0-0.15	SP21	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP22/0-0.15	SP22	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP23/0-0.15	SP23	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP24/0-0.15	SP24	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP25/0-0.15	SP25	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP26/0-0.15	SP26	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP27/0-0.15	SP27	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP28/0-0.15	SP28	0-0.15	30-Apr-18	SILT			<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-

**Organophosphorous Pesticides**

	Dichlorvos	Dimethoate	Disulfoton	Ethion	Ethoprop	Fenitrothion	Fensulfothion	Fenthion	Malathion	Merphos	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Naled (Dibrom)	Omethoate	Phorate	Prothiofos	Pyrazophos	Ronnel	Terbufos
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.05	0.05		0.05				0.05	0.05		0.2		0.2				0.05			
NEPM 2013 Table 1A(1) HILs Res A Soil																				
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion 0-1m																				
NEPM 2013 Table 1B(6) ESLs for Urban Res 0-2m																				
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland																				

Field_ID	LocCode	Sample_Depth_Range	Sampled_Date-Time	Env_Stds_Conditional_Matrix_Type	Dichlorvos	Dimethoate	Disulfoton	Ethion	Ethoprop	Fenitrothion	Fensulfothion	Fenthion	Malathion	Merphos	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Naled (Dibrom)	Omethoate	Phorate	Prothiofos	Pyrazophos	Ronnel	Terbufos
SP29/0-0.15	SP29	0-0.15	30-Apr-18	SILT	<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP30/0-0.15	SP30	0-0.15	30-Apr-18	SILT	<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP31/0-0.15	SP31	0-0.15	30-Apr-18	SILT	<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP32/0-0.15	SP32	0-0.15	30-Apr-18	SILT	<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP33/0-0.15	SP33	0-0.15	30-Apr-18	SILT	<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP34/0-0.15	SP34	0-0.15	30-Apr-18	SILT	<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
SP35/0-0.15	SP35	0-0.15	30-Apr-18	SILT	<0.05	<0.05	-	<0.05	-	-	-	<0.05	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-	-	-
TP01/0-0.15	TP01	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP02/0-0.15	TP02	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP03/0-0.15	TP03	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP04/0-0.15	TP04	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP05/0-0.15	TP05	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP06/0-0.15	TP06	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP07/0-0.15	TP07	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP08/0-0.15	TP08	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP09/0-0.15	TP09	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP10/0-0.15	TP10	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	PAH										PAH/Phenols									
	Trichloronate	Tetrachlorvinphos	Benzo[b]fluoranthene	2,4-dimethylphenol	2-methylphenol	2-nitrophenol	3-&4-methylphenol	4-chloro-3-methylphenol	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Carcinogenic PAHs (as B[a]P TPE)	Fluoranthene	Fluorene
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
NEPM 2013 Table 1A(1) HILs Res A Soil																		3		
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion 0-1m																				
NEPM 2013 Table 1B(6) ESLs for Urban Res 0-2m													0.7 0.7 0.7							
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland																				

Field_ID	LocCode	Sample_Depth_Range	Sampled_Date-Time	Env_Stds	Conditional	Matrix_Type																
QC06	SP17	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC07	SP17	0-0.15	30-Apr-18	SILT	<0.2	<0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC08	TP07	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC09	TP07	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP01/0-0.15	SP01	0-0.15	30-Apr-18	SILT	-	-	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SP02/0-0.15	SP02	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP03/0-0.15	SP03	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP04/0-0.15	SP04	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP05/0-0.15	SP05	0-0.15	30-Apr-18	SILT	-	-	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SP06/0-0.15	SP06	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP07/0-0.15	SP07	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP08/0-0.15	SP08	0-0.15	30-Apr-18	SILT	-	-	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SP09/0-0.15	SP09	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP10/0-0.15	SP10	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP11/0-0.15	SP11	0-0.15	30-Apr-18	SILT	-	-	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SP12/0-0.15	SP12	0-0.15	30-Apr-18	SILT	-	-	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SP13/0-0.15	SP13	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP14/0-0.15	SP14	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP15/0-0.15	SP15	0-0.15	30-Apr-18	SILT	-	-	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SP16/0-0.15	SP16	0-0.15	30-Apr-18	SILT	-	-	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SP17/0-0.15	SP17	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP18/0-0.15	SP18	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP19/0-0.15	SP19	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP20/0-0.15	SP20	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP21/0-0.15	SP21	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP22/0-0.15	SP22	0-0.15	30-Apr-18	SILT	-	-	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SP23/0-0.15	SP23	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP24/0-0.15	SP24	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP25/0-0.15	SP25	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP26/0-0.15	SP26	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP27/0-0.15	SP27	0-0.15	30-Apr-18	SILT	-	-	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SP28/0-0.15	SP28	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	PAH										PAH/Phenols									
	Trichloronate	Tetrachlorvinphos	Benzo[b]fluoranthene	2,4-dimethylphenol	2-methylphenol	2-nitrophenol	3-&4-methylphenol	4-chloro-3-methylphenol	Acenaphthene	Acenaphthylene	Anthracene	Benzo[a]anthracene	Benzo[a] pyrene	Benzo[ghi]perylene	Benzo[k]fluoranthene	Chrysene	Dibenz[a,h]anthracene	Carcinogenic PAHs (as B[a]P TPE)	Fluoranthene	Fluorene
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
NEPM 2013 Table 1A(1) HILs Res A Soil																		3		
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion 0-1m																				
NEPM 2013 Table 1B(6) ESLs for Urban Res 0-2m												0.7	0.7	0.7						
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland																				

Field_ID	LocCode	Sample_Depth_Range	Sampled_Date-Time	Env_Stds_Conditional_Matrix_Type	Trichloronate	Tetrachlorvinphos	Benzo[b]fluoranthene	2,4-dimethylphenol	2-methylphenol	2-nitrophenol	3-&4-methylphenol	4-chloro-3-methylphenol	Acenaphthene	Acenaphthylene	Anthracene	Benzo[a]anthracene	Benzo[a] pyrene	Benzo[ghi]perylene	Benzo[k]fluoranthene	Chrysene	Dibenz[a,h]anthracene	Carcinogenic PAHs (as B[a]P TPE)	Fluoranthene	Fluorene
SP29/0-0.15	SP29	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP30/0-0.15	SP30	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP31/0-0.15	SP31	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP32/0-0.15	SP32	0-0.15	30-Apr-18	SILT	-	-	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SP33/0-0.15	SP33	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP34/0-0.15	SP34	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP35/0-0.15	SP35	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP01/0-0.15	TP01	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP02/0-0.15	TP02	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP03/0-0.15	TP03	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP04/0-0.15	TP04	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP05/0-0.15	TP05	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP06/0-0.15	TP06	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP07/0-0.15	TP07	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP08/0-0.15	TP08	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP09/0-0.15	TP09	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP10/0-0.15	TP10	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



	Indeno(1,2,3-c,d)pyrene	Naphthalene	PAHs (Sum of total)	Phenanthrene	Phenol	Pyrene	Bifenthrin	Demeton-S-methyl	Fenamiphos	Mirex	Parathion	Pirimiphos-methyl	Pirimphos-ethyl	Polychlorinated Biphenyls	SVOCs
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.5	0.5	0.5	0.5	0.5	0.5	0.05	0.05	0.05	0.2	0.2		0.05	0.1	
NEPM 2013 Table 1A(1) HILs Res A Soil			300		3000		600			10				1	
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion 0-1m		3 4 5													
NEPM 2013 Table 1B(6) ESLs for Urban Res 0-2m															
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland															

Field_ID	LocCode	Sample_Depth_Range	Sampled_Date-Time	Env_Stds_Conditional_Matrix_Type	-	-	-	-	-	-	-	<0.05	<0.05	-	<0.2	-	<0.05	-	-
QC06	SP17	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	<0.05	<0.05	-	<0.2	-	<0.05	-	-
QC07	SP17	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	<0.2	<0.2	-	-	<0.2
QC08	TP07	0-0.15	30-Apr-18	SILT	-	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
QC09	TP07	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP01/0-0.15	SP01	0-0.15	30-Apr-18	SILT	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.2	<0.2	-	<0.05	<0.1	-
SP02/0-0.15	SP02	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	<0.05	<0.05	-	<0.2	-	<0.05	-	-	-
SP03/0-0.15	SP03	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	<0.05	<0.05	-	<0.2	-	<0.05	-	-	-
SP04/0-0.15	SP04	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	<0.05	<0.05	-	<0.2	-	<0.05	-	-	-
SP05/0-0.15	SP05	0-0.15	30-Apr-18	SILT	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.2	<0.2	-	<0.05	<0.1	-	-
SP06/0-0.15	SP06	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	<0.05	<0.05	-	<0.2	-	<0.05	-	-	-
SP07/0-0.15	SP07	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	<0.05	<0.05	-	<0.2	-	<0.05	-	-	-
SP08/0-0.15	SP08	0-0.15	30-Apr-18	SILT	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.2	<0.2	-	<0.05	<0.1	-	-
SP09/0-0.15	SP09	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	<0.05	<0.05	-	<0.2	-	<0.05	-	-	-
SP10/0-0.15	SP10	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	<0.05	<0.05	-	<0.2	-	<0.05	-	-	-
SP11/0-0.15	SP11	0-0.15	30-Apr-18	SILT	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.2	<0.2	-	<0.05	<0.1	-	-
SP12/0-0.15	SP12	0-0.15	30-Apr-18	SILT	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.2	<0.2	-	<0.05	<0.1	-	-
SP13/0-0.15	SP13	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	<0.05	<0.05	-	<0.2	-	<0.05	-	-	-
SP14/0-0.15	SP14	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	<0.05	<0.05	-	<0.2	-	<0.05	-	-	-
SP15/0-0.15	SP15	0-0.15	30-Apr-18	SILT	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.2	<0.2	-	<0.05	<0.1	-	-
SP16/0-0.15	SP16	0-0.15	30-Apr-18	SILT	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.2	<0.2	-	<0.05	<0.1	-	-
SP17/0-0.15	SP17	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	<0.05	<0.05	-	<0.2	-	<0.05	-	-	-
SP18/0-0.15	SP18	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	<0.05	<0.05	-	<0.2	-	<0.05	-	-	-
SP19/0-0.15	SP19	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	<0.05	<0.05	-	<0.2	-	<0.05	-	-	-
SP20/0-0.15	SP20	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	<0.05	<0.05	-	<0.2	-	<0.05	-	-	-
SP21/0-0.15	SP21	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	<0.05	<0.05	-	<0.2	-	<0.05	-	-	-
SP22/0-0.15	SP22	0-0.15	30-Apr-18	SILT	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.2	<0.2	-	<0.05	<0.1	-	-
SP23/0-0.15	SP23	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	<0.05	<0.05	-	<0.2	-	<0.05	-	-	-
SP24/0-0.15	SP24	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	<0.05	<0.05	-	<0.2	-	<0.05	-	-	-
SP25/0-0.15	SP25	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	<0.05	<0.05	-	<0.2	-	<0.05	-	-	-
SP26/0-0.15	SP26	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	<0.05	<0.05	-	<0.2	-	<0.05	-	-	-
SP27/0-0.15	SP27	0-0.15	30-Apr-18	SILT	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.2	<0.2	-	<0.05	<0.1	-	-
SP28/0-0.15	SP28	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	<0.05	<0.05	-	<0.2	-	<0.05	-	-	-



	Indeno(1,2,3-c,d)pyrene	Naphthalene	PAHs (Sum of total)	Phenanthrene	Phenol	Pyrene	Bifenthrin	Demeton-S-methyl	Fenamiphos	Mirex	Parathion	Pirimiphos-methyl	Pirimiphos-ethyl	Polychlorinated Biphenyls	SVOCS
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.5	0.5	0.5	0.5	0.5	0.5	0.05	0.05	0.05	0.2	0.2		0.05	0.1	
NEPM 2013 Table 1A(1) HILs Res A Soil			300		3000		600			10				1	
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion 0-1m		3 4 5													
NEPM 2013 Table 1B(6) ESLs for Urban Res 0-2m															
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland															

Field_ID	LocCode	Sample_Depth_Range	Sampled_Date-Time	Env_Stds_Conditional_Matrix_Type														
SP29/0-0.15	SP29	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	<0.05	<0.05	-	<0.2	-	<0.05	-	-
SP30/0-0.15	SP30	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	<0.05	<0.05	-	<0.2	-	<0.05	-	-
SP31/0-0.15	SP31	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	<0.05	<0.05	-	<0.2	-	<0.05	-	-
SP32/0-0.15	SP32	0-0.15	30-Apr-18	SILT	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.2	-	<0.05	<0.1	-	-
SP33/0-0.15	SP33	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	<0.05	<0.05	-	<0.2	-	<0.05	-	-
SP34/0-0.15	SP34	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	<0.05	<0.05	-	<0.2	-	<0.05	-	-
SP35/0-0.15	SP35	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	<0.05	<0.05	-	<0.2	-	<0.05	-	-
TP01/0-0.15	TP01	0-0.15	30-Apr-18	SILT	-	<1	-	-	-	-	-	-	-	-	-	-	-	-
TP02/0-0.15	TP02	0-0.15	30-Apr-18	SILT	-	<1	-	-	-	-	-	-	-	-	-	-	-	-
TP03/0-0.15	TP03	0-0.15	30-Apr-18	SILT	-	<1	-	-	-	-	-	-	-	-	-	-	-	-
TP04/0-0.15	TP04	0-0.15	30-Apr-18	SILT	-	<1	-	-	-	-	-	-	-	-	-	-	-	-
TP05/0-0.15	TP05	0-0.15	30-Apr-18	SILT	-	<1	-	-	-	-	-	-	-	-	-	-	-	-
TP06/0-0.15	TP06	0-0.15	30-Apr-18	SILT	-	<1	-	-	-	-	-	-	-	-	-	-	-	-
TP07/0-0.15	TP07	0-0.15	30-Apr-18	SILT	-	<1	-	-	-	-	-	-	-	-	-	-	-	-
TP08/0-0.15	TP08	0-0.15	30-Apr-18	SILT	-	<1	-	-	-	-	-	-	-	-	-	-	-	-
TP09/0-0.15	TP09	0-0.15	30-Apr-18	SILT	-	<1	-	-	-	-	-	-	-	-	-	-	-	-
TP10/0-0.15	TP10	0-0.15	30-Apr-18	SILT	-	<1	-	-	-	-	-	-	-	-	-	-	-	-



	TPH										
	C10-C16	C16-C34	C34-C40	F2-NAPHTHALENE	C6 - C9	C10 - C14	C15 - C28	C29-C36	∑C10 - C36 (Sum of total)	C10 - C40 (Sum of total)	C6-C10
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	50	100	100	50	10	20	50	50	50	50	10
NEPM 2013 Table 1A(1) HILs Res A Soil											
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion											
0-1m				110 230 280							
NEPM 2013 Table 1B(6) ESLs for Urban Res	120 120	1300 1300	5600 5600								180 180
0-2m	120	300	2800								180
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland	1000 1000 1000	2500 2500 3500	10000 10000 10000								700 700 800

Field_ID	LocCode	Sample_Depth_Range	Sampled_Date-Time	Env_Stds	Conditional	Matrix_Type										
QC06	SP17	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-
QC07	SP17	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-
QC08	TP07	0-0.15	30-Apr-18	SILT	<50	<100	<100	<50	<10	<50	<100	<100	<50	<50	<10	<10
QC09	TP07	0-0.15	30-Apr-18	SILT	<50	<100	<100	<50	<20	30	62	<50	92	-	<20	<20
SP01/0-0.15	SP01	0-0.15	30-Apr-18	SILT	<50	<100	<100	<50	<10	<50	<100	<100	<50	<50	<10	<10
SP02/0-0.15	SP02	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-
SP03/0-0.15	SP03	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-
SP04/0-0.15	SP04	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-
SP05/0-0.15	SP05	0-0.15	30-Apr-18	SILT	<50	<100	<100	<50	<10	<50	<100	<100	<50	<50	<10	<10
SP06/0-0.15	SP06	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-
SP07/0-0.15	SP07	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-
SP08/0-0.15	SP08	0-0.15	30-Apr-18	SILT	<50	<100	<100	<50	<10	<50	<100	<100	<50	<50	<10	<10
SP09/0-0.15	SP09	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-
SP10/0-0.15	SP10	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-
SP11/0-0.15	SP11	0-0.15	30-Apr-18	SILT	<50	<100	<100	<50	<10	<50	<100	<100	<50	<50	<10	<10
SP12/0-0.15	SP12	0-0.15	30-Apr-18	SILT	<50	<100	<100	<50	<10	<50	<100	<100	<50	<50	<10	<10
SP13/0-0.15	SP13	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-
SP14/0-0.15	SP14	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-
SP15/0-0.15	SP15	0-0.15	30-Apr-18	SILT	<50	<100	<100	<50	<10	<50	<100	<100	<50	<50	<10	<10
SP16/0-0.15	SP16	0-0.15	30-Apr-18	SILT	<50	<100	<100	<50	<10	<50	<100	<100	<50	<50	<10	<10
SP17/0-0.15	SP17	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-
SP18/0-0.15	SP18	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-
SP19/0-0.15	SP19	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-
SP20/0-0.15	SP20	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-
SP21/0-0.15	SP21	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-
SP22/0-0.15	SP22	0-0.15	30-Apr-18	SILT	<50	<100	<100	<50	<10	<50	<100	<100	<50	<50	<10	<10
SP23/0-0.15	SP23	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-
SP24/0-0.15	SP24	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-
SP25/0-0.15	SP25	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-
SP26/0-0.15	SP26	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-
SP27/0-0.15	SP27	0-0.15	30-Apr-18	SILT	<50	<100	<100	<50	<10	<50	<100	<100	<50	<50	<10	<10
SP28/0-0.15	SP28	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-

	TPH										
	C10-C16	C16-C34	C34-C40	F2-NAPHTHALENE	C6 - C9	C10 - C14	C15 - C28	C29-C36	∑C10 - C36 (Sum of total)	C10 - C40 (Sum of total)	C6-C10
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	50	100	100	50	10	20	50	50	50	50	10
NEPM 2013 Table 1A(1) HILs Res A Soil											
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion											
0-1m				110 230 280							
NEPM 2013 Table 1B(6) ESLs for Urban Res	120 120	1300 1300	5600 5600								180 180
0-2m	120	300	2800								180
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland	1000 1000 1000	2500 2500 3500	10000 10000 10000								700 700 800

Field_ID	LocCode	Sample_Depth_Range	Sampled_Date-Time	Env_Stds	Conditional	Matrix_Type										
SP29/0-0.15	SP29	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-
SP30/0-0.15	SP30	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-
SP31/0-0.15	SP31	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-
SP32/0-0.15	SP32	0-0.15	30-Apr-18	SILT	<50	<100	<100	<50	<10	<50	<100	<100	<50	<50	<10	<10
SP33/0-0.15	SP33	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-
SP34/0-0.15	SP34	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-
SP35/0-0.15	SP35	0-0.15	30-Apr-18	SILT	-	-	-	-	-	-	-	-	-	-	-	-
TP01/0-0.15	TP01	0-0.15	30-Apr-18	SILT	<50	<100	<100	<50	<10	<50	<100	<100	<50	<50	<10	<10
TP02/0-0.15	TP02	0-0.15	30-Apr-18	SILT	<50	<100	<100	<50	<10	<50	<100	<100	<50	<50	<10	<10
TP03/0-0.15	TP03	0-0.15	30-Apr-18	SILT	<50	<100	<100	<50	<10	<50	<100	<100	<50	<50	<10	<10
TP04/0-0.15	TP04	0-0.15	30-Apr-18	SILT	<50	<100	<100	<50	<10	<50	<100	<100	<50	<50	<10	<10
TP05/0-0.15	TP05	0-0.15	30-Apr-18	SILT	<50	<100	<100	<50	<10	<50	<100	<100	<50	<50	<10	<10
TP06/0-0.15	TP06	0-0.15	30-Apr-18	SILT	<50	<100	<100	<50	<10	<50	<100	<100	<50	<50	<10	<10
TP07/0-0.15	TP07	0-0.15	30-Apr-18	SILT	<50	<100	<100	<50	<10	<50	<100	<100	<50	<50	<10	<10
TP08/0-0.15	TP08	0-0.15	30-Apr-18	SILT	<50	<100	<100	<50	<10	<50	<100	<100	<50	<50	<10	<10
TP09/0-0.15	TP09	0-0.15	30-Apr-18	SILT	<50	<100	<100	<50	<10	<50	<100	<100	<50	<50	<10	<10
TP10/0-0.15	TP10	0-0.15	30-Apr-18	SILT	<50	<100	<100	<50	<10	<50	<100	<100	<50	<50	<10	<10

Field Duplicates (SOIL)  
Filter: SDG in\ALSE-A

Field_ID	SDG	ALSE-Melbourne 01-May-18	ALSE-Melbourne 01-May-18	RPD	ALSE-Melbourne 01-May-18	ALSE-Melbourne 01-May-18	RPD	ALSE-Melbourne 01-May-18	Interlab_D	RPD	ALSE-Melbourne 01-May-18	Interlab_D	RPD		
Field_ID	Sampled_Date-Time	SP17/0-0.15 30-04-18 11:43	QC06 30-04-18 11:43		TP07/0-0.15 30-04-18 11:05	QC08 30-04-18 11:05		SP17/0-0.15 30-04-18 11:43	QC07 30-04-18 11:43		SP17/0-0.15 30-04-18 11:05	QC09 30-04-18 11:05			
Chem_Grd	ChemNam	Units	EQL												
BTEX	Benzene	mg/kg	0.2		<0.2	<0.2	0				<0.2				
	Ethylbenzene	mg/kg	0.5		<0.5	<0.5	0				<0.5				
	Toluene	mg/kg	0.5		<0.5	<0.5	0				<0.5				
	Total BTEX	mg/kg	0.2		<0.2	<0.2	0				<0.2				
	Xylene (m)	mg/kg	0.5		<0.5	<0.5	0				<0.5				
	Xylene (o)	mg/kg	0.5		<0.5	<0.5	0				<0.5				
	Xylene Tol	mg/kg	0.5		<0.5	<0.5	0				<0.5				
	C6-C10 le	mg/kg	10 (Primary); 20 (Interlab)		<10.0	<10.0	0				<10.0	<20.0	0		
Halogenated	Hexachloro	mg/kg	0.05	<0.05	<0.05	0		<0.05	<0.05	0					
nd Benzenes															
Inorganics	Moisture	%	1	4.7	4.7	0	3.8	3.9	3	4.7		3.8			
	Lead	mg/kg	5	7.0	7.0	0	<5.0	<5.0	0	7.0	6.9	1	<5.0	7.3	37
Metals	Arsenic	mg/kg	5 (Primary); 2 (Interlab)	30.0	40.0	29	21.0	21.0	0	30.0	29.0	3	21.0	22.0	5
	Barium	mg/kg	10	10.0	10.0	0	<10.0	10.0	0	10.0	15.0	40	<10.0	15.0	40
	Beryllium	mg/kg	1 (Primary); 2 (Interlab)	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<2.0	0	<1.0	<2.0	0
	Boron	mg/kg	50 (Primary); 10 (Interlab)	<50.0	<50.0	0	<50.0	<50.0	0	<10.0	<10.0	0	<50.0	<10.0	0
	Cadmium	mg/kg	1 (Primary); 0.4 (Interlab)	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<0.4	0	<1.0	<0.4	0
	Chromium	mg/kg	2 (Primary); 5 (Interlab)	21.0	20.0	5	12.0	12.0	0	21.0	20.0	5	12.0	15.0	22
	Cobalt	mg/kg	2 (Primary); 5 (Interlab)	3.0	3.0	0	2.0	<2.0	0	3.0	<5.0	0	2.0	<5.0	0
	Copper	mg/kg	5	<5.0	<5.0	0	<5.0	<5.0	0	<5.0	<5.0	0	<5.0	<5.0	0
	Manganese	mg/kg	5	29.0	32.0	10	16.0	19.0	17	29.0	36.0	22	16.0	51.0	104
	Mercury	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Nickel	mg/kg	2 (Primary); 5 (Interlab)	5.0	5.0	0	3.0	3.0	0	5.0	5.3	6	3.0	<5.0	0
	Selenium	mg/kg	5	<5.0	<5.0	0	<5.0	<5.0	0	<5.0	<5.0	0	<5.0	<5.0	0
	Vanadium	mg/kg	5 (Primary); 10 (Interlab)	49.0	46.0	6	32.0	34.0	6	49.0	44.0	11	32.0	39.0	20
	Zinc	mg/kg	5	<5.0	<5.0	0	<5.0	8.0	48	<5.0	<5.0	0	<5.0	24.0	131
Organochlorine	4,4-DDE	mg/kg	0.05	<0.05	<0.05	0				<0.05	<0.05	0			
	a-BHC	mg/kg	0.05	<0.05	<0.05	0				<0.05	<0.05	0			
	Aldrin	mg/kg	0.05	<0.05	<0.05	0				<0.05	<0.05	0			
	Aldrin + Dieldrin	mg/kg	0.05	<0.05	<0.05	0				<0.05	<0.05	0			
	b-BHC	mg/kg	0.05	<0.05	<0.05	0				<0.05	<0.05	0			
	Chlordane	mg/kg	0.05 (Primary); 0.1 (Interlab)	<0.05	<0.05	0				<0.05	<0.1	0			
	Chlordane	mg/kg	0.05	<0.05	<0.05	0				<0.05	<0.05	0			
	Chlordane	mg/kg	0.05	<0.05	<0.05	0				<0.05	<0.05	0			
	d-BHC	mg/kg	0.05	<0.05	<0.05	0				<0.05	<0.05	0			
	DDD	mg/kg	0.05	<0.05	<0.05	0				<0.05	<0.05	0			
	DDT	mg/kg	0.2 (Primary); 0.05 (Interlab)	<0.2	<0.2	0				<0.2	<0.05	0			
	DDT+DDE	mg/kg	0.05	<0.05	<0.05	0				<0.05	<0.05	0			
	Dieldrin	mg/kg	0.05	<0.05	<0.05	0				<0.05	<0.05	0			
	Endosulfar	mg/kg	0.05	<0.05	<0.05	0				<0.05	<0.05	0			
	Endosulfar	mg/kg	0.05	<0.05	<0.05	0				<0.05	<0.05	0			
	Endosulfar	mg/kg	0.05	<0.05	<0.05	0				<0.05	<0.05	0			
	Endosulfar	mg/kg	0.05	<0.05	<0.05	0				<0.05	<0.05	0			
	Endrin	mg/kg	0.05	<0.05	<0.05	0				<0.05	<0.05	0			
	Endrin aldi	mg/kg	0.05	<0.05	<0.05	0				<0.05	<0.05	0			
	Endrin ket	mg/kg	0.05	<0.05	<0.05	0				<0.05	<0.05	0			
	a-BHC (LH)	mg/kg	0.05	<0.05	<0.05	0				<0.05	<0.05	0			
	Heptachlor	mg/kg	0.05	<0.05	<0.05	0				<0.05	<0.05	0			
	Heptachlor	mg/kg	0.05	<0.05	<0.05	0				<0.05	<0.05	0			
	Methoxychl	mg/kg	0.2 (Primary); 0.05 (Interlab)	<0.2	<0.2	0				<0.2	<0.05	0			
Organophosphate	Azinophos	mg/kg	0.05 (Primary); 0.2 (Interlab)	<0.05	<0.05	0				<0.05	<0.2	0			
	Bromophos	mg/kg	0.05	<0.05	<0.05	0				<0.05	<0.05	0			
	Carbophen	mg/kg	0.05	<0.05	<0.05	0				<0.05	<0.05	0			
	Chlorfenvin	mg/kg	0.05 (Primary); 0.2 (Interlab)	<0.05	<0.05	0				<0.05	<0.2	0			
	Chlorpyrifos	mg/kg	0.05 (Primary); 0.2 (Interlab)	<0.05	<0.05	0				<0.05	<0.2	0			
	Chlorpyrifos	mg/kg	0.05 (Primary); 0.2 (Interlab)	<0.05	<0.05	0				<0.05	<0.2	0			
	Diazinon	mg/kg	0.05 (Primary); 0.2 (Interlab)	<0.05	<0.05	0				<0.05	<0.2	0			
	Dichlorvos	mg/kg	0.05 (Primary); 0.2 (Interlab)	<0.05	<0.05	0				<0.05	<0.2	0			
	Dimethoat	mg/kg	0.05 (Primary); 0.2 (Interlab)	<0.05	<0.05	0				<0.05	<0.2	0			
	Ethion	mg/kg	0.05 (Primary); 0.2 (Interlab)	<0.05	<0.05	0				<0.05	<0.2	0			
	Fenithon	mg/kg	0.05 (Primary); 0.2 (Interlab)	<0.05	<0.05	0				<0.05	<0.2	0			
	Malathion	mg/kg	0.05 (Primary); 0.2 (Interlab)	<0.05	<0.05	0				<0.05	<0.2	0			
	Methyl par	mg/kg	0.2	<0.2	<0.2	0				<0.2	<0.2	0			
	Monocroto	mg/kg	0.2 (Primary); 2 (Interlab)	<0.2	<0.2	0				<0.2	<2.0	0			
	Prothios	mg/kg	0.05	<0.05	<0.05	0				<0.05	<0.05	0			
Phosphorus	Pesticides														
PAH/Phenols	Naphthalen	mg/kg	1				<1.0	<1.0	0			<1.0			
Pesticides	Demeton-S	mg/kg	0.05	<0.05	<0.05	0				<0.05	<0.05	0			
	Fenamphos	mg/kg	0.05	<0.05	<0.05	0				<0.05	<0.05	0			
	Parathion	mg/kg	0.2	<0.2	<0.2	0				<0.2	<0.2	0			
	Primphos	mg/kg	0.05	<0.05	<0.05	0				<0.05	<0.05	0			
TPH	C10-C16	mg/kg	50				<50.0	<50.0	0			<50.0	<50.0	0	
	C16-C34	mg/kg	100				<100.0	<100.0	0			<100.0	<100.0	0	
	C34-C40	mg/kg	100				<100.0	<100.0	0			<100.0	<100.0	0	
	P2-NAFHH	mg/kg	50				<50.0	<50.0	0			<50.0	<50.0	0	
	C6 - C8	mg/kg	10 (Primary); 20 (Interlab)				<10.0	<10.0	0			<10.0	<20.0	0	
	C10 - C14	mg/kg	50 (Primary); 20 (Interlab)				<50.0	<50.0	0			<50.0	30.0	0	
	C15 - C28	mg/kg	100 (Primary); 50 (Interlab)				<100.0	<100.0	0			<100.0	62.0	0	
	C29-C36	mg/kg	100 (Primary); 50 (Interlab)				<100.0	<100.0	0			<100.0	<50.0	0	
	+C10 - C34	mg/kg	50				<50.0	<50.0	0			<50.0	92.0	59	
	C10 - C40	mg/kg	50				<50.0	<50.0	0			<50.0	<50.0	0	
	C6-C10	mg/kg	10 (Primary); 20 (Interlab)				<10.0	<10.0	0			<10.0	<20.0	0	

\*RPDs have only been considered where a concentration is greater than 1 times the EQL.  
 \*\*High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 80 (1-10 x EQL); 50 (10-30 x EQL); 30 (> 30 x EQL))  
 \*\*\*Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

Field Blanks (WATER)  
 Filter: SDG in(ALSE-Melbourne 01-May-18')

Chem_Group	ChemName	Units	EQL	SDG	ALSE-Melbourne 01-May-18	ALSE-Melbourne 01-May-18	ALSE-Melbourne 01-May-18	ALSE-Melbourne 01-May-18	ALSE-Melbourne 01-May-18	ALSE-Melbourne 01-May-18
				Field_ID	QC05	QC10	QC01	QC02	QC03	QC04
				Sampled_Date-Time	30-04-18 9:10	30-04-18 13:00	30-04-18 8:30	30-04-18 8:30	30-04-18 8:30	30-04-18 8:30
Sample_Type	Field_B	Rinsate	Trip_B	Trip_B	Trip_B	Trip_B	Trip_B			
BTEX	Benzene	µg/L	1							<1
	Ethylbenzene	µg/L	1							<2
	Toluene	µg/L	1							<2
	Total BTEX	mg/l	0.001							<0.001
	Xylene (m & p)	µg/L	2							<2
	Xylene (o)	µg/L	1							<2
	Xylene Total	µg/L	2							<2
	C6-C10 less BTEX (F1)	mg/l	0.02							<0.02
Halogenated Benzenes	Hexachlorobenzene	µg/L	0.5		<0.5	<0.5				
Lead	Lead	mg/l	0.001		<0.001	<0.001				
Metals	Arsenic	mg/l	0.001		<0.001	<0.001				
	Barium	mg/l	0.001		<0.001	<0.001				
	Beryllium	mg/l	0.001		<0.001	<0.001				
	Boron	mg/l	0.05		<0.05	<0.05				
	Cadmium	mg/l	0.0001		<0.0001	<0.0001				
	Chromium (III+VI)	mg/l	0.001		<0.001	<0.001				
	Cobalt	mg/l	0.001		<0.001	<0.001				
	Copper	mg/l	0.001		<0.001	<0.001				
	Manganese	mg/l	0.001		<0.001	<0.001				
	Mercury	mg/l	0.0001		<0.0001	<0.0001				
	Nickel	mg/l	0.001		<0.001	<0.001				
	Selenium	mg/l	0.01		<0.01	<0.01				
	Vanadium	mg/l	0.01		<0.01	<0.01				
	Zinc	mg/l	0.005		<0.005	<0.005				
Organochlorine Pesticides	4,4-DDE	µg/L	0.5		<0.5	<0.5				
	a-BHC	µg/L	0.5		<0.5	<0.5				
	Aldrin	µg/L	0.5		<0.5	<0.5				
	Altrin + Dieldrin	µg/L	0.5		<0.5	<0.5				
	β-BHC	µg/L	0.5		<0.5	<0.5				
	chlordan	µg/L	0.5		<0.5	<0.5				
	Chlordane (cis)	µg/L	0.5		<0.5	<0.5				
	Chlordane (trans)	µg/L	0.5		<0.5	<0.5				
	δ-BHC	µg/L	0.5		<0.5	<0.5				
	DDD	µg/L	0.5		<0.5	<0.5				
	DDT	µg/L	2		<2	<2				
	DDT+DDE+DDD	µg/L	0.5		<0.5	<0.5				
	Dieldrin	µg/L	0.5		<0.5	<0.5				
	Endosulfan I	µg/L	0.5		<0.5	<0.5				
	Endosulfan II	µg/L	0.5		<0.5	<0.5				
	Endosulfan sulphate	µg/L	0.5		<0.5	<0.5				
	Endrin	µg/L	0.5		<0.5	<0.5				
	Endrin aldehyde	µg/L	0.5		<0.5	<0.5				
	Endrin ketone	µg/L	0.5		<0.5	<0.5				
	γ-BHC (Lindane)	µg/L	0.5		<0.5	<0.5				
	Heptachlor	µg/L	0.5		<0.5	<0.5				
	Heptachlor epoxide	µg/L	0.5		<0.5	<0.5				
	Methoxychlor	µg/L	2		<2	<2				
Organophosphorous Pesticides	Azinophos methyl	µg/L	0.5		<0.5	<0.5				
	Bromophos-ethyl	µg/L	0.5		<0.5	<0.5				
	Carbophenothion	µg/L	0.5		<0.5	<0.5				
	Chlorfenvinphos	µg/L	0.5		<0.5	<0.5				
	Chlorpyrifos	µg/L	0.5		<0.5	<0.5				
	Chlorpyrifos-methyl	mg/l	0.0005		<0.0005	<0.0005				
	Diazinon	µg/L	0.5		<0.5	<0.5				
	Dichlorvos	µg/L	0.5		<0.5	<0.5				
	Dimethoate	µg/L	0.5		<0.5	<0.5				
	Ethion	µg/L	0.5		<0.5	<0.5				
	Fenitrothion	µg/L	0.5		<0.5	<0.5				
	Malathion	µg/L	0.5		<0.5	<0.5				
	Methyl parathion	µg/L	2		<2	<2				
	Monocrotophos	µg/L	2		<2	<2				
	Prothiofos	µg/L	0.5		<0.5	<0.5				
PAH/Phenols	Naphthalene	µg/L	5				<5	<5	<5	
Pesticides	Demeton-S-methyl	µg/L	0.5		<0.5	<0.5				
	Fenamiphos	µg/L	0.5		<0.5	<0.5				
	Parathion	µg/L	2		<2	<2				
	Pinimphos-ethyl	µg/L	0.5		<0.5	<0.5				
TPH	C6 - C9	µg/l	20				<20	<20	<20	<20
	C6-C10	mg/l	0.02				<0.02	<0.02	<0.02	<0.02

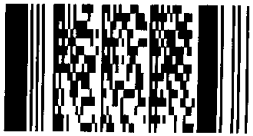


**Appendix 4 – Laboratory Chain of Custody Documents, Certificates of Analysis and QA/QC**



### CHAIN OF CUSTODY

LAB: ALS	TURNAROUND REQUIREMENTS: <input checked="" type="checkbox"/> Standard TAT (List due date): <b>8/5/18</b> <input type="checkbox"/> Non Standard or urgent TAT (List due date):	FOR LABORATORY USE ONLY (Circle) Control Sample Blank / Reference Material Random Sample Temperature Control Other Sample
CLIENT: ENVIRONMENTAL SITE ASSESSMENTS	QUOTE NO.: MEBQ-159-15V2	COC SEQUENCE NUMBER (Circle) COC: ① 2 3 4 5 6 7 OR: 1 2 3 ④ 5 6 7
OFFICE: PO BOX 3106, WAURNPONDS VIC 3216	PROJECT: <b>TGM Bannockburn</b>	
PROJECT MANAGER: Seton Lilas	CONTACT PH: 0433 747 187	
SAMPLER: A. Koster	SAMPLER MOBILE: 0417 966 868	RELINQUISHED BY: <b>A. Koster</b> <i>AK</i>
Email Reports to: office@esagroup.com.au; andrew@esagroup.com.au		RECEIVED BY: <b>Bharathi</b>
Email Invoice to: accounts@esagroup.com.au		DATE/TIME: <b>30/4 1415</b>
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:		RECEIVED BY: <b>Bharathi</b>
Method of Delivery: Courier <input checked="" type="checkbox"/> Hand Delivered <input type="checkbox"/> Postal <input type="checkbox"/>		DATE/TIME: <b>01/5/18 9:05a</b>

LAB ID	SAMPLE DETAILS		MATRIX	CONTAINER INFORMATION	ANALYSIS REQUIRED							Additional Information	
	SAMPLE ID	DATE / TIME			TYPE & PRESERVATIVE	TOTAL CONTAINERS	TRH (6-C10 & BTEX)	OC/OBs	15 Metals (NEMM Metals)	NEMM Suite (P21/10)	TRHS		
1	QC01	30/4 0830	W		1	X							Environmental Division Melbourne Work Order Reference <b>EM1807085</b>  Telephone : + 61-3-8549 9600
2	QC02	0830	W		1	X							
3	QC03	0830	W		1	X							
<del>4</del>	<del>QC04</del>	<del>0830</del>	<del>W</del>		<del>1</del>	<del>X</del>							
4	QC05	0910	W		4		X	X					
5	SP01/0-0.15	0913	S		1				X				
6	SP02/0-0.15	0915	S		1		X	X					
7	SP03/0-0.15	0920	S		1		X	X					
8	SP04/0-0.15	0925	S		1		X	X					
9	SP05/0-0.15	0935	S		1				X				
10	SP06/0-0.15	0930	S		1		X	X					
11	SP07/0-0.15	1020	S		1		X	X					
12	SP08/0-0.15	1045	S		1				X				
13	SP09/0-0.15	1025	S		1		X	X					
14	SP10/0-0.15	1040	S		1		X	X					
<b>TOTAL</b>					<b>17</b>	<b>3</b>	<b>8</b>	<b>8</b>	<b>3</b>				





### CHAIN OF CUSTODY

LAB: ALS	TURNAROUND REQUIREMENTS: <input checked="" type="checkbox"/> Standard TAT (List due date): <b>8/5/18</b>	FOR LABORATORY USE ONLY (Circle) Date of Sample Receipt N/A (see Reference Block) (Date) Ambient Sample Temperature (°C) Other (optional)
CLIENT: ENVIRONMENTAL SITE ASSESSMENTS	<input type="checkbox"/> Non Standard or urgent TAT (List due date):	
OFFICE: PO BOX 3106, WAURNPONDS VIC 3216	QUOTE NO.: MEBQ-159-15V2	COC SEQUENCE NUMBER (Circle)
PROJECT: <b>TGM Bannockburn</b>	PROJECT MANAGER: Seton Lilas	COC: 1 <b>(2)</b> 3 4 5 6 7
SAMPLER: A. Koster	SAMPLER MOBILE: 0417 966 868	OR: 1 2 3 <b>(4)</b> 5 6 7
RELINQUISHED BY: <b>A. Koster</b>	RECEIVED BY:	RELINQUISHED BY:
DATE/TIME: <b>30/4 1415</b>	DATE/TIME:	DATE/TIME:
RECEIVED BY: <b>Bharathi</b>	DATE/TIME: <b>01/5/18 9:05</b>	DATE/TIME:
Email Reports to: office@esagroup.com.au, andrew@esagroup.com.au	Email Invoice to: accounts@esagroup.com.au	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: \_\_\_\_\_

Method of Delivery: Courier  Hand Delivered  Postal

LAB ID	SAMPLE DETAILS		MATRIX	CONTAINER INFORMATION	ANALYSIS REQUIRED							Additional Information	
	SAMPLE ID	DATE / TIME			TYPE & PRESERVATIVE	TOTAL CONTAINERS	TRH G-CD & BTEXN	OC/OPS	15 Metals (NEPM Metals)	NEPM Suite (PZ/1A)	TRHS		
15	SR11/0-0.15	30/4 1005	S		1				X				
16	SR12/0-0.15	1152	S		1				X				
17	SR13/0-0.15	1147	S		1		X	X					
18	SR14/0-0.15	1035	S		1		X	X					
19	SR15/0-0.15	1030	S		1				X				
20	SR16/0-0.15	1115	S		1				X				
21	SR17/0-0.15	1143	S		1		X	X					
22	QC06	1143	S		1		X	X					
23	SR18/0-0.15	1139	S		1		X	X					
24	SR19/0-0.15	1134	S		1		X	X					
25	SR20/0-0.15	1050	S		1		X	X					
26	SR21/0-0.15	1132	S		1		X	X					
27	SR22/0-0.15	1128	S		1				X				
28	SR23/0-0.15	1125	S		1		X	X					
<b>TOTAL</b>					<b>31</b>	<b>3</b>	<b>18</b>	<b>18</b>	<b>8</b>				



### CHAIN OF CUSTODY

LAB: ALS	TURNAROUND REQUIREMENTS: <input checked="" type="checkbox"/> Standard TAT (List due date): 8/5/18 <input type="checkbox"/> Non Standard or urgent TAT (List due date):	FOR LABORATORY USE ONLY (A/C/S) Sample Seal intact Sample received in correct container Sample stored at appropriate temperature Chain of custody
CLIENT: ENVIRONMENTAL SITE ASSESSMENTS	QUOTE NO.: MEBQ-159-15V2	COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7 OR: 1 2 3 4 5 6 7
OFFICE: PO BOX 3106, WAURNPONDS VIC 3216	PROJECT: TGM Bannockburn	
PROJECT MANAGER: Seton Lilas	CONTACT PH: 0433 747 187	RECEIVED BY:
SAMPLER: A. Koster	SAMPLER MOBILE: 0417 966 868	REINQUISHED BY:
Email Reports to: office@esagroup.com.au, andrew@esagroup.com.au	REINQUISHED BY: A. Koster <i>AK</i>	RECEIVED BY: B. Karathi <i>BK</i>
Email Invoice to: accounts@esagroup.com.au	DATE/TIME: 30/4 1415	DATE/TIME: 01/5/18 9.05a
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:	Method of Delivery: Counter <input checked="" type="checkbox"/> Hand Delivered <input type="checkbox"/> Postal <input type="checkbox"/>	

SAMPLE DETAILS				CONTAINER INFORMATION		ANALYSIS REQUIRED							Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE	TOTAL CONTAINERS	TRH CG-CIO & BTEXN	OC/OPs	15 Metals (NEM Metals)	NEM Suite (P21/1a)	TRHS			
29	SR24/0-0.15	30/4 1121	S		1		X	X					
30	SR25/0-0.15	1205	S		1		X	X					
31	SR26/0-0.15	1210	S		1		X	X					
32	SR27/0-0.15	1213	S		1				X				
33	SR28/0-0.15	1218	S		1		X	X					
34	SR29/0-0.15	1223	S		1		X	X					
35	SR30/0-0.15	1226	S		1		X	X					
36	SR31/0-0.15	1241	S		1		X	X					
37	SR32/0-0.15	1237	S		1				X				
38	SR33/0-0.15	1229	S		1		X	X					
39	SR34/0-0.15	1232	S		1		X	X					
40	SR35/0-0.15	1245	S		1		X	X					
41	TP01/0-0.15	0940	S		1			X		X			
42	TP02/0-0.15	0942	S		1			X		X			
43	TP03/0-0.15	0945	S		1			X		X			
<b>TOTAL</b>					46	3	28	31	10	3			



### CHAIN OF CUSTODY

LAB: ALS	TURNAROUND REQUIREMENTS: <input checked="" type="checkbox"/> Standard TAT (List due date): <b>3/5/18</b> <input type="checkbox"/> Non Standard or urgent TAT (List due date):	<b>FOR LABORATORY USE ONLY (35%)</b> Checked seal intact? _____ No. of containers checked: _____ Random Sample Temperature of Sample: _____ Other comments: _____
CLIENT: ENVIRONMENTAL SITE ASSESSMENTS	QUOTE NO.: MEBQ-159-15V2	COC SEQUENCE NUMBER (Circle) COC: 1 2 3 <b>4</b> 5 6 7 OR: 1 2 3 <b>4</b> 5 6 7
OFFICE: PO BOX 3106, WAURNOPDMS VIC 3216	PROJECT: <b>TGM Bannockburn</b>	
PROJECT MANAGER: Seton Lilas	CONTACT PH: 0433 747 187	
SAMPLER: A. Koster	SAMPLER MOBILE: 0417 966 868	RELINQUISHED BY: <b>H. Koster</b> <i>h.k.</i>
Email Reports to: office@esagroup.com.au; andrew@esagroup.com.au		RECEIVED BY:
Email Invoice to: accounts@esagroup.com.au		DATE/TIME: <b>30/4 1415</b>
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:		RELINQUISHED BY: _____
Method of Delivery: Courier <input checked="" type="checkbox"/> Hand Delivered <input type="checkbox"/> Postal <input type="checkbox"/>		RECEIVED BY: _____
		DATE/TIME: _____

SAMPLE DETAILS (MATRIX/SOLID/S/WATER %)		CONTAINER INFORMATION		ANALYSIS REQUIRED							Additional Information		
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE	TOTAL CONTAINERS	TRH 16-00 & BTEX	OC/OPS	15 Metals (NEM Metals)	NEM Suite (Q21/10)	TRHS			
44	TP04/0-0.15	30/4 1010	S		1			X		X			
45	TP05/0-0.15	1012	S		1			X		X			
46	TP06/0-0.15	1137	S		1			X		X			
47	TP07/0-0.15	1105	S		1			X		X			
48	TP08/0-0.15	1100	S		1			X		X			
49	QC08	1105	S		1			X		X			
50	TP09/0-0.15	1159	S		1			X		X			
51	TP10/0-0.15	1202	S		1			X		X			
52	QC10	1300	W		4		X	X					
<b>TOTAL</b>					<b>58</b>	<b>3</b>	<b>29</b>	<b>40</b>	<b>10</b>	<b>11</b>			

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>EM1807085</b> <b>Client</b> : <b>ENVIRONMENTAL SITE ASSESSMENTS PTY LTD</b> <b>Contact</b> : MR SETON LILLAS <b>Address</b> : P.O. BOX 3106 WAURN PONDS VIC 3216  <b>Telephone</b> : ---- <b>Project</b> : TGM Bannockburn <b>Order number</b> : <b>C-O-C number</b> : ---- <b>Sampler</b> : AK <b>Site</b> : ---- <b>Quote number</b> : MEBQ/159/15 V2 <b>No. of samples received</b> : 52 <b>No. of samples analysed</b> : 52	<b>Page</b> : 1 of 48  <b>Laboratory</b> : Environmental Division Melbourne <b>Contact</b> : Larissa Burns <b>Address</b> : 4 Westall Rd Springvale VIC Australia 3171  <b>Telephone</b> : +61-3-8549 9600 <b>Date Samples Received</b> : 01-May-2018 09:05 <b>Date Analysis Commenced</b> : 01-May-2018 <b>Issue Date</b> : 08-May-2018 16:44
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



## General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.  
Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP01/0-0.15	SP02/0-0.15	SP03/0-0.15	SP04/0-0.15	SP05/0-0.15
Client sampling date / time				30-Apr-2018 09:13	30-Apr-2018 09:15	30-Apr-2018 09:20	30-Apr-2018 09:25	30-Apr-2018 09:35	
Compound	CAS Number	LOR	Unit	EM1807085-005	EM1807085-006	EM1807085-007	EM1807085-008	EM1807085-009	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	1.0	%	2.9	3.6	3.6	2.5	7.2	
<b>EG005T: Total Metals by ICP-AES</b>									
Arsenic	7440-38-2	5	mg/kg	<5	6	6	8	5	
Barium	7440-39-3	10	mg/kg	<10	<10	10	<10	<10	
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1	
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50	
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	
Chromium	7440-47-3	2	mg/kg	7	9	13	12	9	
Cobalt	7440-48-4	2	mg/kg	<2	<2	<2	<2	<2	
Copper	7440-50-8	5	mg/kg	<5	<5	<5	<5	<5	
Lead	7439-92-1	5	mg/kg	<5	<5	5	<5	<5	
Manganese	7439-96-5	5	mg/kg	12	5	26	16	18	
Nickel	7440-02-0	2	mg/kg	<2	2	4	2	2	
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5	
Vanadium	7440-62-2	5	mg/kg	18	23	28	33	23	
Zinc	7440-66-6	5	mg/kg	<5	<5	5	<5	<5	
<b>EG035T: Total Recoverable Mercury by FIMS</b>									
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EG048: Hexavalent Chromium (Alkaline Digest)</b>									
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	<0.5	
<b>EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser</b>									
Weak Acid Dissociable Cyanide	----	1	mg/kg	<1	----	----	----	<1	
<b>EP066: Polychlorinated Biphenyls (PCB)</b>									
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	<0.1	
<b>EP068A: Organochlorine Pesticides (OC)</b>									
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
^ Total Chlordane (sum)	----	0.05	mg/kg	----	<0.05	<0.05	<0.05	----	





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP01/0-0.15	SP02/0-0.15	SP03/0-0.15	SP04/0-0.15	SP05/0-0.15
Client sampling date / time				30-Apr-2018 09:13	30-Apr-2018 09:15	30-Apr-2018 09:20	30-Apr-2018 09:25	30-Apr-2018 09:35	
Compound	CAS Number	LOR	Unit	EM1807085-005	EM1807085-006	EM1807085-007	EM1807085-008	EM1807085-009	
				Result	Result	Result	Result	Result	
<b>EP068B: Organophosphorus Pesticides (OP) - Continued</b>									
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP068C: Triazines</b>									
Atrazine	1912-24-9	0.05	mg/kg	<0.05	----	----	----	<0.05	
<b>EP068D: Pyrethroids</b>									
Bifenthrin	82657-04-3	0.05	mg/kg	<0.05	----	----	----	<0.05	
<b>EP075(SIM)A: Phenolic Compounds</b>									
Phenol	108-95-2	0.5	mg/kg	<0.5	----	----	----	<0.5	
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	----	----	----	<0.5	
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	----	----	----	<0.5	
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	----	----	<1	
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	----	----	----	<0.5	
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	----	----	----	<0.5	
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	----	----	----	<0.5	
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	----	----	----	<0.5	
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	----	----	----	<0.5	
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	----	----	----	<0.5	
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	----	----	----	<0.5	
Pentachlorophenol	87-86-5	2	mg/kg	<2	----	----	----	<2	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	<0.5	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	<0.5	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	<0.5	
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	<0.5	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	<0.5	
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	<0.5	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	<0.5	
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	<0.5	
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	<0.5	
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	<0.5	
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	<0.5	
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	<0.5	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	<0.5	





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP01/0-0.15	SP02/0-0.15	SP03/0-0.15	SP04/0-0.15	SP05/0-0.15
Client sampling date / time					30-Apr-2018 09:13	30-Apr-2018 09:15	30-Apr-2018 09:20	30-Apr-2018 09:25	30-Apr-2018 09:35
Compound	CAS Number	LOR	Unit	EM1807085-005	EM1807085-006	EM1807085-007	EM1807085-008	EM1807085-009	
				Result	Result	Result	Result	Result	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>									
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<b>0.6</b>	----	----	----	----	<b>0.6</b>
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<b>1.2</b>	----	----	----	----	<b>1.2</b>
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----	<10
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----	<50
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----	<100
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----	<50
<b>EP080: BTEXN</b>									
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----	<0.2
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	----	----	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----	<1
<b>EP066S: PCB Surrogate</b>									
Decachlorobiphenyl	2051-24-3	0.1	%	<b>94.6</b>	----	----	----	----	<b>90.5</b>



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP01/0-0.15	SP02/0-0.15	SP03/0-0.15	SP04/0-0.15	SP05/0-0.15
Client sampling date / time				30-Apr-2018 09:13	30-Apr-2018 09:15	30-Apr-2018 09:20	30-Apr-2018 09:25	30-Apr-2018 09:35	
Compound	CAS Number	LOR	Unit	EM1807085-005	EM1807085-006	EM1807085-007	EM1807085-008	EM1807085-009	
				Result	Result	Result	Result	Result	
<b>EP068S: Organochlorine Pesticide Surrogate</b>									
Dibromo-DDE	21655-73-2	0.05	%	104	101	103	105	99.5	
<b>EP068T: Organophosphorus Pesticide Surrogate</b>									
DEF	78-48-8	0.05	%	97.7	97.7	104	110	92.1	
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>									
Phenol-d6	13127-88-3	0.5	%	86.6	----	----	----	87.2	
2-Chlorophenol-D4	93951-73-6	0.5	%	87.0	----	----	----	86.1	
2,4,6-Tribromophenol	118-79-6	0.5	%	75.7	----	----	----	77.4	
<b>EP075(SIM)T: PAH Surrogates</b>									
2-Fluorobiphenyl	321-60-8	0.5	%	86.1	----	----	----	86.3	
Anthracene-d10	1719-06-8	0.5	%	92.2	----	----	----	92.6	
4-Terphenyl-d14	1718-51-0	0.5	%	93.7	----	----	----	93.7	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	63.7	----	----	----	85.4	
Toluene-D8	2037-26-5	0.2	%	55.3	----	----	----	79.6	
4-Bromofluorobenzene	460-00-4	0.2	%	74.0	----	----	----	104	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Client sample ID			SP06/0-0.15	SP07/0-0.15	SP08/0-0.15	SP09/0-0.15	SP10/0-0.15			
Client sampling date / time		30-Apr-2018 09:30			30-Apr-2018 10:20		30-Apr-2018 10:45		30-Apr-2018 10:25		30-Apr-2018 10:40	
Compound	CAS Number	LOR	Unit	EM1807085-010	EM1807085-011	EM1807085-012	EM1807085-013	EM1807085-014				
				Result	Result	Result	Result	Result				
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>												
Moisture Content	----	1.0	%	4.1	3.7	2.2	3.7	4.6				
<b>EG005T: Total Metals by ICP-AES</b>												
Arsenic	7440-38-2	5	mg/kg	12	11	10	27	17				
Barium	7440-39-3	10	mg/kg	10	<10	<10	20	<10				
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1				
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50				
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1				
Chromium	7440-47-3	2	mg/kg	18	12	14	19	22				
Cobalt	7440-48-4	2	mg/kg	2	<2	<2	3	<2				
Copper	7440-50-8	5	mg/kg	<5	<5	<5	<5	<5				
Lead	7439-92-1	5	mg/kg	6	<5	6	7	6				
Manganese	7439-96-5	5	mg/kg	20	6	6	24	7				
Nickel	7440-02-0	2	mg/kg	5	3	<2	5	4				
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5				
Vanadium	7440-62-2	5	mg/kg	48	33	49	56	52				
Zinc	7440-66-6	5	mg/kg	<5	<5	<5	<5	<5				
<b>EG035T: Total Recoverable Mercury by FIMS</b>												
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1				
<b>EG048: Hexavalent Chromium (Alkaline Digest)</b>												
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	----	<0.5	----	----				
<b>EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser</b>												
Weak Acid Dissociable Cyanide	----	1	mg/kg	----	----	<1	----	----				
<b>EP066: Polychlorinated Biphenyls (PCB)</b>												
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	<0.1	----	----				
<b>EP068A: Organochlorine Pesticides (OC)</b>												
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05				
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05				
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05				
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05				
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05				
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05				
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05				
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05				
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05				



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP06/0-0.15	SP07/0-0.15	SP08/0-0.15	SP09/0-0.15	SP10/0-0.15
Client sampling date / time					30-Apr-2018 09:30	30-Apr-2018 10:20	30-Apr-2018 10:45	30-Apr-2018 10:25	30-Apr-2018 10:40
Compound	CAS Number	LOR	Unit	EM1807085-010	EM1807085-011	EM1807085-012	EM1807085-013	EM1807085-014	
				Result	Result	Result	Result	Result	
<b>EP068A: Organochlorine Pesticides (OC) - Continued</b>									
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Mirex	2385-85-5	0.20	mg/kg	----	----	<0.20	----	----	
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP068B: Organophosphorus Pesticides (OP)</b>									
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP06/0-0.15	SP07/0-0.15	SP08/0-0.15	SP09/0-0.15	SP10/0-0.15
Client sampling date / time				30-Apr-2018 09:30	30-Apr-2018 10:20	30-Apr-2018 10:45	30-Apr-2018 10:25	30-Apr-2018 10:40	
Compound	CAS Number	LOR	Unit	EM1807085-010	EM1807085-011	EM1807085-012	EM1807085-013	EM1807085-014	
				Result	Result	Result	Result	Result	
<b>EP068B: Organophosphorus Pesticides (OP) - Continued</b>									
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP068C: Triazines</b>									
Atrazine	1912-24-9	0.05	mg/kg	----	----	<0.05	----	----	
<b>EP068D: Pyrethroids</b>									
Bifenthrin	82657-04-3	0.05	mg/kg	----	----	<0.05	----	----	
<b>EP075(SIM)A: Phenolic Compounds</b>									
Phenol	108-95-2	0.5	mg/kg	----	----	<0.5	----	----	
2-Chlorophenol	95-57-8	0.5	mg/kg	----	----	<0.5	----	----	
2-Methylphenol	95-48-7	0.5	mg/kg	----	----	<0.5	----	----	
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	----	<1	----	----	
2-Nitrophenol	88-75-5	0.5	mg/kg	----	----	<0.5	----	----	
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	----	----	<0.5	----	----	
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	----	----	<0.5	----	----	
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	----	----	<0.5	----	----	
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	----	----	<0.5	----	----	
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	----	----	<0.5	----	----	
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	----	----	<0.5	----	----	
Pentachlorophenol	87-86-5	2	mg/kg	----	----	<2	----	----	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>									
Naphthalene	91-20-3	0.5	mg/kg	----	----	<0.5	----	----	
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	<0.5	----	----	
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	----	----	
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	----	----	
Phenanthrene	85-01-8	0.5	mg/kg	----	----	<0.5	----	----	
Anthracene	120-12-7	0.5	mg/kg	----	----	<0.5	----	----	
Fluoranthene	206-44-0	0.5	mg/kg	----	----	<0.5	----	----	
Pyrene	129-00-0	0.5	mg/kg	----	----	<0.5	----	----	
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	<0.5	----	----	
Chrysene	218-01-9	0.5	mg/kg	----	----	<0.5	----	----	
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	<0.5	----	----	
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	<0.5	----	----	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	<0.5	----	----	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP06/0-0.15	SP07/0-0.15	SP08/0-0.15	SP09/0-0.15	SP10/0-0.15
Client sampling date / time				30-Apr-2018 09:30	30-Apr-2018 10:20	30-Apr-2018 10:45	30-Apr-2018 10:25	30-Apr-2018 10:40	
Compound	CAS Number	LOR	Unit	EM1807085-010	EM1807085-011	EM1807085-012	EM1807085-013	EM1807085-014	
				Result	Result	Result	Result	Result	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>									
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	<0.5	----	----	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	----	----	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	<0.5	----	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	<0.5	----	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	<0.5	----	----	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	<b>0.6</b>	----	----	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	<b>1.2</b>	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	10	mg/kg	----	----	<10	----	----	
C10 - C14 Fraction	----	50	mg/kg	----	----	<50	----	----	
C15 - C28 Fraction	----	100	mg/kg	----	----	<100	----	----	
C29 - C36 Fraction	----	100	mg/kg	----	----	<100	----	----	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	<10	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	<10	----	----	
>C10 - C16 Fraction	----	50	mg/kg	----	----	<50	----	----	
>C16 - C34 Fraction	----	100	mg/kg	----	----	<100	----	----	
>C34 - C40 Fraction	----	100	mg/kg	----	----	<100	----	----	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	<50	----	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	0.2	mg/kg	----	----	<0.2	----	----	
Toluene	108-88-3	0.5	mg/kg	----	----	<0.5	----	----	
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	<0.5	----	----	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	<0.5	----	----	
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	<0.5	----	----	
^ Sum of BTEX	----	0.2	mg/kg	----	----	<0.2	----	----	
^ Total Xylenes	----	0.5	mg/kg	----	----	<0.5	----	----	
Naphthalene	91-20-3	1	mg/kg	----	----	<1	----	----	
<b>EP066S: PCB Surrogate</b>									
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	<b>92.3</b>	----	----	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP06/0-0.15	SP07/0-0.15	SP08/0-0.15	SP09/0-0.15	SP10/0-0.15
Client sampling date / time				30-Apr-2018 09:30	30-Apr-2018 10:20	30-Apr-2018 10:45	30-Apr-2018 10:25	30-Apr-2018 10:40	
Compound	CAS Number	LOR	Unit	EM1807085-010	EM1807085-011	EM1807085-012	EM1807085-013	EM1807085-014	
				Result	Result	Result	Result	Result	
<b>EP068S: Organochlorine Pesticide Surrogate</b>									
Dibromo-DDE	21655-73-2	0.05	%	101	104	101	99.4	103	
<b>EP068T: Organophosphorus Pesticide Surrogate</b>									
DEF	78-48-8	0.05	%	99.7	102	95.6	94.8	96.3	
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>									
Phenol-d6	13127-88-3	0.5	%	----	----	86.7	----	----	
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	85.9	----	----	
2,4,6-Tribromophenol	118-79-6	0.5	%	----	----	78.2	----	----	
<b>EP075(SIM)T: PAH Surrogates</b>									
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	84.6	----	----	
Anthracene-d10	1719-06-8	0.5	%	----	----	90.7	----	----	
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	92.4	----	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	61.9	----	----	
Toluene-D8	2037-26-5	0.2	%	----	----	76.6	----	----	
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	101	----	----	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP11/0-0.15	SP12/0-0.15	SP13/0-0.15	SP14/0-0.15	SP15/0-0.15
Client sampling date / time				30-Apr-2018 10:05	30-Apr-2018 11:52	30-Apr-2018 11:47	30-Apr-2018 10:35	30-Apr-2018 10:30	
Compound	CAS Number	LOR	Unit	EM1807085-015	EM1807085-016	EM1807085-017	EM1807085-018	EM1807085-019	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	1.0	%	4.8	3.7	4.3	3.6	5.1	
<b>EG005T: Total Metals by ICP-AES</b>									
Arsenic	7440-38-2	5	mg/kg	10	15	15	15	15	
Barium	7440-39-3	10	mg/kg	20	10	10	10	20	
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1	
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50	
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	
Chromium	7440-47-3	2	mg/kg	16	11	14	14	18	
Cobalt	7440-48-4	2	mg/kg	2	<2	3	2	4	
Copper	7440-50-8	5	mg/kg	<5	<5	<5	<5	<5	
Lead	7439-92-1	5	mg/kg	6	<5	6	5	6	
Manganese	7439-96-5	5	mg/kg	42	16	24	21	21	
Nickel	7440-02-0	2	mg/kg	4	3	5	4	5	
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5	
Vanadium	7440-62-2	5	mg/kg	37	32	38	41	61	
Zinc	7440-66-6	5	mg/kg	<5	<5	<5	<5	<5	
<b>EG035T: Total Recoverable Mercury by FIMS</b>									
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EG048: Hexavalent Chromium (Alkaline Digest)</b>									
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
<b>EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser</b>									
Weak Acid Dissociable Cyanide	----	1	mg/kg	<1	<1	----	----	<1	
<b>EP066: Polychlorinated Biphenyls (PCB)</b>									
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	----	----	<0.1	
<b>EP068A: Organochlorine Pesticides (OC)</b>									
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	<0.05	<0.05	----	





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP11/0-0.15	SP12/0-0.15	SP13/0-0.15	SP14/0-0.15	SP15/0-0.15
Client sampling date / time					30-Apr-2018 10:05	30-Apr-2018 11:52	30-Apr-2018 11:47	30-Apr-2018 10:35	30-Apr-2018 10:30
Compound	CAS Number	LOR	Unit	EM1807085-015	EM1807085-016	EM1807085-017	EM1807085-018	EM1807085-019	
				Result	Result	Result	Result	Result	
<b>EP068A: Organochlorine Pesticides (OC) - Continued</b>									
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Mirex	2385-85-5	0.20	mg/kg	<0.20	<0.20	----	----	<0.20	
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP068B: Organophosphorus Pesticides (OP)</b>									
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP11/0-0.15	SP12/0-0.15	SP13/0-0.15	SP14/0-0.15	SP15/0-0.15
Client sampling date / time				30-Apr-2018 10:05	30-Apr-2018 11:52	30-Apr-2018 11:47	30-Apr-2018 10:35	30-Apr-2018 10:30	
Compound	CAS Number	LOR	Unit	EM1807085-015	EM1807085-016	EM1807085-017	EM1807085-018	EM1807085-019	
				Result	Result	Result	Result	Result	
<b>EP068B: Organophosphorus Pesticides (OP) - Continued</b>									
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP068C: Triazines</b>									
Atrazine	1912-24-9	0.05	mg/kg	<0.05	<0.05	----	----	<0.05	
<b>EP068D: Pyrethroids</b>									
Bifenthrin	82657-04-3	0.05	mg/kg	<0.05	<0.05	----	----	<0.05	
<b>EP075(SIM)A: Phenolic Compounds</b>									
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	----	<1	
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	----	----	<2	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP11/0-0.15	SP12/0-0.15	SP13/0-0.15	SP14/0-0.15	SP15/0-0.15
Client sampling date / time				30-Apr-2018 10:05	30-Apr-2018 11:52	30-Apr-2018 11:47	30-Apr-2018 10:35	30-Apr-2018 10:30	
Compound	CAS Number	LOR	Unit	EM1807085-015	EM1807085-016	EM1807085-017	EM1807085-018	EM1807085-019	
				Result	Result	Result	Result	Result	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>									
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<b>0.6</b>	<b>0.6</b>	----	----	<b>0.6</b>	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<b>1.2</b>	<b>1.2</b>	----	----	<b>1.2</b>	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	----	<10	
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	<50	
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	----	<100	
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	----	<100	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	----	<10	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	----	----	<10	
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	----	----	<50	
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	----	----	<100	
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	----	----	<100	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	<50	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	----	----	<50	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	----	----	<0.2	
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	----	----	<0.2	
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	----	----	<0.5	
Naphthalene	91-20-3	1	mg/kg	<1	<1	----	----	<1	
<b>EP066S: PCB Surrogate</b>									
Decachlorobiphenyl	2051-24-3	0.1	%	<b>95.5</b>	<b>91.6</b>	----	----	<b>95.1</b>	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP11/0-0.15	SP12/0-0.15	SP13/0-0.15	SP14/0-0.15	SP15/0-0.15
Client sampling date / time				30-Apr-2018 10:05	30-Apr-2018 11:52	30-Apr-2018 11:47	30-Apr-2018 10:35	30-Apr-2018 10:30	
Compound	CAS Number	LOR	Unit	EM1807085-015	EM1807085-016	EM1807085-017	EM1807085-018	EM1807085-019	
				Result	Result	Result	Result	Result	
<b>EP068S: Organochlorine Pesticide Surrogate</b>									
Dibromo-DDE	21655-73-2	0.05	%	105	100	108	99.5	103	
<b>EP068T: Organophosphorus Pesticide Surrogate</b>									
DEF	78-48-8	0.05	%	105	100	107	105	104	
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>									
Phenol-d6	13127-88-3	0.5	%	94.3	94.5	----	----	88.5	
2-Chlorophenol-D4	93951-73-6	0.5	%	93.9	94.0	----	----	88.2	
2,4,6-Tribromophenol	118-79-6	0.5	%	87.2	88.7	----	----	82.9	
<b>EP075(SIM)T: PAH Surrogates</b>									
2-Fluorobiphenyl	321-60-8	0.5	%	93.6	93.4	----	----	88.1	
Anthracene-d10	1719-06-8	0.5	%	100	100	----	----	93.5	
4-Terphenyl-d14	1718-51-0	0.5	%	101	102	----	----	95.5	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	70.6	60.5	----	----	93.1	
Toluene-D8	2037-26-5	0.2	%	74.5	75.0	----	----	87.8	
4-Bromofluorobenzene	460-00-4	0.2	%	97.3	94.9	----	----	106	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP16/0-0.15	SP17/0-0.15	QC06	SP18/0-0.15	SP19/0-0.15
Client sampling date / time				30-Apr-2018 11:15	30-Apr-2018 11:43	30-Apr-2018 11:43	30-Apr-2018 11:39	30-Apr-2018 11:34	
Compound	CAS Number	LOR	Unit	EM1807085-020	EM1807085-021	EM1807085-022	EM1807085-023	EM1807085-024	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	1.0	%	7.4	4.7	4.7	4.7	3.5	
<b>EG005T: Total Metals by ICP-AES</b>									
Arsenic	7440-38-2	5	mg/kg	26	30	40	24	24	
Barium	7440-39-3	10	mg/kg	30	10	10	10	20	
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1	
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50	
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	
Chromium	7440-47-3	2	mg/kg	17	21	20	19	14	
Cobalt	7440-48-4	2	mg/kg	3	3	3	3	3	
Copper	7440-50-8	5	mg/kg	<5	<5	<5	<5	<5	
Lead	7439-92-1	5	mg/kg	7	7	7	6	5	
Manganese	7439-96-5	5	mg/kg	48	29	32	16	25	
Nickel	7440-02-0	2	mg/kg	4	5	5	5	4	
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5	
Vanadium	7440-62-2	5	mg/kg	52	49	46	44	38	
Zinc	7440-66-6	5	mg/kg	<5	<5	<5	<5	<5	
<b>EG035T: Total Recoverable Mercury by FIMS</b>									
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EG048: Hexavalent Chromium (Alkaline Digest)</b>									
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	----	
<b>EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser</b>									
Weak Acid Dissociable Cyanide	----	1	mg/kg	1	----	----	----	----	
<b>EP066: Polychlorinated Biphenyls (PCB)</b>									
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----	
<b>EP068A: Organochlorine Pesticides (OC)</b>									
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
^ Total Chlordane (sum)	----	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP16/0-0.15	SP17/0-0.15	QC06	SP18/0-0.15	SP19/0-0.15
Client sampling date / time				30-Apr-2018 11:15	30-Apr-2018 11:43	30-Apr-2018 11:43	30-Apr-2018 11:39	30-Apr-2018 11:34	
Compound	CAS Number	LOR	Unit	EM1807085-020	EM1807085-021	EM1807085-022	EM1807085-023	EM1807085-024	
				Result	Result	Result	Result	Result	
<b>EP068B: Organophosphorus Pesticides (OP) - Continued</b>									
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP068C: Triazines</b>									
Atrazine	1912-24-9	0.05	mg/kg	<0.05	----	----	----	----	
<b>EP068D: Pyrethroids</b>									
Bifenthrin	82657-04-3	0.05	mg/kg	<0.05	----	----	----	----	
<b>EP075(SIM)A: Phenolic Compounds</b>									
Phenol	108-95-2	0.5	mg/kg	<0.5	----	----	----	----	
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	----	----	----	----	
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	----	----	----	----	
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	----	----	----	
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	----	----	----	----	
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	----	----	----	----	
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	----	----	----	----	
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	----	----	----	----	
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	----	----	----	----	
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	----	----	----	----	
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	----	----	----	----	
Pentachlorophenol	87-86-5	2	mg/kg	<2	----	----	----	----	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----	
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----	
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----	
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----	
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----	
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----	
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----	
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP16/0-0.15	SP17/0-0.15	QC06	SP18/0-0.15	SP19/0-0.15
Client sampling date / time					30-Apr-2018 11:15	30-Apr-2018 11:43	30-Apr-2018 11:43	30-Apr-2018 11:39	30-Apr-2018 11:34
Compound	CAS Number	LOR	Unit		EM1807085-020	EM1807085-021	EM1807085-022	EM1807085-023	EM1807085-024
				Result	Result	Result	Result	Result	Result
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>									
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<b>0.6</b>	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<b>1.2</b>	----	----	----	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----	----
<b>EP080: BTEXN</b>									
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----	----
<b>EP066S: PCB Surrogate</b>									
Decachlorobiphenyl	2051-24-3	0.1	%	<b>94.2</b>	----	----	----	----	----





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP16/0-0.15	SP17/0-0.15	QC06	SP18/0-0.15	SP19/0-0.15
Client sampling date / time				30-Apr-2018 11:15	30-Apr-2018 11:43	30-Apr-2018 11:43	30-Apr-2018 11:39	30-Apr-2018 11:34	
Compound	CAS Number	LOR	Unit	EM1807085-020	EM1807085-021	EM1807085-022	EM1807085-023	EM1807085-024	
				Result	Result	Result	Result	Result	
<b>EP068S: Organochlorine Pesticide Surrogate</b>									
Dibromo-DDE	21655-73-2	0.05	%	104	109	111	110	93.2	
<b>EP068T: Organophosphorus Pesticide Surrogate</b>									
DEF	78-48-8	0.05	%	106	101	107	108	80.0	
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>									
Phenol-d6	13127-88-3	0.5	%	94.9	----	----	----	----	
2-Chlorophenol-D4	93951-73-6	0.5	%	94.3	----	----	----	----	
2,4,6-Tribromophenol	118-79-6	0.5	%	89.2	----	----	----	----	
<b>EP075(SIM)T: PAH Surrogates</b>									
2-Fluorobiphenyl	321-60-8	0.5	%	93.6	----	----	----	----	
Anthracene-d10	1719-06-8	0.5	%	101	----	----	----	----	
4-Terphenyl-d14	1718-51-0	0.5	%	102	----	----	----	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	84.8	----	----	----	----	
Toluene-D8	2037-26-5	0.2	%	99.6	----	----	----	----	
4-Bromofluorobenzene	460-00-4	0.2	%	103	----	----	----	----	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP20/0-0.15	SP21/0-0.15	SP22/0-0.15	SP23/0-0.15	SP24/0-0.15
Client sampling date / time				30-Apr-2018 10:50	30-Apr-2018 11:32	30-Apr-2018 11:28	30-Apr-2018 11:25	30-Apr-2018 11:21	
Compound	CAS Number	LOR	Unit	EM1807085-025	EM1807085-026	EM1807085-027	EM1807085-028	EM1807085-029	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	1.0	%	4.1	4.1	6.6	5.9	6.0	
<b>EG005T: Total Metals by ICP-AES</b>									
Arsenic	7440-38-2	5	mg/kg	19	24	18	24	42	
Barium	7440-39-3	10	mg/kg	20	20	10	10	10	
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1	
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50	
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	
Chromium	7440-47-3	2	mg/kg	13	18	15	19	27	
Cobalt	7440-48-4	2	mg/kg	3	4	2	4	4	
Copper	7440-50-8	5	mg/kg	<5	<5	<5	<5	<5	
Lead	7439-92-1	5	mg/kg	<5	6	<5	6	7	
Manganese	7439-96-5	5	mg/kg	51	30	24	29	30	
Nickel	7440-02-0	2	mg/kg	4	4	5	6	7	
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5	
Vanadium	7440-62-2	5	mg/kg	40	49	42	54	71	
Zinc	7440-66-6	5	mg/kg	<5	<5	<5	<5	<5	
<b>EG035T: Total Recoverable Mercury by FIMS</b>									
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EG048: Hexavalent Chromium (Alkaline Digest)</b>									
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	----	<0.5	----	----	
<b>EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser</b>									
Weak Acid Dissociable Cyanide	----	1	mg/kg	----	----	<1	----	----	
<b>EP066: Polychlorinated Biphenyls (PCB)</b>									
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	<0.1	----	----	
<b>EP068A: Organochlorine Pesticides (OC)</b>									
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05	





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP20/0-0.15	SP21/0-0.15	SP22/0-0.15	SP23/0-0.15	SP24/0-0.15
Client sampling date / time					30-Apr-2018 10:50	30-Apr-2018 11:32	30-Apr-2018 11:28	30-Apr-2018 11:25	30-Apr-2018 11:21
Compound	CAS Number	LOR	Unit	EM1807085-025	EM1807085-026	EM1807085-027	EM1807085-028	EM1807085-029	
				Result	Result	Result	Result	Result	
<b>EP068B: Organophosphorus Pesticides (OP) - Continued</b>									
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP068C: Triazines</b>									
Atrazine	1912-24-9	0.05	mg/kg	----	----	<0.05	----	----	
<b>EP068D: Pyrethroids</b>									
Bifenthrin	82657-04-3	0.05	mg/kg	----	----	<0.05	----	----	
<b>EP075(SIM)A: Phenolic Compounds</b>									
Phenol	108-95-2	0.5	mg/kg	----	----	<0.5	----	----	
2-Chlorophenol	95-57-8	0.5	mg/kg	----	----	<0.5	----	----	
2-Methylphenol	95-48-7	0.5	mg/kg	----	----	<0.5	----	----	
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	----	<1	----	----	
2-Nitrophenol	88-75-5	0.5	mg/kg	----	----	<0.5	----	----	
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	----	----	<0.5	----	----	
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	----	----	<0.5	----	----	
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	----	----	<0.5	----	----	
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	----	----	<0.5	----	----	
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	----	----	<0.5	----	----	
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	----	----	<0.5	----	----	
Pentachlorophenol	87-86-5	2	mg/kg	----	----	<2	----	----	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>									
Naphthalene	91-20-3	0.5	mg/kg	----	----	<0.5	----	----	
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	<0.5	----	----	
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	----	----	
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	----	----	
Phenanthrene	85-01-8	0.5	mg/kg	----	----	<0.5	----	----	
Anthracene	120-12-7	0.5	mg/kg	----	----	<0.5	----	----	
Fluoranthene	206-44-0	0.5	mg/kg	----	----	<0.5	----	----	
Pyrene	129-00-0	0.5	mg/kg	----	----	<0.5	----	----	
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	<0.5	----	----	
Chrysene	218-01-9	0.5	mg/kg	----	----	<0.5	----	----	
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	<0.5	----	----	
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	<0.5	----	----	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	<0.5	----	----	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP20/0-0.15	SP21/0-0.15	SP22/0-0.15	SP23/0-0.15	SP24/0-0.15
Client sampling date / time				30-Apr-2018 10:50	30-Apr-2018 11:32	30-Apr-2018 11:28	30-Apr-2018 11:25	30-Apr-2018 11:21	
Compound	CAS Number	LOR	Unit	EM1807085-025	EM1807085-026	EM1807085-027	EM1807085-028	EM1807085-029	
				Result	Result	Result	Result	Result	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>									
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	<0.5	----	----	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	----	----	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	<0.5	----	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	<0.5	----	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	<0.5	----	----	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	<b>0.6</b>	----	----	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	<b>1.2</b>	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	10	mg/kg	----	----	<10	----	----	
C10 - C14 Fraction	----	50	mg/kg	----	----	<50	----	----	
C15 - C28 Fraction	----	100	mg/kg	----	----	<100	----	----	
C29 - C36 Fraction	----	100	mg/kg	----	----	<100	----	----	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	<10	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	<10	----	----	
>C10 - C16 Fraction	----	50	mg/kg	----	----	<50	----	----	
>C16 - C34 Fraction	----	100	mg/kg	----	----	<100	----	----	
>C34 - C40 Fraction	----	100	mg/kg	----	----	<100	----	----	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	<50	----	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	0.2	mg/kg	----	----	<0.2	----	----	
Toluene	108-88-3	0.5	mg/kg	----	----	<0.5	----	----	
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	<0.5	----	----	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	<0.5	----	----	
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	<0.5	----	----	
^ Sum of BTEX	----	0.2	mg/kg	----	----	<0.2	----	----	
^ Total Xylenes	----	0.5	mg/kg	----	----	<0.5	----	----	
Naphthalene	91-20-3	1	mg/kg	----	----	<1	----	----	
<b>EP066S: PCB Surrogate</b>									
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	<b>104</b>	----	----	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP20/0-0.15	SP21/0-0.15	SP22/0-0.15	SP23/0-0.15	SP24/0-0.15
Client sampling date / time				30-Apr-2018 10:50	30-Apr-2018 11:32	30-Apr-2018 11:28	30-Apr-2018 11:25	30-Apr-2018 11:21	
Compound	CAS Number	LOR	Unit	EM1807085-025	EM1807085-026	EM1807085-027	EM1807085-028	EM1807085-029	
				Result	Result	Result	Result	Result	
<b>EP068S: Organochlorine Pesticide Surrogate</b>									
Dibromo-DDE	21655-73-2	0.05	%	81.2	81.4	90.0	83.9	77.0	
<b>EP068T: Organophosphorus Pesticide Surrogate</b>									
DEF	78-48-8	0.05	%	72.8	63.8	73.1	71.2	103	
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>									
Phenol-d6	13127-88-3	0.5	%	----	----	86.8	----	----	
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	86.1	----	----	
2,4,6-Tribromophenol	118-79-6	0.5	%	----	----	76.1	----	----	
<b>EP075(SIM)T: PAH Surrogates</b>									
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	86.0	----	----	
Anthracene-d10	1719-06-8	0.5	%	----	----	90.9	----	----	
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	90.9	----	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	81.0	----	----	
Toluene-D8	2037-26-5	0.2	%	----	----	85.9	----	----	
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	99.8	----	----	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP25/0-0.15	SP26/0-0.15	SP27/0-0.15	SP28/0-0.15	SP29/0-0.15
Client sampling date / time				30-Apr-2018 12:05	30-Apr-2018 12:10	30-Apr-2018 12:13	30-Apr-2018 12:18	30-Apr-2018 12:23	
Compound	CAS Number	LOR	Unit	EM1807085-030	EM1807085-031	EM1807085-032	EM1807085-033	EM1807085-034	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	1.0	%	4.4	5.7	5.3	7.2	5.6	
<b>EG005T: Total Metals by ICP-AES</b>									
Arsenic	7440-38-2	5	mg/kg	21	24	47	25	24	
Barium	7440-39-3	10	mg/kg	20	10	30	20	30	
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1	
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50	
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	
Chromium	7440-47-3	2	mg/kg	16	15	19	18	18	
Cobalt	7440-48-4	2	mg/kg	6	7	10	5	4	
Copper	7440-50-8	5	mg/kg	<5	<5	<5	<5	<5	
Lead	7439-92-1	5	mg/kg	7	<5	<5	6	5	
Manganese	7439-96-5	5	mg/kg	28	91	73	76	41	
Nickel	7440-02-0	2	mg/kg	7	6	9	6	5	
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5	
Vanadium	7440-62-2	5	mg/kg	40	46	53	56	51	
Zinc	7440-66-6	5	mg/kg	<5	6	6	5	<5	
<b>EG035T: Total Recoverable Mercury by FIMS</b>									
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EG048: Hexavalent Chromium (Alkaline Digest)</b>									
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	----	<0.5	----	----	
<b>EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser</b>									
Weak Acid Dissociable Cyanide	----	1	mg/kg	----	----	<1	----	----	
<b>EP066: Polychlorinated Biphenyls (PCB)</b>									
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	<0.1	----	----	
<b>EP068A: Organochlorine Pesticides (OC)</b>									
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05	







## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP25/0-0.15	SP26/0-0.15	SP27/0-0.15	SP28/0-0.15	SP29/0-0.15
Client sampling date / time				30-Apr-2018 12:05	30-Apr-2018 12:10	30-Apr-2018 12:13	30-Apr-2018 12:18	30-Apr-2018 12:23	
Compound	CAS Number	LOR	Unit	EM1807085-030	EM1807085-031	EM1807085-032	EM1807085-033	EM1807085-034	
				Result	Result	Result	Result	Result	
<b>EP068B: Organophosphorus Pesticides (OP) - Continued</b>									
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<b>0.06</b>	<0.05	<0.05	
<b>EP068C: Triazines</b>									
Atrazine	1912-24-9	0.05	mg/kg	----	----	<0.05	----	----	
<b>EP068D: Pyrethroids</b>									
Bifenthrin	82657-04-3	0.05	mg/kg	----	----	<0.05	----	----	
<b>EP075(SIM)A: Phenolic Compounds</b>									
Phenol	108-95-2	0.5	mg/kg	----	----	<0.5	----	----	
2-Chlorophenol	95-57-8	0.5	mg/kg	----	----	<0.5	----	----	
2-Methylphenol	95-48-7	0.5	mg/kg	----	----	<0.5	----	----	
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	----	<1	----	----	
2-Nitrophenol	88-75-5	0.5	mg/kg	----	----	<0.5	----	----	
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	----	----	<0.5	----	----	
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	----	----	<0.5	----	----	
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	----	----	<0.5	----	----	
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	----	----	<0.5	----	----	
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	----	----	<0.5	----	----	
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	----	----	<0.5	----	----	
Pentachlorophenol	87-86-5	2	mg/kg	----	----	<2	----	----	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>									
Naphthalene	91-20-3	0.5	mg/kg	----	----	<0.5	----	----	
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	<0.5	----	----	
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	----	----	
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	----	----	
Phenanthrene	85-01-8	0.5	mg/kg	----	----	<0.5	----	----	
Anthracene	120-12-7	0.5	mg/kg	----	----	<0.5	----	----	
Fluoranthene	206-44-0	0.5	mg/kg	----	----	<0.5	----	----	
Pyrene	129-00-0	0.5	mg/kg	----	----	<0.5	----	----	
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	<0.5	----	----	
Chrysene	218-01-9	0.5	mg/kg	----	----	<0.5	----	----	
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	<0.5	----	----	
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	<0.5	----	----	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	<0.5	----	----	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP25/0-0.15	SP26/0-0.15	SP27/0-0.15	SP28/0-0.15	SP29/0-0.15
Client sampling date / time				30-Apr-2018 12:05	30-Apr-2018 12:10	30-Apr-2018 12:13	30-Apr-2018 12:18	30-Apr-2018 12:23	
Compound	CAS Number	LOR	Unit	EM1807085-030	EM1807085-031	EM1807085-032	EM1807085-033	EM1807085-034	
				Result	Result	Result	Result	Result	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>									
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	<0.5	----	----	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	----	----	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	<0.5	----	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	<0.5	----	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	<0.5	----	----	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	<b>0.6</b>	----	----	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	<b>1.2</b>	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	10	mg/kg	----	----	<10	----	----	
C10 - C14 Fraction	----	50	mg/kg	----	----	<50	----	----	
C15 - C28 Fraction	----	100	mg/kg	----	----	<100	----	----	
C29 - C36 Fraction	----	100	mg/kg	----	----	<100	----	----	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	<10	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	<10	----	----	
>C10 - C16 Fraction	----	50	mg/kg	----	----	<50	----	----	
>C16 - C34 Fraction	----	100	mg/kg	----	----	<100	----	----	
>C34 - C40 Fraction	----	100	mg/kg	----	----	<100	----	----	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	<50	----	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	0.2	mg/kg	----	----	<0.2	----	----	
Toluene	108-88-3	0.5	mg/kg	----	----	<0.5	----	----	
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	<0.5	----	----	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	<0.5	----	----	
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	<0.5	----	----	
^ Sum of BTEX	----	0.2	mg/kg	----	----	<0.2	----	----	
^ Total Xylenes	----	0.5	mg/kg	----	----	<0.5	----	----	
Naphthalene	91-20-3	1	mg/kg	----	----	<1	----	----	
<b>EP066S: PCB Surrogate</b>									
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	<b>101</b>	----	----	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP25/0-0.15	SP26/0-0.15	SP27/0-0.15	SP28/0-0.15	SP29/0-0.15
Client sampling date / time				30-Apr-2018 12:05	30-Apr-2018 12:10	30-Apr-2018 12:13	30-Apr-2018 12:18	30-Apr-2018 12:23	
Compound	CAS Number	LOR	Unit	EM1807085-030	EM1807085-031	EM1807085-032	EM1807085-033	EM1807085-034	
				Result	Result	Result	Result	Result	
<b>EP068S: Organochlorine Pesticide Surrogate</b>									
Dibromo-DDE	21655-73-2	0.05	%	90.2	75.6	84.0	76.1	89.2	
<b>EP068T: Organophosphorus Pesticide Surrogate</b>									
DEF	78-48-8	0.05	%	118	108	118	108	113	
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>									
Phenol-d6	13127-88-3	0.5	%	----	----	89.0	----	----	
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	87.3	----	----	
2,4,6-Tribromophenol	118-79-6	0.5	%	----	----	74.8	----	----	
<b>EP075(SIM)T: PAH Surrogates</b>									
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	87.5	----	----	
Anthracene-d10	1719-06-8	0.5	%	----	----	100	----	----	
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	93.1	----	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	82.0	----	----	
Toluene-D8	2037-26-5	0.2	%	----	----	87.9	----	----	
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	97.2	----	----	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP30/0-0.15	SP31/0-0.15	SP32/0-0.15	SP33/0-0.15	SP34/0-0.15
Client sampling date / time				30-Apr-2018 12:26	30-Apr-2018 12:41	30-Apr-2018 12:37	30-Apr-2018 12:29	30-Apr-2018 12:32	
Compound	CAS Number	LOR	Unit	EM1807085-035	EM1807085-036	EM1807085-037	EM1807085-038	EM1807085-039	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	1.0	%	13.9	10.9	4.2	4.3	7.2	
<b>EG005T: Total Metals by ICP-AES</b>									
Arsenic	7440-38-2	5	mg/kg	43	26	28	32	43	
Barium	7440-39-3	10	mg/kg	60	60	20	30	60	
Beryllium	7440-41-7	1	mg/kg	1	<1	<1	<1	1	
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50	
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	
Chromium	7440-47-3	2	mg/kg	37	22	17	16	25	
Cobalt	7440-48-4	2	mg/kg	10	10	4	4	14	
Copper	7440-50-8	5	mg/kg	<5	<5	<5	<5	<5	
Lead	7439-92-1	5	mg/kg	8	7	<5	<5	7	
Manganese	7439-96-5	5	mg/kg	122	184	84	37	88	
Nickel	7440-02-0	2	mg/kg	17	8	5	4	12	
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5	
Vanadium	7440-62-2	5	mg/kg	99	61	49	46	73	
Zinc	7440-66-6	5	mg/kg	16	6	5	<5	6	
<b>EG035T: Total Recoverable Mercury by FIMS</b>									
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EG048: Hexavalent Chromium (Alkaline Digest)</b>									
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	----	<0.5	----	----	
<b>EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser</b>									
Weak Acid Dissociable Cyanide	----	1	mg/kg	----	----	<1	----	----	
<b>EP066: Polychlorinated Biphenyls (PCB)</b>									
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	<0.1	----	----	
<b>EP068A: Organochlorine Pesticides (OC)</b>									
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP30/0-0.15	SP31/0-0.15	SP32/0-0.15	SP33/0-0.15	SP34/0-0.15
Client sampling date / time				30-Apr-2018 12:26	30-Apr-2018 12:41	30-Apr-2018 12:37	30-Apr-2018 12:29	30-Apr-2018 12:32	
Compound	CAS Number	LOR	Unit	EM1807085-035	EM1807085-036	EM1807085-037	EM1807085-038	EM1807085-039	
				Result	Result	Result	Result	Result	
<b>EP068A: Organochlorine Pesticides (OC) - Continued</b>									
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Mirex	2385-85-5	0.20	mg/kg	----	----	<0.20	----	----	
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP068B: Organophosphorus Pesticides (OP)</b>									
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP30/0-0.15	SP31/0-0.15	SP32/0-0.15	SP33/0-0.15	SP34/0-0.15
Client sampling date / time				30-Apr-2018 12:26	30-Apr-2018 12:41	30-Apr-2018 12:37	30-Apr-2018 12:29	30-Apr-2018 12:32	
Compound	CAS Number	LOR	Unit	EM1807085-035	EM1807085-036	EM1807085-037	EM1807085-038	EM1807085-039	
				Result	Result	Result	Result	Result	
<b>EP068B: Organophosphorus Pesticides (OP) - Continued</b>									
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP068C: Triazines</b>									
Atrazine	1912-24-9	0.05	mg/kg	----	----	<0.05	----	----	
<b>EP068D: Pyrethroids</b>									
Bifenthrin	82657-04-3	0.05	mg/kg	----	----	<0.05	----	----	
<b>EP075(SIM)A: Phenolic Compounds</b>									
Phenol	108-95-2	0.5	mg/kg	----	----	<0.5	----	----	
2-Chlorophenol	95-57-8	0.5	mg/kg	----	----	<0.5	----	----	
2-Methylphenol	95-48-7	0.5	mg/kg	----	----	<0.5	----	----	
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	----	<1	----	----	
2-Nitrophenol	88-75-5	0.5	mg/kg	----	----	<0.5	----	----	
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	----	----	<0.5	----	----	
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	----	----	<0.5	----	----	
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	----	----	<0.5	----	----	
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	----	----	<0.5	----	----	
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	----	----	<0.5	----	----	
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	----	----	<0.5	----	----	
Pentachlorophenol	87-86-5	2	mg/kg	----	----	<2	----	----	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>									
Naphthalene	91-20-3	0.5	mg/kg	----	----	<0.5	----	----	
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	<0.5	----	----	
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	----	----	
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	----	----	
Phenanthrene	85-01-8	0.5	mg/kg	----	----	<0.5	----	----	
Anthracene	120-12-7	0.5	mg/kg	----	----	<0.5	----	----	
Fluoranthene	206-44-0	0.5	mg/kg	----	----	<0.5	----	----	
Pyrene	129-00-0	0.5	mg/kg	----	----	<0.5	----	----	
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	<0.5	----	----	
Chrysene	218-01-9	0.5	mg/kg	----	----	<0.5	----	----	
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	<0.5	----	----	
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	<0.5	----	----	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	<0.5	----	----	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP30/0-0.15	SP31/0-0.15	SP32/0-0.15	SP33/0-0.15	SP34/0-0.15
Client sampling date / time				30-Apr-2018 12:26	30-Apr-2018 12:41	30-Apr-2018 12:37	30-Apr-2018 12:29	30-Apr-2018 12:32	
Compound	CAS Number	LOR	Unit	EM1807085-035	EM1807085-036	EM1807085-037	EM1807085-038	EM1807085-039	
				Result	Result	Result	Result	Result	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>									
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	<0.5	----	----	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	----	----	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	<0.5	----	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	<0.5	----	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	<0.5	----	----	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	<b>0.6</b>	----	----	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	<b>1.2</b>	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	10	mg/kg	----	----	<10	----	----	
C10 - C14 Fraction	----	50	mg/kg	----	----	<50	----	----	
C15 - C28 Fraction	----	100	mg/kg	----	----	<100	----	----	
C29 - C36 Fraction	----	100	mg/kg	----	----	<100	----	----	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	<10	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	<10	----	----	
>C10 - C16 Fraction	----	50	mg/kg	----	----	<50	----	----	
>C16 - C34 Fraction	----	100	mg/kg	----	----	<100	----	----	
>C34 - C40 Fraction	----	100	mg/kg	----	----	<100	----	----	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	<50	----	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	0.2	mg/kg	----	----	<0.2	----	----	
Toluene	108-88-3	0.5	mg/kg	----	----	<0.5	----	----	
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	<0.5	----	----	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	<0.5	----	----	
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	<0.5	----	----	
^ Sum of BTEX	----	0.2	mg/kg	----	----	<0.2	----	----	
^ Total Xylenes	----	0.5	mg/kg	----	----	<0.5	----	----	
Naphthalene	91-20-3	1	mg/kg	----	----	<1	----	----	
<b>EP066S: PCB Surrogate</b>									
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	<b>91.2</b>	----	----	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP30/0-0.15	SP31/0-0.15	SP32/0-0.15	SP33/0-0.15	SP34/0-0.15
Client sampling date / time				30-Apr-2018 12:26	30-Apr-2018 12:41	30-Apr-2018 12:37	30-Apr-2018 12:29	30-Apr-2018 12:32	
Compound	CAS Number	LOR	Unit	EM1807085-035	EM1807085-036	EM1807085-037	EM1807085-038	EM1807085-039	
				Result	Result	Result	Result	Result	
<b>EP068S: Organochlorine Pesticide Surrogate</b>									
Dibromo-DDE	21655-73-2	0.05	%	70.3	70.0	70.9	80.4	71.2	
<b>EP068T: Organophosphorus Pesticide Surrogate</b>									
DEF	78-48-8	0.05	%	88.4	82.0	81.8	83.0	79.8	
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>									
Phenol-d6	13127-88-3	0.5	%	----	----	87.1	----	----	
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	86.6	----	----	
2,4,6-Tribromophenol	118-79-6	0.5	%	----	----	71.9	----	----	
<b>EP075(SIM)T: PAH Surrogates</b>									
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	85.3	----	----	
Anthracene-d10	1719-06-8	0.5	%	----	----	99.3	----	----	
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	89.3	----	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	83.2	----	----	
Toluene-D8	2037-26-5	0.2	%	----	----	81.1	----	----	
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	96.2	----	----	





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP35/0-0.15	TP01/0-0.15	TP02/0-0.15	TP03/0-0.15	TP04/0-0.15
Client sampling date / time				30-Apr-2018 12:45	30-Apr-2018 09:40	30-Apr-2018 09:42	30-Apr-2018 09:45	30-Apr-2018 10:10	
Compound	CAS Number	LOR	Unit	EM1807085-040	EM1807085-041	EM1807085-042	EM1807085-043	EM1807085-044	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	1.0	%	7.2	3.9	3.3	2.8	3.7	
<b>EG005T: Total Metals by ICP-AES</b>									
Arsenic	7440-38-2	5	mg/kg	26	7	5	<5	7	
Barium	7440-39-3	10	mg/kg	20	10	10	<10	<10	
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1	
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50	
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	
Chromium	7440-47-3	2	mg/kg	14	9	9	11	9	
Cobalt	7440-48-4	2	mg/kg	2	<2	<2	<2	<2	
Copper	7440-50-8	5	mg/kg	<5	<5	<5	7	<5	
Lead	7439-92-1	5	mg/kg	<5	<5	<5	7	<5	
Manganese	7439-96-5	5	mg/kg	24	11	14	15	11	
Nickel	7440-02-0	2	mg/kg	3	3	2	4	2	
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5	
Vanadium	7440-62-2	5	mg/kg	39	24	21	20	26	
Zinc	7440-66-6	5	mg/kg	<5	<5	<5	<5	<5	
<b>EG035T: Total Recoverable Mercury by FIMS</b>									
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EP068A: Organochlorine Pesticides (OC)</b>									
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	----	
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	----	
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	----	
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	----	
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	----	----	----	
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	----	----	----	
Aldrin	309-00-2	0.05	mg/kg	<0.05	----	----	----	----	
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	----	----	----	----	
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----	
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	----	----	----	----	
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	----	----	----	----	
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	----	----	----	----	
Dieldrin	60-57-1	0.05	mg/kg	<0.05	----	----	----	----	
4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----	
Endrin	72-20-8	0.05	mg/kg	<0.05	----	----	----	----	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP35/0-0.15	TP01/0-0.15	TP02/0-0.15	TP03/0-0.15	TP04/0-0.15
Client sampling date / time				30-Apr-2018 12:45	30-Apr-2018 09:40	30-Apr-2018 09:42	30-Apr-2018 09:45	30-Apr-2018 10:10	
Compound	CAS Number	LOR	Unit	EM1807085-040	EM1807085-041	EM1807085-042	EM1807085-043	EM1807085-044	
				Result	Result	Result	Result	Result	
<b>EP068A: Organochlorine Pesticides (OC) - Continued</b>									
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	----	----	----	
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----	
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----	
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	----	----	----	----	
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	----	----	----	----	
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	----	----	----	----	
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	----	----	----	
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	----	----	----	----	
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----	
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	----	----	----	----	
<b>EP068B: Organophosphorus Pesticides (OP)</b>									
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	----	----	----	----	
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	----	----	----	----	
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	----	----	----	----	
Dimethoate	60-51-5	0.05	mg/kg	<0.05	----	----	----	----	
Diazinon	333-41-5	0.05	mg/kg	<0.05	----	----	----	----	
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	----	----	----	----	
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	----	----	----	----	
Malathion	121-75-5	0.05	mg/kg	<0.05	----	----	----	----	
Fenthion	55-38-9	0.05	mg/kg	<0.05	----	----	----	----	
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	----	----	----	----	
Parathion	56-38-2	0.2	mg/kg	<0.2	----	----	----	----	
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	----	----	----	----	
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	----	----	----	----	
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	----	----	----	----	
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	----	----	----	----	
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	----	----	----	----	
Ethion	563-12-2	0.05	mg/kg	<0.05	----	----	----	----	
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	----	----	----	----	
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	----	----	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	10	mg/kg	----	<10	<10	<10	<10	
C10 - C14 Fraction	----	50	mg/kg	----	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	mg/kg	----	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP35/0-0.15	TP01/0-0.15	TP02/0-0.15	TP03/0-0.15	TP04/0-0.15
Client sampling date / time				30-Apr-2018 12:45	30-Apr-2018 09:40	30-Apr-2018 09:42	30-Apr-2018 09:45	30-Apr-2018 10:10	
Compound	CAS Number	LOR	Unit	EM1807085-040	EM1807085-041	EM1807085-042	EM1807085-043	EM1807085-044	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>									
C29 - C36 Fraction	----	100	mg/kg	----	<100	<100	<100	<100	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	<10	<10	<10	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	<10	<10	<10	
>C10 - C16 Fraction	----	50	mg/kg	----	<50	<50	<50	<50	
>C16 - C34 Fraction	----	100	mg/kg	----	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	mg/kg	----	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	<50	<50	<50	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	<50	<50	<50	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	0.2	mg/kg	----	<0.2	<0.2	<0.2	<0.2	
Toluene	108-88-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5	
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5	
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5	
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	<0.2	<0.2	<0.2	
^ Total Xylenes	----	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5	
Naphthalene	91-20-3	1	mg/kg	----	<1	<1	<1	<1	
<b>EP068S: Organochlorine Pesticide Surrogate</b>									
Dibromo-DDE	21655-73-2	0.05	%	70.4	----	----	----	----	
<b>EP068T: Organophosphorus Pesticide Surrogate</b>									
DEF	78-48-8	0.05	%	79.8	----	----	----	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	----	87.2	83.4	82.6	87.1	
Toluene-D8	2037-26-5	0.2	%	----	90.0	83.6	82.4	83.9	
4-Bromofluorobenzene	460-00-4	0.2	%	----	104	96.6	96.9	96.6	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Client sample ID		TP05/0-0.15	TP06/0-0.15	TP07/0-0.15	TP08/0-0.15	QC08	
Client sampling date / time		30-Apr-2018 10:12		30-Apr-2018 11:37		30-Apr-2018 11:05		30-Apr-2018 11:05	
Compound	CAS Number	LOR	Unit	EM1807085-045	EM1807085-046	EM1807085-047	EM1807085-048	EM1807085-049	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	1.0	%	4.1	5.6	3.8	11.8	3.9	
<b>EG005T: Total Metals by ICP-AES</b>									
Arsenic	7440-38-2	5	mg/kg	14	50	21	40	21	
Barium	7440-39-3	10	mg/kg	10	10	<10	20	10	
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	1	<1	
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50	
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	
Chromium	7440-47-3	2	mg/kg	15	23	12	29	12	
Cobalt	7440-48-4	2	mg/kg	<2	4	2	13	<2	
Copper	7440-50-8	5	mg/kg	<5	<5	<5	6	<5	
Lead	7439-92-1	5	mg/kg	8	7	<5	12	<5	
Manganese	7439-96-5	5	mg/kg	21	31	16	85	19	
Nickel	7440-02-0	2	mg/kg	3	6	3	33	3	
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5	
Vanadium	7440-62-2	5	mg/kg	40	69	32	63	34	
Zinc	7440-66-6	5	mg/kg	<5	<5	<5	24	8	
<b>EG035T: Total Recoverable Mercury by FIMS</b>									
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10	
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10	
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP05/0-0.15	TP06/0-0.15	TP07/0-0.15	TP08/0-0.15	QC08
Client sampling date / time				30-Apr-2018 10:12	30-Apr-2018 11:37	30-Apr-2018 11:05	30-Apr-2018 11:00	30-Apr-2018 11:05	
Compound	CAS Number	LOR	Unit	EM1807085-045	EM1807085-046	EM1807085-047	EM1807085-048	EM1807085-049	
				Result	Result	Result	Result	Result	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	79.4	84.6	83.6	82.9	86.3	
Toluene-D8	2037-26-5	0.2	%	76.8	87.3	80.9	80.8	84.3	
4-Bromofluorobenzene	460-00-4	0.2	%	93.8	101	99.2	98.9	101	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Client sample ID		TP09/0-0.15	TP10/0-0.15	----	----	----
Client sampling date / time		30-Apr-2018 11:59		30-Apr-2018 12:02		----	----	----
Compound	CAS Number	LOR	Unit	EM1807085-050	EM1807085-051	-----	-----	-----
				Result	Result	----	----	----
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
Moisture Content	----	1.0	%	5.6	7.0	----	----	----
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	50	56	----	----	----
Barium	7440-39-3	10	mg/kg	40	20	----	----	----
Beryllium	7440-41-7	1	mg/kg	<1	<1	----	----	----
Boron	7440-42-8	50	mg/kg	<50	<50	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	21	26	----	----	----
Cobalt	7440-48-4	2	mg/kg	10	8	----	----	----
Copper	7440-50-8	5	mg/kg	<5	<5	----	----	----
Lead	7439-92-1	5	mg/kg	10	11	----	----	----
Manganese	7439-96-5	5	mg/kg	45	35	----	----	----
Nickel	7440-02-0	2	mg/kg	10	8	----	----	----
Selenium	7782-49-2	5	mg/kg	<5	<5	----	----	----
Vanadium	7440-62-2	5	mg/kg	57	83	----	----	----
Zinc	7440-66-6	5	mg/kg	13	11	----	----	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	----	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP09/0-0.15	TP10/0-0.15	----	----	----
Client sampling date / time				30-Apr-2018 11:59	30-Apr-2018 12:02	----	----	----	
Compound	CAS Number	LOR	Unit	EM1807085-050	EM1807085-051	-----	-----	-----	
				Result	Result	----	----	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	----	----	----	
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	----	----	----	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	----	----	----	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	----	----	----	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	----	----	----	
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	----	----	----	
Naphthalene	91-20-3	1	mg/kg	<1	<1	----	----	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	80.9	76.5	----	----	----	
Toluene-D8	2037-26-5	0.2	%	80.5	66.4	----	----	----	
4-Bromofluorobenzene	460-00-4	0.2	%	95.2	85.7	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC01	QC02	QC03	QC05	QC10
Client sampling date / time					30-Apr-2018 08:30	30-Apr-2018 08:30	30-Apr-2018 08:30	30-Apr-2018 09:10	30-Apr-2018 13:00
Compound	CAS Number	LOR	Unit	EM1807085-001	EM1807085-002	EM1807085-003	EM1807085-004	EM1807085-052	EM1807085-052
				Result	Result	Result	Result	Result	Result
<b>EG020T: Total Metals by ICP-MS</b>									
Arsenic	7440-38-2	0.001	mg/L	----	----	----	<0.001	<0.001	<0.001
Boron	7440-42-8	0.05	mg/L	----	----	----	<0.05	<0.05	<0.05
Barium	7440-39-3	0.001	mg/L	----	----	----	<0.001	<0.001	<0.001
Beryllium	7440-41-7	0.001	mg/L	----	----	----	<0.001	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	<0.0001	<0.0001	<0.0001
Cobalt	7440-48-4	0.001	mg/L	----	----	----	<0.001	<0.001	<0.001
Chromium	7440-47-3	0.001	mg/L	----	----	----	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	----	----	----	<0.001	<0.001	<0.001
Manganese	7439-96-5	0.001	mg/L	----	----	----	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	----	----	----	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	----	----	----	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	----	----	----	<0.01	<0.01	<0.01
Vanadium	7440-62-2	0.01	mg/L	----	----	----	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	----	----	----	<0.005	<0.005	<0.005
<b>EG035T: Total Recoverable Mercury by FIMS</b>									
Mercury	7439-97-6	0.0001	mg/L	----	----	----	<0.0001	<0.0001	<0.0001
<b>EP068A: Organochlorine Pesticides (OC)</b>									
alpha-BHC	319-84-6	0.5	µg/L	----	----	----	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	----	----	----	<0.5	<0.5	<0.5
beta-BHC	319-85-7	0.5	µg/L	----	----	----	<0.5	<0.5	<0.5
gamma-BHC	58-89-9	0.5	µg/L	----	----	----	<0.5	<0.5	<0.5
delta-BHC	319-86-8	0.5	µg/L	----	----	----	<0.5	<0.5	<0.5
Heptachlor	76-44-8	0.5	µg/L	----	----	----	<0.5	<0.5	<0.5
Aldrin	309-00-2	0.5	µg/L	----	----	----	<0.5	<0.5	<0.5
Heptachlor epoxide	1024-57-3	0.5	µg/L	----	----	----	<0.5	<0.5	<0.5
trans-Chlordane	5103-74-2	0.5	µg/L	----	----	----	<0.5	<0.5	<0.5
alpha-Endosulfan	959-98-8	0.5	µg/L	----	----	----	<0.5	<0.5	<0.5
cis-Chlordane	5103-71-9	0.5	µg/L	----	----	----	<0.5	<0.5	<0.5
Dieldrin	60-57-1	0.5	µg/L	----	----	----	<0.5	<0.5	<0.5
4,4'-DDE	72-55-9	0.5	µg/L	----	----	----	<0.5	<0.5	<0.5
Endrin	72-20-8	0.5	µg/L	----	----	----	<0.5	<0.5	<0.5
beta-Endosulfan	33213-65-9	0.5	µg/L	----	----	----	<0.5	<0.5	<0.5
4,4'-DDD	72-54-8	0.5	µg/L	----	----	----	<0.5	<0.5	<0.5
Endrin aldehyde	7421-93-4	0.5	µg/L	----	----	----	<0.5	<0.5	<0.5





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC01	QC02	QC03	QC05	QC10
Client sampling date / time					30-Apr-2018 08:30	30-Apr-2018 08:30	30-Apr-2018 08:30	30-Apr-2018 09:10	30-Apr-2018 13:00
Compound	CAS Number	LOR	Unit		EM1807085-001	EM1807085-002	EM1807085-003	EM1807085-004	EM1807085-052
					Result	Result	Result	Result	Result
<b>EP068A: Organochlorine Pesticides (OC) - Continued</b>									
Endosulfan sulfate	1031-07-8	0.5	µg/L		----	----	----	<0.5	<0.5
4,4'-DDT	50-29-3	2.0	µg/L		----	----	----	<2.0	<2.0
Endrin ketone	53494-70-5	0.5	µg/L		----	----	----	<0.5	<0.5
Methoxychlor	72-43-5	2.0	µg/L		----	----	----	<2.0	<2.0
^ Total Chlordane (sum)	----	0.5	µg/L		----	----	----	<0.5	<0.5
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.5	µg/L		----	----	----	<0.5	<0.5
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L		----	----	----	<0.5	<0.5
<b>EP068B: Organophosphorus Pesticides (OP)</b>									
Dichlorvos	62-73-7	0.5	µg/L		----	----	----	<0.5	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L		----	----	----	<0.5	<0.5
Monocrotophos	6923-22-4	2.0	µg/L		----	----	----	<2.0	<2.0
Dimethoate	60-51-5	0.5	µg/L		----	----	----	<0.5	<0.5
Diazinon	333-41-5	0.5	µg/L		----	----	----	<0.5	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L		----	----	----	<0.5	<0.5
Parathion-methyl	298-00-0	2.0	µg/L		----	----	----	<2.0	<2.0
Malathion	121-75-5	0.5	µg/L		----	----	----	<0.5	<0.5
Fenthion	55-38-9	0.5	µg/L		----	----	----	<0.5	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L		----	----	----	<0.5	<0.5
Parathion	56-38-2	2.0	µg/L		----	----	----	<2.0	<2.0
Pirimphos-ethyl	23505-41-1	0.5	µg/L		----	----	----	<0.5	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L		----	----	----	<0.5	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L		----	----	----	<0.5	<0.5
Fenamiphos	22224-92-6	0.5	µg/L		----	----	----	<0.5	<0.5
Prothiofos	34643-46-4	0.5	µg/L		----	----	----	<0.5	<0.5
Ethion	563-12-2	0.5	µg/L		----	----	----	<0.5	<0.5
Carbophenothion	786-19-6	0.5	µg/L		----	----	----	<0.5	<0.5
Azinphos Methyl	86-50-0	0.5	µg/L		----	----	----	<0.5	<0.5
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC01	QC02	QC03	QC05	QC10
Client sampling date / time					30-Apr-2018 08:30	30-Apr-2018 08:30	30-Apr-2018 08:30	30-Apr-2018 09:10	30-Apr-2018 13:00
Compound	CAS Number	LOR	Unit	EM1807085-001	EM1807085-002	EM1807085-003	EM1807085-004	EM1807085-052	
				Result	Result	Result	Result	Result	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----	
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	----	----	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	----	----	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----	
<b>EP068S: Organochlorine Pesticide Surrogate</b>									
Dibromo-DDE	21655-73-2	0.5	%	----	----	----	71.6	86.2	
<b>EP068T: Organophosphorus Pesticide Surrogate</b>									
DEF	78-48-8	0.5	%	----	----	----	63.0	94.2	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	93.5	98.6	97.6	----	----	
Toluene-D8	2037-26-5	2	%	87.1	96.2	92.7	----	----	
4-Bromofluorobenzene	460-00-4	2	%	93.3	98.1	96.4	----	----	



## Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP066S: PCB Surrogate</b>			
Decachlorobiphenyl	2051-24-3	36	140
<b>EP068S: Organochlorine Pesticide Surrogate</b>			
Dibromo-DDE	21655-73-2	38	128
<b>EP068T: Organophosphorus Pesticide Surrogate</b>			
DEF	78-48-8	33	139
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	54	125
2-Chlorophenol-D4	93951-73-6	65	123
2,4,6-Tribromophenol	118-79-6	34	122
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	61	125
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	51	125
Toluene-D8	2037-26-5	55	125
4-Bromofluorobenzene	460-00-4	56	124

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP068S: Organochlorine Pesticide Surrogate</b>			
Dibromo-DDE	21655-73-2	49	117
<b>EP068T: Organophosphorus Pesticide Surrogate</b>			
DEF	78-48-8	51	127
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

## QUALITY CONTROL REPORT

<b>Work Order</b>	: <b>EM1807085</b>	<b>Page</b>	: 1 of 28
<b>Client</b>	: <b>ENVIRONMENTAL SITE ASSESSMENTS PTY LTD</b>	<b>Laboratory</b>	: Environmental Division Melbourne
<b>Contact</b>	: MR SETON LILLAS	<b>Contact</b>	: Larissa Burns
<b>Address</b>	: P.O. BOX 3106 WAURN PONDS VIC 3216	<b>Address</b>	: 4 Westall Rd Springvale VIC Australia 3171
<b>Telephone</b>	: ----	<b>Telephone</b>	: +61-3-8549 9600
<b>Project</b>	: TGM Bannockburn	<b>Date Samples Received</b>	: 01-May-2018
<b>Order number</b>	:	<b>Date Analysis Commenced</b>	: 01-May-2018
<b>C-O-C number</b>	: ----	<b>Issue Date</b>	: 08-May-2018
<b>Sampler</b>	: AK		
<b>Site</b>	: ----		
<b>Quote number</b>	: MEBQ/159/15 V2		
<b>No. of samples received</b>	: 52		
<b>No. of samples analysed</b>	: 52		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



## General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1609539)</b>									
EM1807083-001	Anonymous	EA055: Moisture Content	----	0.1	%	8.8	7.4	17.0	No Limit
EM1807083-022	Anonymous	EA055: Moisture Content	----	0.1	%	12.2	12.5	2.44	0% - 50%
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1609540)</b>									
EM1807085-014	SP10/0-0.15	EA055: Moisture Content	----	0.1	%	4.6	5.2	11.3	No Limit
EM1807085-024	SP19/0-0.15	EA055: Moisture Content	----	0.1	%	3.5	3.0	14.6	No Limit
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1609541)</b>									
EM1807085-034	SP29/0-0.15	EA055: Moisture Content	----	0.1	%	5.6	6.0	7.98	No Limit
EM1807085-044	TP04/0-0.15	EA055: Moisture Content	----	0.1	%	3.7	3.2	13.4	No Limit
<b>EG005T: Total Metals by ICP-AES (QC Lot: 1610015)</b>									
EM1807085-005	SP01/0-0.15	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	<10	<10	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	7	7	0.00	No Limit
		EG005T: Cobalt	7440-48-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	12	11	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	18	18	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.00	No Limit
EM1807085-014	SP10/0-0.15	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EG005T: Total Metals by ICP-AES (QC Lot: 1610015) - continued</b>									
EM1807085-014	SP10/0-0.15	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	<10	<10	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	22	22	0.00	0% - 50%
		EG005T: Cobalt	7440-48-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	4	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	17	17	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	6	6	0.00	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	7	8	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	52	52	0.00	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.00	No Limit		
<b>EG005T: Total Metals by ICP-AES (QC Lot: 1610020)</b>									
EM1807085-025	SP20/0-0.15	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	20	20	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	13	13	0.00	No Limit
		EG005T: Cobalt	7440-48-4	2	mg/kg	3	3	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	4	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	19	19	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	51	52	0.00	0% - 50%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	40	41	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.00	No Limit
EM1807085-034	SP29/0-0.15	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	30	30	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	18	18	0.00	No Limit
		EG005T: Cobalt	7440-48-4	2	mg/kg	4	4	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	5	5	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	24	24	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	5	<5	0.00	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	41	41	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	51	52	0.00	0% - 50%



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EG005T: Total Metals by ICP-AES (QC Lot: 1610020) - continued</b>									
EM1807085-034	SP29/0-0.15	EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.00	No Limit
<b>EG005T: Total Metals by ICP-AES (QC Lot: 1610884)</b>									
EM1806793-021	Anonymous	EG005T: Beryllium	7440-41-7	1	mg/kg	1	1	0.00	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	60	60	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	16	16	0.00	No Limit
		EG005T: Cobalt	7440-48-4	2	mg/kg	8	8	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	9	9	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	8	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	6	6	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	6	6	0.00	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	135	137	1.16	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	53	54	0.00	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	13	13	0.00	No Limit
EG005T: Boron	7440-42-8	50	mg/kg	90	90	0.00	No Limit		
EM1807085-047	TP07/0-0.15	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	<10	<10	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	12	11	0.00	No Limit
		EG005T: Cobalt	7440-48-4	2	mg/kg	2	2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	3	3	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	21	21	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	16	16	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	32	32	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.00	No Limit		
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1610018)</b>									
EM1807085-005	SP01/0-0.15	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1807085-014	SP10/0-0.15	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1610019)</b>									
EM1807085-025	SP20/0-0.15	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1807085-034	SP29/0-0.15	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1610885)</b>									
EM1806793-021	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1610885) - continued</b>									
EM1807085-047	TP07/0-0.15	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
<b>EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1609691)</b>									
EM1806967-020	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1807083-005	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
<b>EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1609692)</b>									
EM1807085-037	SP32/0-0.15	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
<b>EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser (QC Lot: 1610412)</b>									
EM1806782-007	Anonymous	EK028SF: Weak Acid Dissociable Cyanide	----	1	mg/kg	<1	<1	0.00	No Limit
EM1807085-032	SP27/0-0.15	EK028SF: Weak Acid Dissociable Cyanide	----	1	mg/kg	<1	<1	0.00	No Limit
<b>EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1609440)</b>									
EM1807085-005	SP01/0-0.15	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
<b>EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1609450)</b>									
EM1807085-027	SP22/0-0.15	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
<b>EP068A: Organochlorine Pesticides (OC) (QC Lot: 1609441)</b>									
EM1807085-015	SP11/0-0.15	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EM1807085-005	SP01/0-0.15	EP068: Mirex	2385-85-5	0.05	mg/kg	<0.20	<0.20
EP068: 4,4'-DDT	50-29-3			0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068: Methoxychlor	72-43-5			0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068: alpha-BHC	319-84-6			0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP068: Hexachlorobenzene (HCB)	118-74-1			0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP068: beta-BHC	319-85-7			0.05	mg/kg	<0.05	<0.05	0.00	No Limit





Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP068A: Organochlorine Pesticides (OC) (QC Lot: 1609441) - continued</b>									
EM1807085-005	SP01/0-0.15	EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Mirex	2385-85-5	0.05	mg/kg	<0.20	<0.20	0.00	No Limit
		EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit		
<b>EP068A: Organochlorine Pesticides (OC) (QC Lot: 1609449)</b>									
EM1807085-034	SP29/0-0.15	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit		
EP068: Mirex	2385-85-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit		



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP068A: Organochlorine Pesticides (OC) (QC Lot: 1609449) - continued</b>									
EM1807085-034	SP29/0-0.15	EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1807085-027	SP22/0-0.15	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Mirex	2385-85-5	0.05	mg/kg	<0.20	<0.20	0.00	No Limit
EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit		
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit		
<b>EP068B: Organophosphorus Pesticides (OP) (QC Lot: 1609441)</b>									
EM1807085-015	SP11/0-0.15	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP068B: Organophosphorus Pesticides (OP) (QC Lot: 1609441) - continued</b>									
EM1807085-015	SP11/0-0.15	EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1807085-005	SP01/0-0.15	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit		
<b>EP068B: Organophosphorus Pesticides (OP) (QC Lot: 1609449)</b>									
EM1807085-034	SP29/0-0.15	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit		



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP068B: Organophosphorus Pesticides (OP) (QC Lot: 1609449) - continued</b>									
EM1807085-034	SP29/0-0.15	EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1807085-027	SP22/0-0.15	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit		
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit		
<b>EP068C: Triazines (QC Lot: 1609441)</b>									
EM1807085-015	SP11/0-0.15	EP068: Atrazine	1912-24-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1807085-005	SP01/0-0.15	EP068: Atrazine	1912-24-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
<b>EP068C: Triazines (QC Lot: 1609449)</b>									
EM1807085-034	SP29/0-0.15	EP068: Atrazine	1912-24-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1807085-027	SP22/0-0.15	EP068: Atrazine	1912-24-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
<b>EP068D: Pyrethroids (QC Lot: 1609441)</b>									
EM1807085-015	SP11/0-0.15	EP068: Bifenthrin	82657-04-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1807085-005	SP01/0-0.15	EP068: Bifenthrin	82657-04-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
<b>EP068D: Pyrethroids (QC Lot: 1609449)</b>									
EM1807085-034	SP29/0-0.15	EP068: Bifenthrin	82657-04-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1807085-027	SP22/0-0.15	EP068: Bifenthrin	82657-04-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 1609442)</b>									
EM1807085-005	SP01/0-0.15	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 1609442) - continued</b>										
EM1807085-005	SP01/0-0.15	EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit	
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.00	No Limit	
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 1609453)</b>										
EM1807085-027	SP22/0-0.15	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit	
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.00	No Limit	
		<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1609442)</b>								
EM1807085-005	SP01/0-0.15	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
			205-82-3							
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit			
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1609453)</b>										



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1609453) - continued</b>									
EM1807085-027	SP22/0-0.15	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1608141)</b>									
EM1807085-005	SP01/0-0.15	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1807085-041	TP01/0-0.15	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1608142)</b>									
EM1807080-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1807083-009	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1609443)</b>									
EM1807085-005	SP01/0-0.15	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1609452)</b>									
EM1807085-027	SP22/0-0.15	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1609462)</b>									
EM1806793-002	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit
EM1807108-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1609462) - continued</b>										
EM1807108-001	Anonymous	EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit	
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1608141)</b>										
EM1807085-005	SP01/0-0.15	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit	
EM1807085-041	TP01/0-0.15	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1608142)</b>										
EM1807080-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit	
EM1807083-009	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1609443)</b>										
EM1807085-005	SP01/0-0.15	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit	
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1609452)</b>										
EM1807085-027	SP22/0-0.15	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit	
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1609462)</b>										
EM1806793-002	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit	
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit	
EM1807108-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit	
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit	
<b>EP080: BTEXN (QC Lot: 1608141)</b>										
EM1807085-005	SP01/0-0.15	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
EM1807085-041	TP01/0-0.15	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit	
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP080: BTEXN (QC Lot: 1608141) - continued</b>									
EM1807085-041	TP01/0-0.15	EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
<b>EP080: BTEXN (QC Lot: 1608142)</b>									
EM1807080-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1807083-009	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EG020T: Total Metals by ICP-MS (QC Lot: 1609210)</b>									
EM1807085-004	QC05	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	0.00	No Limit
EM1807095-038	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit





Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
<b>EG020T: Total Metals by ICP-MS (QC Lot: 1609210) - continued</b>										
EM1807095-038	Anonymous	EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit	
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit	
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit	
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit	
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.001	0.00	No Limit	
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit	
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit	
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
		EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	0.00	No Limit	
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1620600)</b>										
EM1806827-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit	
EM1807151-003	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1608999)</b>										
EM1807114-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit	
EM1807114-005	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1608999)</b>										
EM1807114-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit	
EM1807114-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit	
<b>EP080: BTEXN (QC Lot: 1608999)</b>										
EM1807114-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit	
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit	
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit	
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit	
EM1807114-005	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit	
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit	
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit	
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit	
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit	
			106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit			
EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit			



## Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 1610015)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	91.4	79	113	
EG005T: Barium	7440-39-3	10	mg/kg	<10	143 mg/kg	93.7	79	110	
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	5.63 mg/kg	103	85	120	
EG005T: Boron	7440-42-8	50	mg/kg	<50	33.2 mg/kg	106	82	126	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	91.1	85	109	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	101	83	109	
EG005T: Cobalt	7440-48-4	2	mg/kg	<2	16 mg/kg	95.2	78	112	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	94.9	78	108	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	94.2	78	106	
EG005T: Manganese	7439-96-5	5	mg/kg	<5	130 mg/kg	95.6	82	107	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	99.0	82	111	
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	100	93	109	
EG005T: Vanadium	7440-62-2	5	mg/kg	<5	29.6 mg/kg	96.3	80	109	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	95.5	82	111	
<b>EG005T: Total Metals by ICP-AES (QCLot: 1610020)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	89.3	79	113	
EG005T: Barium	7440-39-3	10	mg/kg	<10	143 mg/kg	92.6	79	110	
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	5.63 mg/kg	100	85	120	
EG005T: Boron	7440-42-8	50	mg/kg	<50	33.2 mg/kg	102	82	126	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	88.9	85	109	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	97.0	83	109	
EG005T: Cobalt	7440-48-4	2	mg/kg	<2	16 mg/kg	93.0	78	112	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	91.7	78	108	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	91.0	78	106	
EG005T: Manganese	7439-96-5	5	mg/kg	<5	130 mg/kg	93.9	82	107	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	96.3	82	111	
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	98.8	93	109	
EG005T: Vanadium	7440-62-2	5	mg/kg	<5	29.6 mg/kg	94.1	80	109	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	94.8	82	111	
<b>EG005T: Total Metals by ICP-AES (QCLot: 1610884)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	86.0	79	113	
EG005T: Barium	7440-39-3	10	mg/kg	<10	143 mg/kg	93.2	79	110	
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	5.63 mg/kg	99.5	85	120	
EG005T: Boron	7440-42-8	50	mg/kg	<50	33.2 mg/kg	100	82	126	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	High
<b>EG005T: Total Metals by ICP-AES (QCLot: 1610884) - continued</b>									
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	89.2	85	109	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	92.5	83	109	
EG005T: Cobalt	7440-48-4	2	mg/kg	<2	16 mg/kg	92.1	78	112	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	89.0	78	108	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	87.8	78	106	
EG005T: Manganese	7439-96-5	5	mg/kg	<5	130 mg/kg	93.9	82	107	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	94.7	82	111	
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	99.5	93	109	
EG005T: Vanadium	7440-62-2	5	mg/kg	<5	29.6 mg/kg	92.3	80	109	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	96.9	82	111	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 1610018)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	79.4	77	104	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 1610019)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	88.6	77	104	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 1610885)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	80.5	77	104	
<b>EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1609691)</b>									
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	82.8	75	112	
<b>EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1609692)</b>									
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	88.7	75	112	
<b>EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser (QCLot: 1610412)</b>									
EK028SF: Weak Acid Dissociable Cyanide	----	1	mg/kg	<1	20 mg/kg	96.5	80	110	
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1609440)</b>									
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	92.5	63	115	
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1609450)</b>									
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	77.9	63	115	
<b>EP068A: Organochlorine Pesticides (OC) (QCLot: 1609441)</b>									
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	92.6	65	120	
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	95.9	68	121	
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	94.5	70	121	
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	92.0	64	119	
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	93.2	56	121	
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	92.5	63	114	
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	93.5	64	121	
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	89.2	68	120	
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	93.0	72	124	
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	94.6	69	125	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP068A: Organochlorine Pesticides (OC) (QCLot: 1609441) - continued</b>									
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	92.7	71	123	
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	94.2	59	123	
EP068: 4.4'-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	95.9	70	123	
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	97.9	64	119	
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	94.2	69	124	
EP068: 4.4'-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	93.2	66	128	
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	96.7	62	121	
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	94.5	57	124	
EP068: 4.4'-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	94.4	60	124	
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	90.3	73	120	
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	93.1	61	121	
EP068: Mirex	2385-85-5	0.05	mg/kg	<0.05	0.5 mg/kg	92.7	69	123	
<b>EP068A: Organochlorine Pesticides (OC) (QCLot: 1609449)</b>									
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	103	65	120	
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	107	68	121	
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	104	70	121	
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	104	64	119	
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	91.6	56	121	
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	85.9	63	114	
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	102	64	121	
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	103	68	120	
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	106	72	124	
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	106	69	125	
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	106	71	123	
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	99.9	59	123	
EP068: 4.4'-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	96.8	70	123	
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	118	64	119	
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	102	69	124	
EP068: 4.4'-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	108	66	128	
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	83.1	62	121	
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	89.1	57	124	
EP068: 4.4'-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	85.4	60	124	
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	85.3	73	120	
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	84.4	61	121	
EP068: Mirex	2385-85-5	0.05	mg/kg	<0.05	0.5 mg/kg	88.2	69	123	
<b>EP068B: Organophosphorus Pesticides (OP) (QCLot: 1609441)</b>									
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	105	63	127	
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	94.9	53	137	
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	75.7	10	136	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP068B: Organophosphorus Pesticides (OP) (QCLot: 1609441) - continued</b>									
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	93.9	56	127	
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	88.1	70	120	
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	99.2	70	120	
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	93.9	50	132	
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	93.4	63	122	
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	95.5	70	122	
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	95.0	58	123	
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	90.4	56	119	
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	92.8	68	119	
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	85.0	45	122	
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	88.6	67	116	
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	84.0	50	127	
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	93.0	68	121	
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	91.4	60	123	
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	96.1	68	122	
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	86.5	24	113	
<b>EP068B: Organophosphorus Pesticides (OP) (QCLot: 1609449)</b>									
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	107	63	127	
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	99.2	53	137	
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	100	10	136	
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	109	56	127	
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	108	70	120	
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	105	70	120	
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	104	50	132	
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	108	63	122	
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	107	70	122	
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	104	58	123	
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	100	56	119	
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	107	68	119	
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	101	45	122	
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	105	67	116	
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	98.1	50	127	
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	106	68	121	
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	104	60	123	
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	91.6	68	122	
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	101	24	113	
<b>EP068C: Triazines (QCLot: 1609441)</b>									
EP068: Atrazine	1912-24-9	0.05	mg/kg	<0.05	0.5 mg/kg	94.2	73	122	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP068C: Triazines (QCLot: 1609449)</b>									
EP068: Atrazine	1912-24-9	0.05	mg/kg	<0.05	0.5 mg/kg	105	73	122	
<b>EP068D: Pyrethroids (QCLot: 1609441)</b>									
EP068: Bifenthrin	82657-04-3	0.05	mg/kg	<0.05	0.5 mg/kg	94.2	65	123	
<b>EP068D: Pyrethroids (QCLot: 1609449)</b>									
EP068: Bifenthrin	82657-04-3	0.05	mg/kg	<0.05	0.5 mg/kg	87.1	65	123	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 1609442)</b>									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	3 mg/kg	86.1	70	125	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	3 mg/kg	85.3	74	128	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	3 mg/kg	84.6	76	123	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	6 mg/kg	84.6	70	128	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	3 mg/kg	59.9	56	114	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	3 mg/kg	79.8	70	122	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	3 mg/kg	85.7	70	121	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	3 mg/kg	87.6	70	126	
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	3 mg/kg	85.4	67	120	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	3 mg/kg	85.8	63	121	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	3 mg/kg	86.6	71	133	
EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	6 mg/kg	57.7	20	110	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 1609453)</b>									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	3 mg/kg	90.0	70	125	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	3 mg/kg	87.8	74	128	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	3 mg/kg	85.6	76	123	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	6 mg/kg	87.2	70	128	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	3 mg/kg	77.2	56	114	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	3 mg/kg	80.5	70	122	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	3 mg/kg	84.7	70	121	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	3 mg/kg	86.8	70	126	
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	3 mg/kg	85.8	67	120	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	3 mg/kg	81.1	63	121	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	3 mg/kg	83.6	71	133	
EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	6 mg/kg	56.5	20	110	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1609442)</b>									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	3 mg/kg	85.3	75	131	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	3 mg/kg	85.8	70	132	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	3 mg/kg	85.7	80	128	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	3 mg/kg	85.5	70	128	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	3 mg/kg	88.2	80	128	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	1.6 mg/kg	85.5	72	126	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1609442) - continued</b>									
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	3 mg/kg	85.9	70	128	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	3 mg/kg	93.8	80	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	3 mg/kg	81.5	70	130	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	3 mg/kg	89.3	80	126	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	3 mg/kg	77.4	71	124	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	3 mg/kg	85.6	75	125	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	3 mg/kg	74.6	70	125	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	3 mg/kg	76.0	71	128	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	3 mg/kg	75.8	72	126	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	3 mg/kg	77.1	68	127	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1609453)</b>									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	3 mg/kg	88.5	75	131	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	3 mg/kg	87.1	70	132	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	3 mg/kg	87.0	80	128	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	3 mg/kg	87.5	70	128	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	3 mg/kg	90.0	80	128	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	1.6 mg/kg	83.6	72	126	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	3 mg/kg	86.3	70	128	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	3 mg/kg	92.2	80	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	3 mg/kg	81.6	70	130	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	3 mg/kg	88.4	80	126	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	3 mg/kg	82.6	71	124	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	3 mg/kg	86.3	75	125	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	3 mg/kg	76.1	70	125	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	3 mg/kg	79.8	71	128	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	3 mg/kg	81.4	72	126	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	3 mg/kg	81.7	68	127	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 1608141)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	106	70	127	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 1608142)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	88.2	70	127	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 1609443)</b>									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	107	80	120	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	113	84	115	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	104	80	112	
EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 1609452)</b>									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	100	80	120	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	109	84	115	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	102	80	112	
EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 1609462)</b>									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	94.0	80	120	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	104	84	115	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	98.6	80	112	
EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1608141)</b>									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	102	68	125	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1608142)</b>									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	85.9	68	125	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1609443)</b>									
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	104	83	117	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	109	82	114	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	103	73	115	
EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1609452)</b>									
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	101	83	117	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	109	82	114	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	98.7	73	115	
EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1609462)</b>									
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	94.3	83	117	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	103	82	114	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	85.7	73	115	
EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
<b>EP080: BTEXN (QCLot: 1608141)</b>									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	111	74	124	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	110	77	125	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	110	73	125	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4 mg/kg	109	77	128	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	111	81	128	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	111	66	130	
<b>EP080: BTEXN (QCLot: 1608142)</b>									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	86.4	74	124	





Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP080: BTEXN (QCLot: 1608142) - continued</b>									
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	94.4	77	125	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	90.3	73	125	
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4 mg/kg	93.0	77	128	
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	100	81	128	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	93.5	66	130	

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG020T: Total Metals by ICP-MS (QCLot: 1609210)</b>									
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	98.0	90	110	
EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	0.1 mg/L	93.9	88	113	
EG020A-T: Barium	7440-39-3	0.001	mg/L	<0.001	0.1 mg/L	97.4	88	112	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	93.1	86	111	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	90.0	87	109	
EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	0.1 mg/L	97.9	88	113	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	97.3	87	108	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	91.3	88	109	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	92.6	88	111	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	99.3	87	111	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	94.6	85	113	
EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	0.1 mg/L	93.3	88	112	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	98.7	87	113	
EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	0.5 mg/L	92.0	88	118	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 1620600)</b>									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	98.9	81	114	
<b>EP068A: Organochlorine Pesticides (OC) (QCLot: 1608080)</b>									
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	97.9	51	122	
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	88.8	51	118	
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	99.7	57	119	
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	78.6	51	121	
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	100.0	58	114	
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	104	47	113	
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	95.8	53	118	
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	98.8	53	117	
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	98.7	50	126	
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	96.6	55	121	
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	97.8	54	120	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP068A: Organochlorine Pesticides (OC) (QCLot: 1608080) - continued</b>									
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	97.1	50	121	
EP068: 4.4'-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	95.4	54	120	
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	122	45	122	
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	99.4	55	120	
EP068: 4.4'-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	101	53	126	
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	108	52	123	
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	100	48	121	
EP068: 4.4'-DDT	50-29-3	2	µg/L	<2.0	5 µg/L	108	46	120	
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	93.7	56	118	
EP068: Methoxychlor	72-43-5	2	µg/L	<2.0	5 µg/L	116	42	123	
<b>EP068B: Organophosphorus Pesticides (OP) (QCLot: 1608080)</b>									
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	113	45	123	
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	117	42	129	
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	21.7	10	43	
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	109	38	115	
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	101	54	121	
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	97.2	56	118	
EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	5 µg/L	105	43	115	
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	90.0	50	120	
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	99.1	55	119	
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	98.7	50	122	
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	107	44	114	
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	101	52	117	
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	113	42	126	
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	100	50	117	
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	102	45	127	
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	99.9	52	120	
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	111	49	118	
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	105	52	119	
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	110	21	120	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 1608999)</b>									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	87.5	68	125	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1608999)</b>									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	85.2	66	123	
<b>EP080: BTEXN (QCLot: 1608999)</b>									
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	87.6	74	123	
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	95.0	77	128	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	92.8	73	126	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP080: BTEXN (QCLot: 1608999) - continued</b>									
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	93.0	72	131	
	106-42-3								
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	95.1	74	131	
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	94.6	74	124	

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report				
				Spike Concentration	Spike Recovery(%)		Recovery Limits (%)	
					MS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 1610015)</b>								
EM1807085-006	SP02/0-0.15	EG005T: Arsenic	7440-38-2	50 mg/kg	106	78	124	
		EG005T: Barium	7440-39-3	50 mg/kg	106	71	135	
		EG005T: Beryllium	7440-41-7	50 mg/kg	116	85	125	
		EG005T: Cadmium	7440-43-9	50 mg/kg	106	84	116	
		EG005T: Chromium	7440-47-3	50 mg/kg	106	79	121	
		EG005T: Copper	7440-50-8	50 mg/kg	104	82	124	
		EG005T: Lead	7439-92-1	50 mg/kg	110	76	124	
		EG005T: Manganese	7439-96-5	50 mg/kg	105	68	136	
		EG005T: Nickel	7440-02-0	50 mg/kg	106	78	120	
		EG005T: Selenium	7782-49-2	50 mg/kg	99.0	71	125	
		EG005T: Vanadium	7440-62-2	50 mg/kg	104	76	124	
		EG005T: Zinc	7440-66-6	50 mg/kg	107	74	128	
<b>EG005T: Total Metals by ICP-AES (QCLot: 1610020)</b>								
EM1807085-026	SP21/0-0.15	EG005T: Arsenic	7440-38-2	50 mg/kg	96.4	78	124	
		EG005T: Barium	7440-39-3	50 mg/kg	102	71	135	
		EG005T: Beryllium	7440-41-7	50 mg/kg	108	85	125	
		EG005T: Cadmium	7440-43-9	50 mg/kg	102	84	116	
		EG005T: Chromium	7440-47-3	50 mg/kg	100	79	121	
		EG005T: Copper	7440-50-8	50 mg/kg	101	82	124	
		EG005T: Lead	7439-92-1	50 mg/kg	101	76	124	
		EG005T: Manganese	7439-96-5	50 mg/kg	101	68	136	
		EG005T: Nickel	7440-02-0	50 mg/kg	102	78	120	
		EG005T: Selenium	7782-49-2	50 mg/kg	91.1	71	125	
		EG005T: Vanadium	7440-62-2	50 mg/kg	91.2	76	124	
		EG005T: Zinc	7440-66-6	50 mg/kg	99.4	74	128	



Sub-Matrix: SOIL

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EG005T: Total Metals by ICP-AES (QCLot: 1610884)</b>							
EM1806793-029	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	97.7	78	124
		EG005T: Barium	7440-39-3	50 mg/kg	95.4	71	135
		EG005T: Beryllium	7440-41-7	50 mg/kg	109	85	125
		EG005T: Cadmium	7440-43-9	50 mg/kg	102	84	116
		EG005T: Chromium	7440-47-3	50 mg/kg	104	79	121
		EG005T: Copper	7440-50-8	50 mg/kg	104	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	102	76	124
		EG005T: Manganese	7439-96-5	50 mg/kg	106	68	136
		EG005T: Nickel	7440-02-0	50 mg/kg	102	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	91.5	71	125
		EG005T: Vanadium	7440-62-2	50 mg/kg	101	76	124
		EG005T: Zinc	7440-66-6	50 mg/kg	101	74	128
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 1610018)</b>							
EM1807085-006	SP02/0-0.15	EG035T: Mercury	7439-97-6	5 mg/kg	96.5	76	116
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 1610019)</b>							
EM1807085-026	SP21/0-0.15	EG035T: Mercury	7439-97-6	5 mg/kg	95.6	76	116
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 1610885)</b>							
EM1806793-029	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	96.2	76	116
<b>EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1609691)</b>							
EM1806967-021	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	99.0	58	114
<b>EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1609692)</b>							
EM1807098-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	58.2	58	114
<b>EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser (QCLot: 1610412)</b>							
EM1807085-005	SP01/0-0.15	EK028SF: Weak Acid Dissociable Cyanide	----	20 mg/kg	104	70	130
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1609440)</b>							
EM1807085-009	SP05/0-0.15	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	96.5	44	144
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1609450)</b>							
EM1807085-032	SP27/0-0.15	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	91.9	44	144
<b>EP068A: Organochlorine Pesticides (OC) (QCLot: 1609441)</b>							
EM1807085-006	SP02/0-0.15	EP068: gamma-BHC	58-89-9	0.5 mg/kg	70.9	22	139
		EP068: Heptachlor	76-44-8	0.5 mg/kg	85.9	18	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	91.2	23	136
		EP068: Dieldrin	60-57-1	0.5 mg/kg	90.8	42	136
		EP068: Endrin	72-20-8	0.5 mg/kg	95.2	23	146
		EP068: 4,4'-DDT	50-29-3	0.5 mg/kg	73.3	20	133
<b>EP068A: Organochlorine Pesticides (OC) (QCLot: 1609449)</b>							



Sub-Matrix: SOIL

				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP068A: Organochlorine Pesticides (OC) (QCLot: 1609449) - continued</b>							
EM1807085-025	SP20/0-0.15	EP068: gamma-BHC	58-89-9	0.5 mg/kg	73.6	22	139
		EP068: Heptachlor	76-44-8	0.5 mg/kg	70.5	18	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	95.0	23	136
		EP068: Dieldrin	60-57-1	0.5 mg/kg	84.2	42	136
		EP068: Endrin	72-20-8	0.5 mg/kg	107	23	146
		EP068: 4.4'-DDT	50-29-3	0.5 mg/kg	88.8	20	133
<b>EP068B: Organophosphorus Pesticides (OP) (QCLot: 1609441)</b>							
EM1807085-006	SP02/0-0.15	EP068: Diazinon	333-41-5	0.5 mg/kg	75.6	49	135
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	92.3	41	127
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	77.2	47	133
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	73.3	45	133
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	78.0	40	128
<b>EP068B: Organophosphorus Pesticides (OP) (QCLot: 1609449)</b>							
EM1807085-025	SP20/0-0.15	EP068: Diazinon	333-41-5	0.5 mg/kg	87.6	49	135
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	78.6	41	127
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	82.1	47	133
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	77.5	45	133
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	72.8	40	128
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 1609442)</b>							
EM1807085-012	SP08/0-0.15	EP075(SIM): Phenol	108-95-2	3 mg/kg	85.8	63	117
		EP075(SIM): 2-Chlorophenol	95-57-8	3 mg/kg	84.3	65	123
		EP075(SIM): 2-Nitrophenol	88-75-5	3 mg/kg	54.9	40	134
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	3 mg/kg	83.1	56	122
		EP075(SIM): Pentachlorophenol	87-86-5	3 mg/kg	61.7	15	139
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 1609453)</b>							
EM1807085-037	SP32/0-0.15	EP075(SIM): Phenol	108-95-2	3 mg/kg	89.6	63	117
		EP075(SIM): 2-Chlorophenol	95-57-8	3 mg/kg	89.5	65	123
		EP075(SIM): 2-Nitrophenol	88-75-5	3 mg/kg	81.7	40	134
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	3 mg/kg	85.8	56	122
		EP075(SIM): Pentachlorophenol	87-86-5	3 mg/kg	67.2	15	139
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1609442)</b>							
EM1807085-012	SP08/0-0.15	EP075(SIM): Acenaphthene	83-32-9	3 mg/kg	83.3	67	117
		EP075(SIM): Pyrene	129-00-0	3 mg/kg	87.3	52	148
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1609453)</b>							
EM1807085-037	SP32/0-0.15	EP075(SIM): Acenaphthene	83-32-9	3 mg/kg	86.2	67	117
		EP075(SIM): Pyrene	129-00-0	3 mg/kg	87.4	52	148
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 1608141)</b>							



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 1608141) - continued</b>							
EM1807085-009	SP05/0-0.15	EP080: C6 - C9 Fraction	----	28 mg/kg	79.4	42	131
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 1608142)</b>							
EM1807080-002	Anonymous	EP080: C6 - C9 Fraction	----	28 mg/kg	70.9	42	131
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 1609443)</b>							
EM1807085-009	SP05/0-0.15	EP071: C10 - C14 Fraction	----	806 mg/kg	101	53	123
		EP071: C15 - C28 Fraction	----	3006 mg/kg	106	70	124
		EP071: C29 - C36 Fraction	----	1584 mg/kg	97.9	64	118
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 1609452)</b>							
EM1807085-032	SP27/0-0.15	EP071: C10 - C14 Fraction	----	806 mg/kg	88.3	53	123
		EP071: C15 - C28 Fraction	----	3006 mg/kg	98.0	70	124
		EP071: C29 - C36 Fraction	----	1584 mg/kg	92.2	64	118
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 1609462)</b>							
EM1806793-008	Anonymous	EP071: C10 - C14 Fraction	----	806 mg/kg	87.3	53	123
		EP071: C15 - C28 Fraction	----	3006 mg/kg	97.2	70	124
		EP071: C29 - C36 Fraction	----	1584 mg/kg	92.8	64	118
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1608141)</b>							
EM1807085-009	SP05/0-0.15	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	75.7	39	129
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1608142)</b>							
EM1807080-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	69.6	39	129
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1609443)</b>							
EM1807085-009	SP05/0-0.15	EP071: >C10 - C16 Fraction	----	1160 mg/kg	97.8	65	123
		EP071: >C16 - C34 Fraction	----	3978 mg/kg	103	67	121
		EP071: >C34 - C40 Fraction	----	313 mg/kg	97.7	44	126
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1609452)</b>							
EM1807085-032	SP27/0-0.15	EP071: >C10 - C16 Fraction	----	1160 mg/kg	89.5	65	123
		EP071: >C16 - C34 Fraction	----	3978 mg/kg	97.6	67	121
		EP071: >C34 - C40 Fraction	----	313 mg/kg	88.1	44	126
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1609462)</b>							
EM1806793-008	Anonymous	EP071: >C10 - C16 Fraction	----	1160 mg/kg	87.1	65	123
		EP071: >C16 - C34 Fraction	----	3978 mg/kg	96.4	67	121
		EP071: >C34 - C40 Fraction	----	313 mg/kg	90.4	44	126
<b>EP080: BTEXN (QCLot: 1608141)</b>							
EM1807085-009	SP05/0-0.15	EP080: Benzene	71-43-2	2 mg/kg	69.3	50	136
		EP080: Toluene	108-88-3	2 mg/kg	87.7	56	139
<b>EP080: BTEXN (QCLot: 1608142)</b>							



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
						Low	High
<b>EP080: BTEXN (QCLot: 1608142) - continued</b>							
EM1807080-002	Anonymous	EP080: Benzene	71-43-2	2 mg/kg	77.6	50	136
		EP080: Toluene	108-88-3	2 mg/kg	82.0	56	139
Sub-Matrix: WATER				Matrix Spike (MS) Report			
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
						Low	High
<b>EG020T: Total Metals by ICP-MS (QCLot: 1609210)</b>							
EM1807085-004	QC05	EG020A-T: Arsenic	7440-38-2	1 mg/L	93.1	82	118
		EG020A-T: Beryllium	7440-41-7	1 mg/L	99.7	79	121
		EG020A-T: Barium	7440-39-3	1 mg/L	97.9	80	114
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	91.7	75	129
		EG020A-T: Chromium	7440-47-3	1 mg/L	89.3	80	118
		EG020A-T: Cobalt	7440-48-4	1 mg/L	90.3	82	120
		EG020A-T: Copper	7440-50-8	1 mg/L	89.8	81	115
		EG020A-T: Lead	7439-92-1	1 mg/L	85.8	83	121
		EG020A-T: Manganese	7439-96-5	1 mg/L	91.2	73	123
		EG020A-T: Nickel	7440-02-0	1 mg/L	94.8	80	118
		EG020A-T: Vanadium	7440-62-2	1 mg/L	89.7	81	119
		EG020A-T: Zinc	7440-66-6	1 mg/L	93.9	74	116
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 1620600)</b>							
EM1806960-001	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	92.7	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 1608999)</b>							
EM1807114-004	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	68.6	43	125
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1608999)</b>							
EM1807114-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	66.9	44	122
<b>EP080: BTEXN (QCLot: 1608999)</b>							
EM1807114-004	Anonymous	EP080: Benzene	71-43-2	20 µg/L	89.5	68	130
		EP080: Toluene	108-88-3	20 µg/L	94.9	72	132

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: <b>EM1807085</b>	Page	: 1 of 14
Client	: <b>ENVIRONMENTAL SITE ASSESSMENTS PTY LTD</b>	Laboratory	: Environmental Division Melbourne
Contact	: MR SETON LILLAS	Telephone	: +61-3-8549 9600
Project	: TGM Bannockburn	Date Samples Received	: 01-May-2018
Site	: ----	Issue Date	: 08-May-2018
Sampler	: AK	No. of samples received	: 52
Order number	:	No. of samples analysed	: 52

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

#### Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**





### Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
Pesticides by GCMS	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>					
Pesticides by GCMS	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>							
<b>Soil Glass Jar - Unpreserved (EA055)</b>							



Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
<b>EA055: Moisture Content (Dried @ 105-110°C) - Continued</b>									
SP01/0-0.15, SP03/0-0.15, SP05/0-0.15, SP07/0-0.15, SP09/0-0.15, SP11/0-0.15, SP13/0-0.15, SP15/0-0.15, SP17/0-0.15, SP18/0-0.15, SP20/0-0.15, SP22/0-0.15, SP24/0-0.15, SP26/0-0.15, SP28/0-0.15, SP30/0-0.15, SP32/0-0.15, SP34/0-0.15, TP01/0-0.15, TP03/0-0.15, TP05/0-0.15, TP07/0-0.15, TP09/0-0.15, TP10/0-0.15	SP02/0-0.15, SP04/0-0.15, SP06/0-0.15, SP08/0-0.15, SP10/0-0.15, SP12/0-0.15, SP14/0-0.15, SP16/0-0.15, QC06, SP19/0-0.15, SP21/0-0.15, SP23/0-0.15, SP25/0-0.15, SP27/0-0.15, SP29/0-0.15, SP31/0-0.15, SP33/0-0.15, SP35/0-0.15, TP02/0-0.15, QC08, TP04/0-0.15, TP06/0-0.15, TP08/0-0.15,	30-Apr-2018	----	----	----	02-May-2018	14-May-2018	✓	



Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EG005T: Total Metals by ICP-AES</b>								
<b>Soil Glass Jar - Unpreserved (EG005T)</b>								
SP01/0-0.15, SP03/0-0.15, SP05/0-0.15, SP07/0-0.15, SP09/0-0.15, SP11/0-0.15, SP13/0-0.15, SP15/0-0.15, SP17/0-0.15, SP18/0-0.15, SP20/0-0.15, SP22/0-0.15, SP24/0-0.15, SP26/0-0.15, SP28/0-0.15, SP30/0-0.15, SP32/0-0.15, SP34/0-0.15, TP01/0-0.15, TP03/0-0.15, TP05/0-0.15, TP07/0-0.15, TP09/0-0.15, TP10/0-0.15	SP02/0-0.15, SP04/0-0.15, SP06/0-0.15, SP08/0-0.15, SP10/0-0.15, SP12/0-0.15, SP14/0-0.15, SP16/0-0.15, QC06, SP19/0-0.15, SP21/0-0.15, SP23/0-0.15, SP25/0-0.15, SP27/0-0.15, SP29/0-0.15, SP31/0-0.15, SP33/0-0.15, SP35/0-0.15, TP02/0-0.15, QC08, TP04/0-0.15, TP06/0-0.15, TP08/0-0.15,	30-Apr-2018	02-May-2018	27-Oct-2018	✓	02-May-2018	27-Oct-2018	✓



Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
<b>Soil Glass Jar - Unpreserved (EG035T)</b>								
SP01/0-0.15, SP03/0-0.15, SP05/0-0.15, SP07/0-0.15, SP09/0-0.15, SP11/0-0.15, SP13/0-0.15, SP15/0-0.15, SP17/0-0.15, SP18/0-0.15, SP20/0-0.15, SP22/0-0.15, SP24/0-0.15, SP26/0-0.15, SP28/0-0.15, SP30/0-0.15, SP32/0-0.15, SP34/0-0.15, TP01/0-0.15, TP03/0-0.15, TP05/0-0.15, TP07/0-0.15, TP09/0-0.15, TP10/0-0.15	SP02/0-0.15, SP04/0-0.15, SP06/0-0.15, SP08/0-0.15, SP10/0-0.15, SP12/0-0.15, SP14/0-0.15, SP16/0-0.15, QC06, SP19/0-0.15, SP21/0-0.15, SP23/0-0.15, SP25/0-0.15, SP27/0-0.15, SP29/0-0.15, SP31/0-0.15, SP33/0-0.15, SP35/0-0.15, TP02/0-0.15, QC08, TP04/0-0.15, TP06/0-0.15, TP08/0-0.15	30-Apr-2018	02-May-2018	28-May-2018	✓	03-May-2018	28-May-2018	✓
<b>EG048: Hexavalent Chromium (Alkaline Digest)</b>								
<b>Soil Glass Jar - Unpreserved (EG048G)</b>								
SP01/0-0.15, SP08/0-0.15, SP12/0-0.15, SP16/0-0.15, SP27/0-0.15	SP05/0-0.15, SP11/0-0.15, SP15/0-0.15, SP22/0-0.15, SP32/0-0.15	30-Apr-2018	02-May-2018	28-May-2018	✓	02-May-2018	09-May-2018	✓
<b>EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser</b>								
<b>Soil Glass Jar - Unpreserved (EK028SF)</b>								
SP01/0-0.15, SP08/0-0.15, SP12/0-0.15, SP16/0-0.15, SP27/0-0.15	SP05/0-0.15, SP11/0-0.15, SP15/0-0.15, SP22/0-0.15, SP32/0-0.15	30-Apr-2018	02-May-2018	14-May-2018	✓	03-May-2018	16-May-2018	✓



Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
<b>Soil Glass Jar - Unpreserved (EP066)</b>								
SP01/0-0.15, SP08/0-0.15, SP12/0-0.15, SP16/0-0.15, SP27/0-0.15,	SP05/0-0.15, SP11/0-0.15, SP15/0-0.15, SP22/0-0.15, SP32/0-0.15	30-Apr-2018	02-May-2018	14-May-2018	✓	02-May-2018	11-Jun-2018	✓
<b>EP068A: Organochlorine Pesticides (OC)</b>								
<b>Soil Glass Jar - Unpreserved (EP068)</b>								
SP01/0-0.15, SP03/0-0.15, SP05/0-0.15, SP07/0-0.15, SP09/0-0.15, SP11/0-0.15, SP13/0-0.15, SP15/0-0.15, SP17/0-0.15, SP18/0-0.15, SP20/0-0.15, SP22/0-0.15, SP24/0-0.15, SP26/0-0.15, SP28/0-0.15, SP30/0-0.15, SP32/0-0.15, SP34/0-0.15,	SP02/0-0.15, SP04/0-0.15, SP06/0-0.15, SP08/0-0.15, SP10/0-0.15, SP12/0-0.15, SP14/0-0.15, SP16/0-0.15, QC06, SP19/0-0.15, SP21/0-0.15, SP23/0-0.15, SP25/0-0.15, SP27/0-0.15, SP29/0-0.15, SP31/0-0.15, SP33/0-0.15, SP35/0-0.15	30-Apr-2018	02-May-2018	14-May-2018	✓	02-May-2018	11-Jun-2018	✓



Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP068B: Organophosphorus Pesticides (OP)</b>								
<b>Soil Glass Jar - Unpreserved (EP068)</b>								
SP01/0-0.15, SP03/0-0.15, SP05/0-0.15, SP07/0-0.15, SP09/0-0.15, SP11/0-0.15, SP13/0-0.15, SP15/0-0.15, SP17/0-0.15, SP18/0-0.15, SP20/0-0.15, SP22/0-0.15, SP24/0-0.15, SP26/0-0.15, SP28/0-0.15, SP30/0-0.15, SP32/0-0.15, SP34/0-0.15,	SP02/0-0.15, SP04/0-0.15, SP06/0-0.15, SP08/0-0.15, SP10/0-0.15, SP12/0-0.15, SP14/0-0.15, SP16/0-0.15, QC06, SP19/0-0.15, SP21/0-0.15, SP23/0-0.15, SP25/0-0.15, SP27/0-0.15, SP29/0-0.15, SP31/0-0.15, SP33/0-0.15, SP35/0-0.15	30-Apr-2018	02-May-2018	14-May-2018	✓	02-May-2018	11-Jun-2018	✓
<b>EP068C: Triazines</b>								
<b>Soil Glass Jar - Unpreserved (EP068)</b>								
SP01/0-0.15, SP08/0-0.15, SP12/0-0.15, SP16/0-0.15, SP27/0-0.15,	SP05/0-0.15, SP11/0-0.15, SP15/0-0.15, SP22/0-0.15, SP32/0-0.15	30-Apr-2018	02-May-2018	14-May-2018	✓	02-May-2018	11-Jun-2018	✓
<b>EP068D: Pyrethroids</b>								
<b>Soil Glass Jar - Unpreserved (EP068)</b>								
SP01/0-0.15, SP08/0-0.15, SP12/0-0.15, SP16/0-0.15, SP27/0-0.15,	SP05/0-0.15, SP11/0-0.15, SP15/0-0.15, SP22/0-0.15, SP32/0-0.15	30-Apr-2018	02-May-2018	14-May-2018	✓	02-May-2018	11-Jun-2018	✓
<b>EP075(SIM)A: Phenolic Compounds</b>								
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b>								
SP01/0-0.15, SP08/0-0.15, SP12/0-0.15, SP16/0-0.15, SP27/0-0.15,	SP05/0-0.15, SP11/0-0.15, SP15/0-0.15, SP22/0-0.15, SP32/0-0.15	30-Apr-2018	02-May-2018	14-May-2018	✓	02-May-2018	11-Jun-2018	✓



Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b>								
SP01/0-0.15, SP08/0-0.15, SP12/0-0.15, SP16/0-0.15, SP27/0-0.15,	SP05/0-0.15, SP11/0-0.15, SP15/0-0.15, SP22/0-0.15, SP32/0-0.15	30-Apr-2018	02-May-2018	14-May-2018	✓	02-May-2018	11-Jun-2018	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
<b>Soil Glass Jar - Unpreserved (EP080)</b>								
SP01/0-0.15, SP08/0-0.15, SP12/0-0.15, SP16/0-0.15, SP27/0-0.15, TP01/0-0.15, TP03/0-0.15, TP05/0-0.15, TP07/0-0.15, QC08, TP10/0-0.15	SP05/0-0.15, SP11/0-0.15, SP15/0-0.15, SP22/0-0.15, SP32/0-0.15, TP02/0-0.15, TP04/0-0.15, TP06/0-0.15, TP08/0-0.15, TP09/0-0.15,	30-Apr-2018	01-May-2018	14-May-2018	✓	02-May-2018	14-May-2018	✓
<b>Soil Glass Jar - Unpreserved (EP071)</b>								
SP01/0-0.15, SP08/0-0.15, SP12/0-0.15, SP16/0-0.15, SP27/0-0.15, TP01/0-0.15,	SP05/0-0.15, SP11/0-0.15, SP15/0-0.15, SP22/0-0.15, SP32/0-0.15, TP02/0-0.15	30-Apr-2018	02-May-2018	14-May-2018	✓	02-May-2018	11-Jun-2018	✓
<b>Soil Glass Jar - Unpreserved (EP071)</b>								
TP03/0-0.15, TP05/0-0.15, TP07/0-0.15, QC08, TP10/0-0.15	TP04/0-0.15, TP06/0-0.15, TP08/0-0.15, TP09/0-0.15,	30-Apr-2018	02-May-2018	14-May-2018	✓	03-May-2018	11-Jun-2018	✓



Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>								
<b>Soil Glass Jar - Unpreserved (EP080)</b>								
SP01/0-0.15, SP08/0-0.15, SP12/0-0.15, SP16/0-0.15, SP27/0-0.15, TP01/0-0.15, TP03/0-0.15, TP05/0-0.15, TP07/0-0.15, QC08, TP10/0-0.15	SP05/0-0.15, SP11/0-0.15, SP15/0-0.15, SP22/0-0.15, SP32/0-0.15, TP02/0-0.15, TP04/0-0.15, TP06/0-0.15, TP08/0-0.15, TP09/0-0.15	30-Apr-2018	01-May-2018	14-May-2018	✓	02-May-2018	14-May-2018	✓
<b>Soil Glass Jar - Unpreserved (EP071)</b>								
SP01/0-0.15, SP08/0-0.15, SP12/0-0.15, SP16/0-0.15, SP27/0-0.15, TP01/0-0.15,	SP05/0-0.15, SP11/0-0.15, SP15/0-0.15, SP22/0-0.15, SP32/0-0.15, TP02/0-0.15	30-Apr-2018	02-May-2018	14-May-2018	✓	02-May-2018	11-Jun-2018	✓
<b>Soil Glass Jar - Unpreserved (EP071)</b>								
TP03/0-0.15, TP05/0-0.15, TP07/0-0.15, QC08, TP10/0-0.15	TP04/0-0.15, TP06/0-0.15, TP08/0-0.15, TP09/0-0.15,	30-Apr-2018	02-May-2018	14-May-2018	✓	03-May-2018	11-Jun-2018	✓
<b>EP080: BTEXN</b>								
<b>Soil Glass Jar - Unpreserved (EP080)</b>								
SP01/0-0.15, SP08/0-0.15, SP12/0-0.15, SP16/0-0.15, SP27/0-0.15, TP01/0-0.15, TP03/0-0.15, TP05/0-0.15, TP07/0-0.15, QC08, TP10/0-0.15	SP05/0-0.15, SP11/0-0.15, SP15/0-0.15, SP22/0-0.15, SP32/0-0.15, TP02/0-0.15, TP04/0-0.15, TP06/0-0.15, TP08/0-0.15, TP09/0-0.15,	30-Apr-2018	01-May-2018	14-May-2018	✓	02-May-2018	14-May-2018	✓

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation





Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EG020T: Total Metals by ICP-MS</b>							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) QC05, QC10	30-Apr-2018	02-May-2018	27-Oct-2018	✓	02-May-2018	27-Oct-2018	✓
<b>EG035T: Total Recoverable Mercury by FIMS</b>							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) QC05, QC10	30-Apr-2018	----	----	----	07-May-2018	28-May-2018	✓
<b>EP068A: Organochlorine Pesticides (OC)</b>							
Amber Glass Bottle - Unpreserved (EP068) QC05, QC10	30-Apr-2018	02-May-2018	07-May-2018	✓	03-May-2018	11-Jun-2018	✓
<b>EP068B: Organophosphorus Pesticides (OP)</b>							
Amber Glass Bottle - Unpreserved (EP068) QC05, QC10	30-Apr-2018	02-May-2018	07-May-2018	✓	03-May-2018	11-Jun-2018	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
Amber VOC Vial - Sulfuric Acid (EP080) QC01, QC02, QC03	30-Apr-2018	02-May-2018	14-May-2018	✓	02-May-2018	14-May-2018	✓
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>							
Amber VOC Vial - Sulfuric Acid (EP080) QC01, QC02, QC03	30-Apr-2018	02-May-2018	14-May-2018	✓	02-May-2018	14-May-2018	✓
<b>EP080: BTEXN</b>							
Amber VOC Vial - Sulfuric Acid (EP080) QC01, QC02, QC03	30-Apr-2018	02-May-2018	14-May-2018	✓	02-May-2018	14-May-2018	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	3	23	13.04	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	6	60	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	4	36	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	6	60	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	6	60	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	4	27	14.81	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
WAD Cyanide by Segmented Flow Analyser	EK028SF	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	4	23	17.39	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	10	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	2	10	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	60	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	3	60	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	3	27	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
WAD Cyanide by Segmented Flow Analyser	EK028SF	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	10	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	2	10	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	60	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	3	60	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	3	27	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
WAD Cyanide by Segmented Flow Analyser	EK028SF	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	10	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	2	10	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	60	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Total Metals by ICP-AES	EG005T	3	60	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	3	27	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	39	5.13	5.00	✔	NEPM 2013 B3 & ALS QC Standard
WAD Cyanide by Segmented Flow Analyser	EK028SF	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<i>Analytical Methods</i>							
<b>Laboratory Duplicates (DUP)</b>							
Pesticides by GCMS	EP068	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Pesticides by GCMS	EP068	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Pesticides by GCMS	EP068	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Pesticides by GCMS	EP068	0	2	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> ) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl <sub>2</sub> which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
WAD Cyanide by Segmented Flow Analyser	EK028SF	SOIL	In house: Referenced to APHA 4500-CN-O. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Hydrogen cyanide is liberated from a slightly acidified (pH 4.5) and is dialysed. Tight cyanide complexes that would not be amenable to oxidation by chlorine are not converted. Iron cyanide complexes are precipitated with zinc acetate. Liberated HCN diffuses through a membrane into a stream of sodium hydroxide where it is carried as CN- The cyanide in caustic solution is buffered to pH 5.2 and further converted to cyanogen chloride by reaction with chloramine-T. Cyanogen chloride subsequently reacts with 4 $\mu$ pyridine carboxylic and 1,3 - dimethylbarbituric acids to give a red colour complex. This colour is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504,505)
TRH - Semivolatle Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)



Analytical Methods	Method	Matrix	Method Descriptions
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl <sub>2</sub> which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

Company	Environmental Site Assessments		Purchase Order			Project Name	TGM Bannockburn	
Address			Eurofins   mgf Quote No	170227ESA		Electronic Results Format		
Contact Name	Andrew Koster		<small>Analysis (Please advise whether you require: please specify "Total" or "Element")</small> Suite R1 - Via EPA IWRG 621 : TRH/PAH/Phenols/OC/PCB/VOC/Vinyl Chloride/ Metals (As, Cd, Cr, Cu, Ni, Pb, Hg, Ag, Sn, Mo, Se, Zn)/Cr6+/CN/ Total Fluoride/ pH Suite M12 - IWRG 621 - As, Cd, Cr, Cu, Ni, Pb, Zn, Hg, Mo, Se, Ag, Sn PAH ASLP - PAH ASLP - M12 - As, Cd, Cr, Cu, Ni, Pb, Zn, Hg, Mo, Se, Ag, Sn Suite R20 - NEPM Screen Table 1(A) HILs for Soil Contaminants - Basic Suite - Excluding add suite B1 - BTEX/TRH TRH C6-C9 & BTEX TRH 15 Metals (NEPM Metals) OC/OPs	Project Message				
Contact Phone No	0417 966 668			Project No				
Special Direction				Turn Around Requirements	<input type="checkbox"/> 1 DAY* <input type="checkbox"/> 2 DAY* <input type="checkbox"/> 3 DAY* <input checked="" type="checkbox"/> 5 DAY (del) <input type="checkbox"/> Other ( ) <small>* Surcharges apply</small>			
Requisitioned by	A. Koster			Containers	Method of Shipment <input checked="" type="checkbox"/> Courier ( Josies ) <input type="checkbox"/> Hand Delivered <input type="checkbox"/> Postal Sample Comments / DG Hazard Warning			
(Signature)	<i>[Signature]</i>		1L Plastic					
(Time / Date)	14:15 30/4/18		250ml Plastic					
			150ml Plastic					
			200ml Amber Glass					
			400ml Amber Glass					
			125ml Amber Glass					

No	Client Sample ID	Date	Matrix	1L Plastic	250ml Plastic	150ml Plastic	200ml Amber Glass	400ml Amber Glass	125ml Amber Glass
1	QCO4	30/4	W						
2	QCO7	↓	S	X					
3	QCO9	↓	S			X	X		
4									
5									
6									
7									
8									
9									
10									
11									
12									

Laboratory Use Only	Received By		SYD   BNE   MEL   PER   ADL   NEW   DAR	Date	1/1/	Time		Signature		Temperature	
	Received By	S/S	SYD   BNE   MEL   PER   ADL   NEW   DAR	Date	1/5/18	Time	9:56	Signature	<i>[Signature]</i>	Report No	596385

## Certificate of Analysis

 Environmental Site Assessments P/L  
 2 Homestead Crt  
 Highton  
 VIC 3216

 NATA Accredited  
 Accreditation Number 1261  
 Site Number 1254

 Accredited for compliance with ISO/IEC 17025 – Testing  
 The results of the tests, calibrations and/or  
 measurements included in this document are traceable  
 to Australian/national standards.

Attention: Andrew Koster

 Report 596385-S  
 Project name TGM BANNOCKBURN  
 Received Date May 01, 2018

Client Sample ID			QC07	QC09
Sample Matrix			Soil	Soil
Eurofins   mgt Sample No.			M18-My01490	M18-My01491
Date Sampled			Apr 30, 2018	Apr 30, 2018
Test/Reference	LOR	Unit		
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>				
TRH C6-C9	20	mg/kg	-	< 20
TRH C10-C14	20	mg/kg	-	30
TRH C15-C28	50	mg/kg	-	62
TRH C29-C36	50	mg/kg	-	< 50
TRH C10-36 (Total)	50	mg/kg	-	92
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				
Naphthalene <sup>N02</sup>	0.5	mg/kg	-	< 0.5
TRH C6-C10	20	mg/kg	-	< 20
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	-	< 20
TRH >C10-C16	50	mg/kg	-	< 50
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	50	mg/kg	-	< 50
TRH >C16-C34	100	mg/kg	-	< 100
TRH >C34-C40	100	mg/kg	-	< 100
<b>Organochlorine Pesticides</b>				
Chlordanes - Total	0.1	mg/kg	< 0.1	-
4,4'-DDD	0.05	mg/kg	< 0.05	-
4,4'-DDE	0.05	mg/kg	< 0.05	-
4,4'-DDT	0.05	mg/kg	< 0.05	-
a-BHC	0.05	mg/kg	< 0.05	-
Aldrin	0.05	mg/kg	< 0.05	-
b-BHC	0.05	mg/kg	< 0.05	-
d-BHC	0.05	mg/kg	< 0.05	-
Dieldrin	0.05	mg/kg	< 0.05	-
Endosulfan I	0.05	mg/kg	< 0.05	-
Endosulfan II	0.05	mg/kg	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	-
Endrin	0.05	mg/kg	< 0.05	-
Endrin aldehyde	0.05	mg/kg	< 0.05	-
Endrin ketone	0.05	mg/kg	< 0.05	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-
Heptachlor	0.05	mg/kg	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	-
Methoxychlor	0.05	mg/kg	< 0.05	-
Toxaphene	1	mg/kg	< 1	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	-

Client Sample ID			QC07	QC09
Sample Matrix			Soil	Soil
Eurofins   mgt Sample No.			M18-My01490	M18-My01491
Date Sampled			Apr 30, 2018	Apr 30, 2018
Test/Reference	LOR	Unit		
<b>Organochlorine Pesticides</b>				
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	-
Dibutylchlorendate (surr.)	1	%	100	-
Tetrachloro-m-xylene (surr.)	1	%	92	-
<b>Organophosphorus Pesticides</b>				
Azinphos-methyl	0.2	mg/kg	< 0.2	-
Bolstar	0.2	mg/kg	< 0.2	-
Chlorfenvinphos	0.2	mg/kg	< 0.2	-
Chlorpyrifos	0.2	mg/kg	< 0.2	-
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	-
Coumaphos	2	mg/kg	< 2	-
Demeton-S	0.2	mg/kg	< 0.2	-
Demeton-O	0.2	mg/kg	< 0.2	-
Diazinon	0.2	mg/kg	< 0.2	-
Dichlorvos	0.2	mg/kg	< 0.2	-
Dimethoate	0.2	mg/kg	< 0.2	-
Disulfoton	0.2	mg/kg	< 0.2	-
EPN	0.2	mg/kg	< 0.2	-
Ethion	0.2	mg/kg	< 0.2	-
Ethoprop	0.2	mg/kg	< 0.2	-
Ethyl parathion	0.2	mg/kg	< 0.2	-
Fenitrothion	0.2	mg/kg	< 0.2	-
Fensulfothion	0.2	mg/kg	< 0.2	-
Fenthion	0.2	mg/kg	< 0.2	-
Malathion	0.2	mg/kg	< 0.2	-
Merphos	0.2	mg/kg	< 0.2	-
Methyl parathion	0.2	mg/kg	< 0.2	-
Mevinphos	0.2	mg/kg	< 0.2	-
Monocrotophos	2	mg/kg	< 2	-
Naled	0.2	mg/kg	< 0.2	-
Omethoate	2	mg/kg	< 2	-
Phorate	0.2	mg/kg	< 0.2	-
Pirimiphos-methyl	0.2	mg/kg	< 0.2	-
Pyrazophos	0.2	mg/kg	< 0.2	-
Ronnel	0.2	mg/kg	< 0.2	-
Terbufos	0.2	mg/kg	< 0.2	-
Tetrachlorvinphos	0.2	mg/kg	< 0.2	-
Tokuthion	0.2	mg/kg	< 0.2	-
Trichloronate	0.2	mg/kg	< 0.2	-
Triphenylphosphate (surr.)	1	%	87	-
Chromium (hexavalent)	1	mg/kg	< 1	< 1
Chromium (trivalent)	5	mg/kg	20	15
% Moisture	1	%	4.6	4.4



Client Sample ID			QC07	QC09
Sample Matrix			Soil	Soil
Eurofins   mgt Sample No.			M18-My01490	M18-My01491
Date Sampled			Apr 30, 2018	Apr 30, 2018
Test/Reference	LOR	Unit		
<b>Heavy Metals</b>				
Arsenic	2	mg/kg	29	22
Barium	10	mg/kg	15	15
Beryllium	2	mg/kg	< 2	< 2
Boron	10	mg/kg	< 10	< 10
Cadmium	0.4	mg/kg	< 0.4	< 0.4
Chromium	5	mg/kg	20	15
Cobalt	5	mg/kg	< 5	< 5
Copper	5	mg/kg	< 5	< 5
Lead	5	mg/kg	6.9	7.3
Manganese	5	mg/kg	36	51
Mercury	0.1	mg/kg	< 0.1	< 0.1
Nickel	5	mg/kg	5.3	< 5
Vanadium	10	mg/kg	44	39
Zinc	5	mg/kg	< 5	24

### Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C36	Melbourne	May 03, 2018	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 03, 2018	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 03, 2018	14 Day
Organochlorine Pesticides - Method: LTM-ORG-2220 OCP & PCB in Soil and Water	Melbourne	May 03, 2018	14 Day
Organophosphorus Pesticides - Method: LTM-ORG-2200 Organophosphorus Pesticides by GC-MS	Melbourne	May 03, 2018	14 Day
Chromium (hexavalent) - Method: APHA 3500-Cr Hexavalent Chromium- (Extraction:- USEPA3060)	Melbourne	May 03, 2018	28 Day
Heavy Metals - Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)	Melbourne	May 03, 2018	180 Day
% Moisture - Method: LTM-GEN-7080 Moisture	Melbourne	May 02, 2018	14 Day

<b>Company Name:</b> Environmental Site Assessments P/L	<b>Order No.:</b>	<b>Received:</b> May 1, 2018 8:56 AM
<b>Address:</b> 2 Homestead Crt Highton VIC 3216	<b>Report #:</b> 596385	<b>Due:</b> May 8, 2018
<b>Project Name:</b> TGM BANNOCKBURN	<b>Phone:</b>	<b>Priority:</b> 5 Day
	<b>Fax:</b>	<b>Contact Name:</b> Andrew Koster

**Eurofins | mgt Analytical Services Manager : Cindi Guo**

Sample Detail						Organochlorine Pesticides	Organophosphorus Pesticides	NEPM 1999 Metals : Metals M15	Moisture Set	Total Recoverable Hydrocarbons	BTEXN and Volatile TRH
<b>Melbourne Laboratory - NATA Site # 1254 &amp; 14271</b>						X	X	X	X	X	X
<b>Sydney Laboratory - NATA Site # 18217</b>											
<b>Brisbane Laboratory - NATA Site # 20794</b>											
<b>Perth Laboratory - NATA Site # 23736</b>											
<b>External Laboratory</b>											
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID						
1	QC04	Apr 30, 2018		Water	M18-My01489						X
2	QC07	Apr 30, 2018		Soil	M18-My01490	X	X	X	X		
3	QC09	Apr 30, 2018		Soil	M18-My01491			X	X	X	
<b>Test Counts</b>						1	1	2	2	1	1

## Internal Quality Control Review and Glossary

### General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- This report replaces any interim results previously issued.

### Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

**\*\*NOTE:** pH duplicates are reported as a range NOT as RPD

### Units

<b>mg/kg:</b> milligrams per kilogram	<b>mg/L:</b> milligrams per litre	<b>ug/L:</b> micrograms per litre
<b>ppm:</b> Parts per million	<b>ppb:</b> Parts per billion	<b>%:</b> Percentage
<b>org/100mL:</b> Organisms per 100 millilitres	<b>NTU:</b> Nephelometric Turbidity Units	<b>MPN/100mL:</b> Most Probable Number of organisms per 100 millilitres

### Terms

<b>Dry</b>	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
<b>LOR</b>	Limit of Reporting.
<b>SPIKE</b>	Addition of the analyte to the sample and reported as percentage recovery.
<b>RPD</b>	Relative Percent Difference between two Duplicate pieces of analysis.
<b>LCS</b>	Laboratory Control Sample - reported as percent recovery.
<b>CRM</b>	Certified Reference Material - reported as percent recovery.
<b>Method Blank</b>	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
<b>Surr - Surrogate</b>	The addition of a like compound to the analyte target and reported as percentage recovery.
<b>Duplicate</b>	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
<b>USEPA</b>	United States Environmental Protection Agency
<b>APHA</b>	American Public Health Association
<b>TCLP</b>	Toxicity Characteristic Leaching Procedure
<b>COC</b>	Chain of Custody
<b>SRA</b>	Sample Receipt Advice
<b>QSM</b>	Quality Systems Manual ver 5.1 US Department of Defense
<b>CP</b>	Client Parent - QC was performed on samples pertaining to this report
<b>NCP</b>	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
<b>TEQ</b>	Toxic Equivalency Quotient

### QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

### QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

**Quality Control Results**

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
<b>Method Blank</b>							
<b>Organochlorine Pesticides</b>							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4,4'-DDD	mg/kg	< 0.05			0.05	Pass	
4,4'-DDE	mg/kg	< 0.05			0.05	Pass	
4,4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 1			1	Pass	
<b>Method Blank</b>							
<b>Organophosphorus Pesticides</b>							
Azinphos-methyl	mg/kg	< 0.2			0.2	Pass	
Bolstar	mg/kg	< 0.2			0.2	Pass	
Chlorfenvinphos	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos-methyl	mg/kg	< 0.2			0.2	Pass	
Coumaphos	mg/kg	< 2			2	Pass	
Demeton-S	mg/kg	< 0.2			0.2	Pass	
Demeton-O	mg/kg	< 0.2			0.2	Pass	
Diazinon	mg/kg	< 0.2			0.2	Pass	
Dichlorvos	mg/kg	< 0.2			0.2	Pass	
Dimethoate	mg/kg	< 0.2			0.2	Pass	
Disulfoton	mg/kg	< 0.2			0.2	Pass	
EPN	mg/kg	< 0.2			0.2	Pass	
Ethion	mg/kg	< 0.2			0.2	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Ethoprop	mg/kg	< 0.2			0.2	Pass	
Ethyl parathion	mg/kg	< 0.2			0.2	Pass	
Fenitrothion	mg/kg	< 0.2			0.2	Pass	
Fensulfothion	mg/kg	< 0.2			0.2	Pass	
Fenthion	mg/kg	< 0.2			0.2	Pass	
Malathion	mg/kg	< 0.2			0.2	Pass	
Merphos	mg/kg	< 0.2			0.2	Pass	
Methyl parathion	mg/kg	< 0.2			0.2	Pass	
Mevinphos	mg/kg	< 0.2			0.2	Pass	
Monocrotophos	mg/kg	< 2			2	Pass	
Naled	mg/kg	< 0.2			0.2	Pass	
Omethoate	mg/kg	< 2			2	Pass	
Phorate	mg/kg	< 0.2			0.2	Pass	
Pirimiphos-methyl	mg/kg	< 0.2			0.2	Pass	
Pyrazophos	mg/kg	< 0.2			0.2	Pass	
Ronnel	mg/kg	< 0.2			0.2	Pass	
Terbufos	mg/kg	< 0.2			0.2	Pass	
Tetrachlorvinphos	mg/kg	< 0.2			0.2	Pass	
Tokuthion	mg/kg	< 0.2			0.2	Pass	
Trichloronate	mg/kg	< 0.2			0.2	Pass	
<b>Method Blank</b>							
Chromium (hexavalent)	mg/kg	< 1			1	Pass	
<b>Method Blank</b>							
<b>Heavy Metals</b>							
Arsenic	mg/kg	< 2			2	Pass	
Barium	mg/kg	< 10			10	Pass	
Beryllium	mg/kg	< 2			2	Pass	
Boron	mg/kg	< 10			10	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Cobalt	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Manganese	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Vanadium	mg/kg	< 10			10	Pass	
Zinc	mg/kg	< 5			5	Pass	
<b>LCS - % Recovery</b>							
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>							
TRH C6-C9	%	94			70-130	Pass	
TRH C10-C14	%	82			70-130	Pass	
<b>LCS - % Recovery</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>							
Naphthalene	%	105			70-130	Pass	
TRH C6-C10	%	88			70-130	Pass	
TRH >C10-C16	%	86			70-130	Pass	
<b>LCS - % Recovery</b>							
<b>Organochlorine Pesticides</b>							
4.4'-DDD	%	113			70-130	Pass	
4.4'-DDE	%	113			70-130	Pass	
4.4'-DDT	%	85			70-130	Pass	
a-BHC	%	112			70-130	Pass	
Aldrin	%	118			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
b-BHC	%	106			70-130	Pass		
d-BHC	%	106			70-130	Pass		
Dieldrin	%	116			70-130	Pass		
Endosulfan I	%	118			70-130	Pass		
Endosulfan II	%	109			70-130	Pass		
Endosulfan sulphate	%	111			70-130	Pass		
Endrin	%	115			70-130	Pass		
Endrin aldehyde	%	107			70-130	Pass		
Endrin ketone	%	108			70-130	Pass		
g-BHC (Lindane)	%	111			70-130	Pass		
Heptachlor	%	108			70-130	Pass		
Heptachlor epoxide	%	118			70-130	Pass		
Hexachlorobenzene	%	110			70-130	Pass		
Methoxychlor	%	90			70-130	Pass		
<b>LCS - % Recovery</b>								
<b>Organophosphorus Pesticides</b>								
Diazinon	%	90			70-130	Pass		
Dimethoate	%	79			70-130	Pass		
Ethion	%	74			70-130	Pass		
Fenitrothion	%	116			70-130	Pass		
Methyl parathion	%	113			70-130	Pass		
Mevinphos	%	87			70-130	Pass		
<b>LCS - % Recovery</b>								
Chromium (hexavalent)	%	98			70-130	Pass		
<b>LCS - % Recovery</b>								
<b>Heavy Metals</b>								
Arsenic	%	92			80-120	Pass		
Barium	%	107			80-120	Pass		
Beryllium	%	90			80-120	Pass		
Boron	%	90			80-120	Pass		
Cadmium	%	87			80-120	Pass		
Chromium	%	98			80-120	Pass		
Cobalt	%	97			80-120	Pass		
Copper	%	89			80-120	Pass		
Lead	%	96			80-120	Pass		
Manganese	%	95			80-120	Pass		
Mercury	%	89			75-125	Pass		
Nickel	%	89			80-120	Pass		
Vanadium	%	93			80-120	Pass		
Zinc	%	89			80-120	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
<b>Spike - % Recovery</b>								
<b>Organochlorine Pesticides</b>								
				Result 1				
4.4'-DDD	M18-My01635	NCP	%	113		70-130	Pass	
4.4'-DDE	M18-My01635	NCP	%	108		70-130	Pass	
4.4'-DDT	M18-My01635	NCP	%	83		70-130	Pass	
a-BHC	M18-My01635	NCP	%	100		70-130	Pass	
Aldrin	M18-My01635	NCP	%	108		70-130	Pass	
b-BHC	M18-My01635	NCP	%	94		70-130	Pass	
d-BHC	M18-My01635	NCP	%	97		70-130	Pass	
Dieldrin	M18-My01635	NCP	%	106		70-130	Pass	
Endosulfan I	M18-My01635	NCP	%	108		70-130	Pass	
Endosulfan II	M18-My01635	NCP	%	103		70-130	Pass	
Endosulfan sulphate	M18-My01635	NCP	%	110		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endrin	M18-My01635	NCP	%	107			70-130	Pass	
Endrin aldehyde	M18-My01635	NCP	%	102			70-130	Pass	
Endrin ketone	M18-My01635	NCP	%	102			70-130	Pass	
g-BHC (Lindane)	M18-My01635	NCP	%	96			70-130	Pass	
Heptachlor	M18-My01635	NCP	%	102			70-130	Pass	
Heptachlor epoxide	M18-My01635	NCP	%	107			70-130	Pass	
Hexachlorobenzene	M18-My01635	NCP	%	94			70-130	Pass	
Methoxychlor	M18-My01635	NCP	%	93			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Organophosphorus Pesticides</b>				Result 1					
Diazinon	M18-Ap34068	NCP	%	117			70-130	Pass	
Dimethoate	M18-My05071	NCP	%	76			70-130	Pass	
Ethion	M18-Ap34068	NCP	%	102			70-130	Pass	
Fenitrothion	M18-My05071	NCP	%	80			70-130	Pass	
Methyl parathion	M18-My05071	NCP	%	77			70-130	Pass	
Mevinphos	M18-Ap34068	NCP	%	75			70-130	Pass	
<b>Spike - % Recovery</b>									
				Result 1					
Chromium (hexavalent)	M18-My03933	NCP	%	107			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Heavy Metals</b>				Result 1					
Arsenic	M18-My03935	NCP	%	106			75-125	Pass	
Barium	M18-My03935	NCP	%	108			75-125	Pass	
Beryllium	M18-My03935	NCP	%	103			75-125	Pass	
Boron	M18-My03935	NCP	%	101			75-125	Pass	
Cadmium	M18-My03935	NCP	%	100			75-125	Pass	
Chromium	M18-My03935	NCP	%	110			75-125	Pass	
Cobalt	M18-My03935	NCP	%	111			75-125	Pass	
Copper	M18-My03935	NCP	%	108			75-125	Pass	
Lead	M18-My03935	NCP	%	107			75-125	Pass	
Manganese	M18-My03935	NCP	%	109			75-125	Pass	
Mercury	M18-My03935	NCP	%	84			70-130	Pass	
Nickel	M18-My03935	NCP	%	101			75-125	Pass	
Vanadium	M18-My03935	NCP	%	106			75-125	Pass	
Zinc	M18-My03935	NCP	%	105			75-125	Pass	
<b>Spike - % Recovery</b>									
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>				Result 1					
TRH C6-C9	M18-My01345	NCP	%	93			70-130	Pass	
TRH C10-C14	M18-My00767	NCP	%	83			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1					
Naphthalene	M18-My01345	NCP	%	80			70-130	Pass	
TRH C6-C10	M18-My01345	NCP	%	87			70-130	Pass	
TRH >C10-C16	M18-My00767	NCP	%	87			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Duplicate</b>									
<b>Organochlorine Pesticides</b>				Result 1	Result 2	RPD			
Chlordanes - Total	M18-My01634	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	M18-My01634	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	M18-My01634	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	M18-My01634	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	M18-My01634	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	M18-My01634	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	M18-My01634	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	



Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Duplicate</b>									
<b>Organochlorine Pesticides</b>				Result 1	Result 2	RPD			
d-BHC	M18-My01634	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	M18-My01634	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	M18-My01634	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	M18-My01634	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	M18-My01634	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	M18-My01634	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	M18-My01634	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	M18-My01634	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
γ-BHC (Lindane)	M18-My01634	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	M18-My01634	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	M18-My01634	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	M18-My01634	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	M18-My01634	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toxaphene	M18-My01634	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
<b>Duplicate</b>									
<b>Organophosphorus Pesticides</b>				Result 1	Result 2	RPD			
Azinphos-methyl	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Bolstar	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorfenvinphos	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorpyrifos	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorpyrifos-methyl	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Coumaphos	M18-My04547	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Demeton-S	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Demeton-O	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Diazinon	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Dichlorvos	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Dimethoate	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Disulfoton	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
EPN	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ethion	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ethoprop	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ethyl parathion	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fenitrothion	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fensulfotiothion	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fenthion	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Malathion	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Merphos	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Methyl parathion	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Mevinphos	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Monocrotophos	M18-My04547	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Naled	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Omethoate	M18-My04547	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Phorate	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Pirimiphos-methyl	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Pyrazophos	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ronnel	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Terbufos	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Tetrachlorvinphos	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Tokuthion	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Trichloronate	M18-My04547	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	

Duplicate								
				Result 1	Result 2	RPD		
Chromium (hexavalent)	M18-Ap33872	NCP	mg/kg	< 1	< 1	<1	30%	Pass
% Moisture	M18-My01418	NCP	%	20	18	10	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	M18-My03935	NCP	mg/kg	< 2	< 2	<1	30%	Pass
Barium	M18-My03935	NCP	mg/kg	< 10	< 10	<1	30%	Pass
Beryllium	M18-My03935	NCP	mg/kg	< 2	< 2	<1	30%	Pass
Boron	M18-My03935	NCP	mg/kg	< 10	< 10	<1	30%	Pass
Cadmium	M18-My03935	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	M18-My03935	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Cobalt	M18-My03935	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Copper	M18-My03935	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Lead	M18-My03935	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Manganese	M18-My03935	NCP	mg/kg	11	11	3.0	30%	Pass
Mercury	M18-My03935	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Nickel	M18-My03935	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Vanadium	M18-My03935	NCP	mg/kg	< 10	< 10	<1	30%	Pass
Zinc	M18-My03935	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	M18-My01344	NCP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C10-C14	M18-My00766	NCP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C15-C28	M18-My00766	NCP	mg/kg	< 50	< 50	<1	30%	Pass
TRH C29-C36	M18-My00766	NCP	mg/kg	< 50	< 50	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	M18-My01344	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	M18-My01344	NCP	mg/kg	< 20	< 20	<1	30%	Pass
TRH >C10-C16	M18-My00766	NCP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	M18-My00766	NCP	mg/kg	< 100	< 100	<1	30%	Pass
TRH >C34-C40	M18-My00766	NCP	mg/kg	< 100	< 100	<1	30%	Pass

## Comments

### Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

### Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.

### Authorised By

Cindi Guo	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Michael Brancati	Senior Analyst-Inorganic (VIC)



### Glenn Jackson

#### National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

\* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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## Certificate of Analysis

Environmental Site Assessments P/L  
2 Homestead Crt  
Highton  
VIC 3216



NATA Accredited  
Accreditation Number 1261  
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing  
The results of the tests, calibrations and/or  
measurements included in this document are traceable  
to Australian/national standards.

Attention: Andrew Koster

Report 596385-W  
Project name TGM BANNOCKBURN  
Received Date May 01, 2018

Client Sample ID			QC04
Sample Matrix			Water
Eurofins   mgt Sample No.			M18-My01489
Date Sampled			Apr 30, 2018
Test/Reference	LOR	Unit	
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>			
Naphthalene <sup>N02</sup>	0.01	mg/L	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	0.02	mg/L	< 0.02
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>			
TRH C6-C9	0.02	mg/L	< 0.02
<b>BTEX</b>			
Benzene	0.001	mg/L	< 0.001
Toluene	0.001	mg/L	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002
o-Xylene	0.001	mg/L	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003
4-Bromofluorobenzene (surr.)	1	%	96

### Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.

A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 02, 2018	7 Day
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C36	Melbourne	May 02, 2018	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 02, 2018	14 Day

<b>Company Name:</b> Environmental Site Assessments P/L	<b>Order No.:</b>	<b>Received:</b> May 1, 2018 8:56 AM
<b>Address:</b> 2 Homestead Crt Highton VIC 3216	<b>Report #:</b> 596385	<b>Due:</b> May 8, 2018
<b>Project Name:</b> TGM BANNOCKBURN	<b>Phone:</b>	<b>Priority:</b> 5 Day
	<b>Fax:</b>	<b>Contact Name:</b> Andrew Koster
<b>Eurofins   mgt Analytical Services Manager : Cindi Guo</b>		

Sample Detail						Organochlorine Pesticides	Organophosphorus Pesticides	NEPM 1999 Metals : Metals M15	Moisture Set	Total Recoverable Hydrocarbons	BTEXN and Volatile TRH
<b>Melbourne Laboratory - NATA Site # 1254 &amp; 14271</b>						X	X	X	X	X	X
<b>Sydney Laboratory - NATA Site # 18217</b>											
<b>Brisbane Laboratory - NATA Site # 20794</b>											
<b>Perth Laboratory - NATA Site # 23736</b>											
<b>External Laboratory</b>											
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID						
1	QC04	Apr 30, 2018		Water	M18-My01489						X
2	QC07	Apr 30, 2018		Soil	M18-My01490	X	X	X	X		
3	QC09	Apr 30, 2018		Soil	M18-My01491			X	X	X	
<b>Test Counts</b>						1	1	2	2	1	1

## Internal Quality Control Review and Glossary

### General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- This report replaces any interim results previously issued.

### Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

**\*\*NOTE:** pH duplicates are reported as a range NOT as RPD

### Units

<b>mg/kg:</b> milligrams per kilogram	<b>mg/L:</b> milligrams per litre	<b>ug/L:</b> micrograms per litre
<b>ppm:</b> Parts per million	<b>ppb:</b> Parts per billion	<b>%:</b> Percentage
<b>org/100mL:</b> Organisms per 100 millilitres	<b>NTU:</b> Nephelometric Turbidity Units	<b>MPN/100mL:</b> Most Probable Number of organisms per 100 millilitres

### Terms

<b>Dry</b>	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
<b>LOR</b>	Limit of Reporting.
<b>SPIKE</b>	Addition of the analyte to the sample and reported as percentage recovery.
<b>RPD</b>	Relative Percent Difference between two Duplicate pieces of analysis.
<b>LCS</b>	Laboratory Control Sample - reported as percent recovery.
<b>CRM</b>	Certified Reference Material - reported as percent recovery.
<b>Method Blank</b>	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
<b>Surr - Surrogate</b>	The addition of a like compound to the analyte target and reported as percentage recovery.
<b>Duplicate</b>	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
<b>USEPA</b>	United States Environmental Protection Agency
<b>APHA</b>	American Public Health Association
<b>TCLP</b>	Toxicity Characteristic Leaching Procedure
<b>COC</b>	Chain of Custody
<b>SRA</b>	Sample Receipt Advice
<b>QSM</b>	Quality Systems Manual ver 5.1 US Department of Defense
<b>CP</b>	Client Parent - QC was performed on samples pertaining to this report
<b>NCP</b>	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
<b>TEQ</b>	Toxic Equivalency Quotient

### QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

### QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

**Quality Control Results**

Test		Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
<b>Method Blank</b>									
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>									
Naphthalene		mg/L	< 0.01			0.01	Pass		
TRH C6-C10		mg/L	< 0.02			0.02	Pass		
<b>Method Blank</b>									
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>									
TRH C6-C9		mg/L	< 0.02			0.02	Pass		
<b>Method Blank</b>									
<b>BTEX</b>									
Benzene		mg/L	< 0.001			0.001	Pass		
Toluene		mg/L	< 0.001			0.001	Pass		
Ethylbenzene		mg/L	< 0.001			0.001	Pass		
m&p-Xylenes		mg/L	< 0.002			0.002	Pass		
o-Xylene		mg/L	< 0.001			0.001	Pass		
Xylenes - Total		mg/L	< 0.003			0.003	Pass		
<b>LCS - % Recovery</b>									
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>									
Naphthalene		%	121			70-130	Pass		
TRH C6-C10		%	118			70-130	Pass		
<b>LCS - % Recovery</b>									
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>									
TRH C6-C9		%	118			70-130	Pass		
<b>LCS - % Recovery</b>									
<b>BTEX</b>									
Benzene		%	120			70-130	Pass		
Toluene		%	116			70-130	Pass		
Ethylbenzene		%	120			70-130	Pass		
m&p-Xylenes		%	122			70-130	Pass		
Xylenes - Total		%	123			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code	
<b>Spike - % Recovery</b>									
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>									
Naphthalene		M18-My01524	NCP	%	102		70-130	Pass	
TRH C6-C10		M18-My01524	NCP	%	99		70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>									
TRH C6-C9		M18-My01524	NCP	%	101		70-130	Pass	
<b>Spike - % Recovery</b>									
<b>BTEX</b>									
Benzene		M18-My01524	NCP	%	101		70-130	Pass	
Toluene		M18-My01524	NCP	%	109		70-130	Pass	
Ethylbenzene		M18-My01524	NCP	%	103		70-130	Pass	
m&p-Xylenes		M18-My01524	NCP	%	106		70-130	Pass	
o-Xylene		M18-My01524	NCP	%	103		70-130	Pass	
Xylenes - Total		M18-My01524	NCP	%	105		70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code	
<b>Duplicate</b>									
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>									
Naphthalene		M18-My01523	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
TRH C6-C10		M18-My01523	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass



Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	M18-My01523	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	M18-My01523	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Toluene	M18-My01523	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Ethylbenzene	M18-My01523	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
m&p-Xylenes	M18-My01523	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
o-Xylene	M18-My01523	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Xylenes - Total	M18-My01523	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass





**GEELONG**

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PRINCIPAL: ANDREW P. REDMAN BSc.

## GEOTECHNICAL SITE INVESTIGATION REPORT

- i. SITE ADDRESS: 25 Ormond Street  
BANNOCKBURN, VICTORIA
- ii. PROPOSED DEVELOPMENT: Municipal infrastructure
- iii. CLIENT: CARDNO TGM  
PO BOX 1137  
GEELONG VIC 3220
- iv. ISSUE DATE: 26<sup>th</sup> May 2021
- v. OUR REFERENCE NUMBER: 16964E
- vi. DISTRIBUTION: CARDNO TGM  
ATT: Chris Marshall
- vii. SUPERVISING GEOLOGIST: Andrew Redman BSc
- viii. AUTHOR: Andrew Redman BSc



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- i. Introduction
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- viii. Site Constraints
- ix. Construction Requirements
- x. Report Limitations

## APPENDICES

- i. Location Plan
- ii. GeoVic Map
- iii. Photographic Evidence
- iv. Test Site Location Plan
- v. Borelog Descriptions



## **i. INTRODUCTION**

Provincial Geotechnical Pty Ltd has been commissioned to provide a Geotechnical Site Investigation report for the nominated address. We understand that construction of new municipal infrastructure is proposed.

The Location Plan is appended (Appendix i).

The site investigation hereby reported has been carried out with regard to the information supplied to us by our client or client's agents at the date of our commission. Should the client or his agent have omitted to supply us with relevant information or make significant changes to the building type, building envelope, or site our report may be irrelevant and/or inappropriate. No responsibility will be accepted by us for the consequences of such action. The client should acknowledge that this is a Geotechnical Site Investigation report specifically prepared for the proposed building development at the identified location and does not extend beyond that brief.

All site works related to the building project must be undertaken to comply with the relevant Codes and Standards and must not potentially adversely impact upon the building envelope. Provincial Geotechnical Pty Ltd accepts no liability or responsibility for any site works outside of our specific commission.

## **ii. SITE CLASSIFICATION**

The scope of AS2870-2011 allows for the classification of sites for some light commercial and institutional buildings. However, the proposed development appears to fall outside the scope of the code and the design should be based on engineering principles.

This site would normally be classified as CLASS P (PROBLEM SITE-ABNORMAL MOISTURE CONDITIONS), noting the underlying soil profile is moderately reactive CLASS M (Moderately Reactive Clay).

Site Classification is based upon Section 2 Clauses 2.2 of AS2870 - 2011. The method adopted for clay sites primarily includes 2.2.1 (a). Clause 2.2.1 (b) can be adopted under instruction from the client.

Classification of the site has taken into account the following:

- Identification of the sub soil profile.
- Field classification of the soil type and plasticity.

## **iii. SITE SOIL CHARACTERISTICS SUMMARY**

SITE FILLING: None encountered.

### **UNSUITABLE FOUNDATION**

CONDITIONS: Depth to satisfactory foundation soils may necessitate localised deepening of footings in excess of standard types.

PERCHED WATER: None observed. The installation of suitable site drainage should ensure that destabilisation of the foundation soils does not occur.



**iii. SITE SOIL CHARACTERISTICS SUMMARY - continued**

GROUND WATER: None encountered.

BEDROCK: None encountered.

FLOATERS: None encountered.

ABNORMAL MOISTURE  
CONDITIONS: Established vegetation present. Proximity and potential  
influence should be considered.

GEOLOGY: Tertiary Sediments (Mapcode Nbm & Nhn)  
Identification assisted by reference to appropriate geological survey  
map. This report contains a geology map obtained from the  
Department of Natural Resources Geovic website including the site  
under investigation. It is provided as a guide to mapping of the local  
geology only and not to be used as a basis for design (Appendix ii).

SOIL TYPES: Natural: Silty clayey sand topsoils overlying silty clays, typical of  
area's geology. Clays of the above sedimentary origin are generally  
considered moderately reactive.

Fill: None encountered.

**iv. TERRAIN EVALUATION SUMMARY**

CLIMATIC ZONE: CZ 2

SITE LOCATION: North-east side of Ormond Street.

SLOPE: Gentle fall over site predominantly to the east.

DRAINAGE: SURFACE: Fair to Poor.  
SUB-SURFACE: Poor. Installation of cut off drains may be  
required.

EARTHQUAKE  
CLASS: Australian Standard AS1170.4-2007, 'Minimum Design Loads on  
Structures, Part 4: 'Site Sub-Soil Class' outlines the methods for  
assigning the site's Sub-soil Class. Based on the anticipated  
stratigraphy, Table 4.1 'Maximum Depth Limits for Sub-Soil Class C'  
and Table 3.2 'Hazard Factor (Z) For Specific Australian Locations' of  
the standard, we recommend the following Hazard Factor and Sub-  
Soil Class are adopted:  
SUB-SOIL CLASS: Class C<sub>e</sub> – Shallow soil site  
HAZARD FACTOR (Z): 0.10



**iv. TERRAIN EVALUATION SUMMARY - continued**

PROXIMATE VEGETATION (POTENTIAL ABNORMAL MOISTURE CONDITIONS):

GRASSES: Present.  
SHRUBS: Occasional present.  
TREES: Occasional present.

INFRASTRUCTURE WITHIN OR IN PROXIMITY TO BUILDING ENVELOPE: No. Greenfield site.

NOTE: The designing engineer should review available aerial mapping data and/or available site context information to assess the current or pre-existing conditions in respect to design considerations for Abnormal Moisture Conditions.

This report provides photographic evidence of either existing or pre-existing site context (Refer to Appendix iii).

**v. TESTING PROGRAMME**

Four (4) test sites were established and excavated using a 100mm direct drive drilling rig at the approximate locations shown on the appended Test Site Location Plan (Appendix iv).

Where soil conditions dictated, investigation was assisted by the use of a penetrometer to confirm profile depth and condition. Where penetrometer testing is not undertaken the soil profile depths and conditions may be extrapolated from our knowledge of the geology and soils in this area.

Disturbed samples were collected and hand classified.

A vane shear apparatus was used to determine the strength of all cohesive soils in conjunction with tactile assessment.

Site history: The client is advised that site classification can be altered by past activities on this site not known at the time of our site investigation and report preparation. The client is advised that failure to investigate and report past history may invalidate the report.

**vi. FINDINGS**

The soil profiles encountered are shown on the appended borelog sheet (Appendix v).

The cohesion value obtained is quoted on the log sheet.

The sedimentary nature and depth of the Tertiary aged soils indicates a moderate soil reactivity and seasonal heave potential.

The client should recognise that the soil profiles encountered during our testing are deemed representative of the building envelope for the purpose of classifications.



## **vi. FINDINGS CONTINUED**

The client should be aware however that in some cases soil conditions can change dramatically over short distances and although all effort is made to determine possible soil profile variations, no responsibility is taken for any undetected variations. The most careful exploration programme may not locate all soil profile variations due to time and economic restraints.

If footing excavations reveal soil conditions differing from those shown on the log sheet in this report, we recommend that Provincial Geotechnical be contacted immediately to carry out further testing to confirm or revise our conclusions and recommendations.

## **vii. CONCLUSIONS AND RECOMMENDATIONS**

### **1. CONCRETE SLAB FLOOR – RESIDENTIAL STYLE STRUCTURES:**

The use of stiffened raft slab construction is recommended for residential proportioned buildings constructed on a residual clay profile. An Allowable Bearing Pressure of 100kPa may be considered for preliminary proportioning of stiffened raft slab edge beams and internal load bearing ribs a minimum of 100mm into stiff clay.

Minimum dimensions and reinforcement of footings will need to meet the minimum requirements of Australian Standard AS2870-2011, 'Residential Slabs and Footings – Construction' for a CLASS M (Moderately Reactive Clay) site classification.

Where the depth of fill exceeds 0.3 metres it will be necessary to adopt suspended raft slab construction. All edge beams and internal ribs will need to be founded in stiff clay at the base of any fill and topsoils, and the slab panels will need to be designed as fully suspended.

A suspended concrete slab on piles may use an Allowable Bearing Pressure of 250kPa at a depth of 300mm into natural stiff clay and a minimum foundation depth of 1000mm below finished ground level.

Considerable attention to site drainage and existing (and any proposed or retained) trees will be required to ensure adequate performance of structures. Failure to take these factors into account will result in poor footing performance.

### **2. LOW RISE STRUCTURES:**

Strip and pad footings founded within residual clay are routinely adopted for flexible commercial style structures constructed on a clay foundation. The use of pad and strip footings founded on clay may be considered for any proposed low rise structures subject to:

- The superstructures being flexible and well-articulated. Steel portal framed construction and precast concrete panel construction normally satisfies this criteria.
- The superstructures not being sensitive to footing movements associated with seasonal volume changes within the clay.





**2. LOW RISE STRUCTURES - CONTINUED:**

- The moisture content regime of the clay beneath the structures being maintained as uniform as possible. The clays must not be subject to extremes in moisture conditions resulting from poor site drainage and/or the drying effects of trees.

If the proposed structures are not flexible and/or well-articulated, or the structures are sensitive to footing movements associated with seasonal volume changes within the highly plastic residual clay, it will be necessary to deepen the footings to a depth of negligible seasonal soil moisture variation.

Minimum dimensions and reinforcement of footings founded on clay should meet the minimum requirements of Australian Standard AS2870-2011, 'Residential Slabs and Footings – Construction' for a CLASS M site classification.

An Allowable Bearing Pressures of 250kPa may be considered for preliminary proportioning of strip and pad footings respectively where founded a minimum of 300mm into stiff clay, subject to a minimum founding depth of 1000mm. It is recommended that a uniform founding stratum be provided throughout any structure to minimize differential movements.

During our investigation a suitable foundation level was found at the following depths:

<b>SITE</b>	<b>FOUNDATION DEPTH</b>	<b>FOUNDATION MATERIAL</b>	<b>ALLOWABLE BEARING PRESSURE</b>
1	1000mm	Natural stiff clay	250kPa
2	1000mm	Natural stiff clay	250kPa
3	1000mm	Natural stiff clay	250kPa
4	1000mm	Natural stiff clay	250kPa

**NOTE:**

The site derived clays are not recommended for use as structural fill. Plastic clays are generally difficult to compact and are potentially subject to appreciable volume changes if they are not properly moisture conditioned. Use of a suitable imported granular or low plasticity clay fill will assist in assuring efficient placement and present less risk with respect to long term performance of structures and pavements based on soil reactivity.

Structural fill must be placed in uniform layers no exceeding a loose thickness of 200mm and compacted to at least 98% of the standard maximum dry density value as determined in accordance with Australian Standard AS1289 5.1.1-1993.

Australian Standard AS3798, 'Guidelines on Earthworks for Commercial and Residential Developments' provides guidance on the specification, execution and control of earthworks relevant to the subject site. Level 1 supervision in accordance with Australian Standard AS3798 is recommended for all proposed earthworks at the site.

Construction of pavements is likely to be problematic during the wetter months of the year. Pavement construction should be undertaken during the drier months of the year to avoid the need for additional subgrade improvement and delays in construction.



### **EXCAVATION/CONSTRUCTION DIFFICULTIES**

SITE VEHICLE ACCESS: Good.

SITE VEHICLE MANEUVERABILITY: Fair.

EXCAVATION CONDITIONS: The clays should be readily excavated using a 20 tonne capacity hydraulic excavator.

EXISTING STRUCTURES AROUND CONSTRUCTION AREA: No – greenfield site.

VEGETATION AROUND CONSTRUCTION AREA: Yes – on eastern boundary.

WET WEATHER IMPACT: Possible.

Sites without good natural or installed drainage can be adversely impacted upon during construction. The client should be aware that the following impacts can occur after wet weather.

- \* Site may become slippery and boggy.
- \* Foundation soils may become inundated and unworkable.
- \* Site drainage may need to be installed.
- \* Site may need to be abandoned for a period.
- \* Deeper footings or additional earthworks may be required.

## **ix. CONSTRUCTION REQUIREMENTS**

### **1. CONSTRUCTION ADJACENT TO EASEMENTS, EXCAVATIONS AND SERVICE PIPE TRENCHES**

Buried services should be located adjacent to footings. Where this cannot be avoided, the trench should be backfilled in such a way as to prevent moisture ingress. Any footings located adjacent to easements, excavations or backfilled service trenches should be founded below a line drawn up at 40° above horizontal from the base of the easement or excavation. If the angle of repose is to be intersected, a piled footing will be required.

### **2. SITE DRAINAGE AND MAINTENANCE OF FOOTINGS**

Effective drainage of the site should be maintained at all times. Water run-off should be collected and diverted away from all structures during construction. Water should not be allowed to pond against footings during or after construction. The ground adjacent to footings should be graded to provide a permanent fall of 1(V):50(H) away from the footings over the first two metres. Water supply and drainage infrastructure should be maintained so that no leakage occurs.

### **3. ARTICULATION OF STRUCTURE**

Adequate articulation should be provided in accordance with The Cement and Concrete Association of Australia – Technical Note TN61. In addition to the requirements of TN61, a full height articulation joint should be provided at the following locations:

- At the junction where two different footing types intersect.
- Where new structures adjoin existing structures.

### **4. INSPECTION OF FOOTING EXCAVATIONS**

All footing excavations should be inspected by a suitably qualified geotechnical consultant to ensure that the required founding stratum has been achieved. The presence of any unusual features or conditions should be brought to the attention of this office before construction proceeds.

For shallow footing and trench excavations, based on the ground conditions information obtained, it appears excavations will be predominantly in natural clays. Personnel should not be permitted to enter confined excavations in excess of 1.5 metres deep unless such excavations are appropriately battered or shored. Shallower excavations, particularly in loosely compacted fill, may also need to be battered or shored and will need to be assessed at the time of construction.

### **5. BATTER SLOPES**

It is recommended that temporary batter slopes should be steeper than 1H:1V, but flatter slopes may need to be considered within fill materials. Permanent batter slopes should not be steeper than 2H:1V and should be protected from erosion by vegetation or proprietary protection systems. Drainage should be provided at the top of batter slopes to divert run-off away from the slope face. The above recommendations are provided for batter slopes up to 3 metres in height; further geotechnical advice should be sought where higher batter slopes are proposed.

## **x. REPORT LIMITATIONS**

This report is for the use of the party to whom it is addressed only and has been produced for the proposed development as described and for no other purpose. It has been assumed that the conditions encountered by the limited number of boreholes are representative of the site in general. Some variation from the conditions encountered by the boreholes is expected over the site.

ANDREW REDMAN BSc.  
GEOLOGIST.  
AR: hs



## **APPENDICES**

- i. Location Plan
- ii. GeoVic Map
- iii. Photographic Evidence
- iv. Test Site Location Plan
- v. Borelog Descriptions



LAND BUDGET	
SITE AREA	16.14ha
OPEN SPACE	0.95ha
NET DEVELOPABLE AREA	15.19ha
No. OF LOTS	172
LOT DENSITY	11.3 LOTS/ha

Rev.	Revision	Date

TGM Group  
1/27-31 Myers Street (PO Box 1137)  
Geelong, VIC 3220  
Phone: 51 222 400  
Fax: 51 222 485  
www.tgmgroup.com.au

2017-18 Financial Year  
2018-19 Financial Year

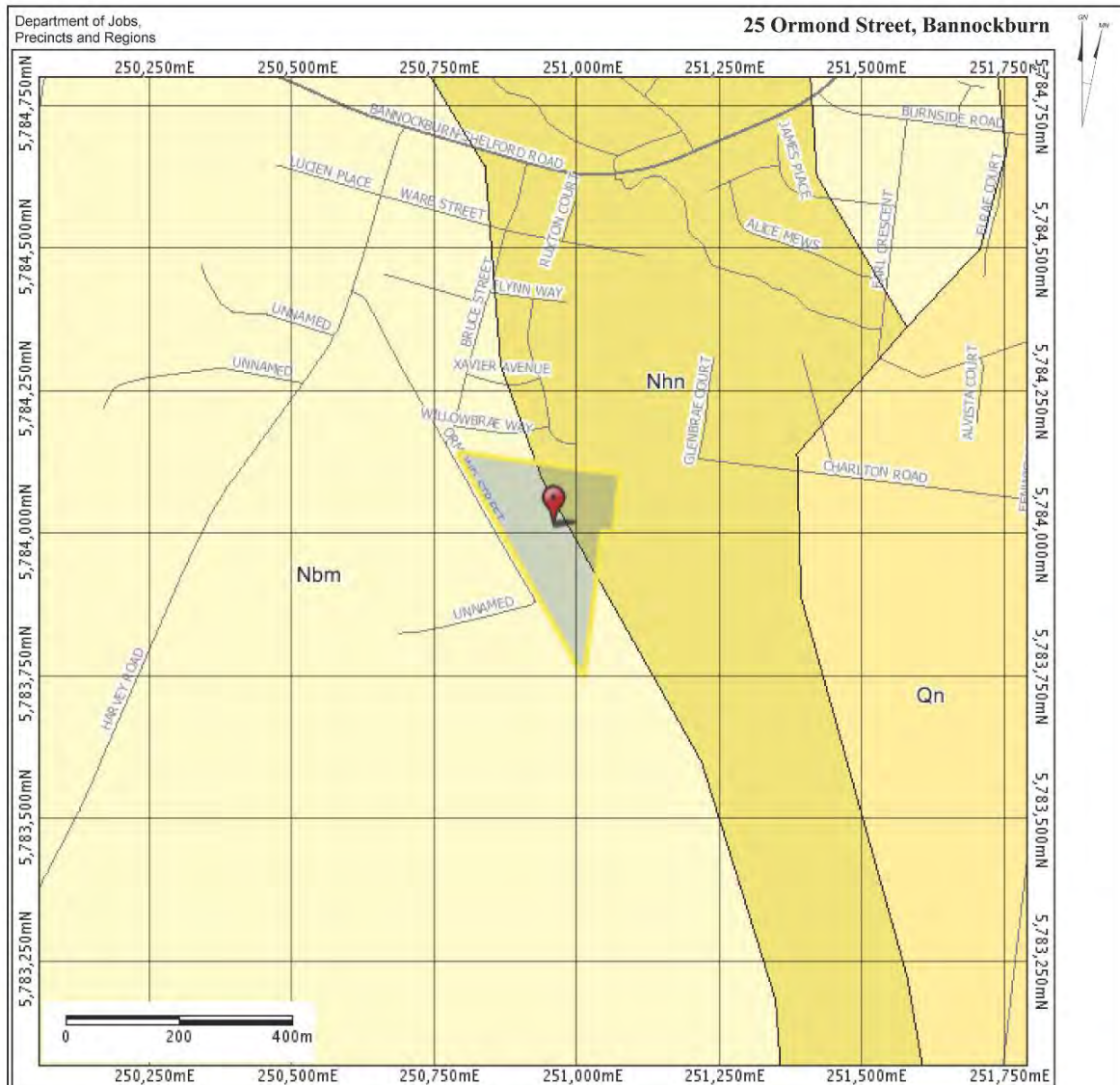
PLAN OF PROPOSED SUBDIVISION		Job Number: 17170-100	Date of Issue: 13/02/2018
5, 20, 25 & 30 ORMOND STREET BANNOCKBURN, 3331		Sheet: 1 of 1	Date of Survey: N/A
		GRAPHIC SCALE IN METRES 0 12.50 25 37.50 50 62.50 Survey: N/A Drawn: RUD Checked: RUD DWG: 17170-100-PROPOSAL1 REV 2	



A.B.N. 88 090 400 114

## GEOVIC MAP

## APPENDIX ii



### Legend

#### Towns (25K)

#### Geologic Faults 25K

- Geologic mapped.
- Geologic inferred.
- Geologic concealed.
- Intrusive mapped.

Map Scale: 1:10,000

Projection: MGA 55

Disclaimer: This map is a snapshot generated from Victoria Government data. This material may be of assistance to you but the State of Victoria does not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for error, loss or damage which may arise from reliance upon it. All persons accessing this information should make appropriate enquiries to assess the currency of the data.

Generated from GeoVic 3

Map Created Wed May 26 2021 11:00:33 GMT+1000 (AEST)



## AERIAL PHOTOGRAPH

(Approximate Location)

**Client:** CARDNO TGM  
**Ref. Number:** 16964E  
**Date:** 19/05/2021  
**Site:** 25 Ormond Street, BANNOCKBURN













## TEST SITE LOCATION PLAN

○ - Approximate borehole locations

**Client:** CARDNO TGM  
**Ref. Number:** 16964E  
**Date:** 19/05/2021  
**Site:** 25 Ormond Street, BANNOCKBURN



# PROVINCIAL GEOTECHNICAL PTY. LTD.

## CONSULTING GEOLOGISTS



A.B.N. 88 090 400 114

### APPENDIX v

**Client:** CARDNO TGM  
**Ref. Number:** 16964E  
**Date:** 19/05/2021  
**Site:** 25 Ormond Street, BANNOCKBURN

TEST SITE 1 EXCAVATION METHOD: HYDRAULIC DRILLING RIG					TEST SITE 2 EXCAVATION METHOD: HYDRAULIC DRILLING RIG								
Depth mm	FILL	SOIL PROFILE	"C"	ABP	Depth mm	FILL	SOIL PROFILE	"C"	ABP				
100		<b>SILTY CLAYEY SAND</b> <b>brown</b> <b>moist; dense</b>		<b>100</b>	100		<b>SILTY CLAYEY SAND</b> <b>brown moist; dense</b>		<b>100</b>				
200						200							
300						300				<b>CLAY</b> <b>orange brown</b> <b>moist; stiff</b>  <b>becoming silty</b> <b>yellow-yellow</b> <b>light grey</b>	<b>130+</b>		
400						400							
500						500							
600						600							
700						700							
800						800							
900						900							
1000						1000							
1100				1100									
1200				1200									
1300				1300									
1400				1400									
1500				1500									
1600				1600									
1700				1700									
1800				1800									
1900				1900									
2000				2000									
2100		<b>CLAY</b> <b>orange brown</b> <b>light grey mottle</b> <b>moist; stiff</b>  <b>becoming soft</b>	<b>130+</b>		2100								
2200						2200							
2300						2300							
2400						2400		<b>VERY SILTY CLAY</b> <b>orange</b> <b>moist; stiff</b>					
2500						2500							
2600						2600							
2700						2700							
2800						2800							
2900						2900							
3000						3000							
3100				3100									
3200				3200									
3300				3300									
3400				3400									
3500				3500									
3600				3600									
3700				3700									
3800				3800									
3900				3900									
4000				4000									
3100		<b>END BORE HOLE</b>			3100		<b>END BORE HOLE</b>						
3200					3200								
3300					3300								
3400					3400								
3500					3500								
3600					3600								
3700					3700								
3800					3800								
3900					3900								
4000					4000								

# PROVINCIAL GEOTECHNICAL PTY. LTD.

## CONSULTING GEOLOGISTS



A.B.N. 88 090 400 114

### APPENDIX v

**Client:** CARDNO TGM  
**Ref. Number:** 16964E  
**Date:** 19/05/2021  
**Site:** 25 Ormond Street, BANNOCKBURN

TEST SITE 3 EXCAVATION METHOD: HYDRAULIC DRILLING RIG					TEST SITE 4 EXCAVATION METHOD: HYDRAULIC DRILLING RIG				
Depth mm	FILL	SOIL PROFILE	"C"	ABP	Depth mm	FILL	SOIL PROFILE	"C"	ABP
100		<b>SILTY CLAYEY SAND</b>		<b>100</b>	100		<b>SILTY CLAYEY SAND</b>		<b>100</b>
200		<b>brown moist; dense</b>			200		<b>brown moist; dense</b>		
300		<b>CLAY</b>			300		<b>CLAY</b>		
400		<b>orange brown</b>			400		<b>orange brown</b>		
500		<b>moist; stiff</b>	<b>130+</b>		500		<b>moist; stiff</b>	<b>130+</b>	
600					600				
700					700				
800					800				
900					900				
1000		<b>becoming silty</b>			1000				
1100		<b>yellow-yellow</b>			1100				
1200		<b>light grey</b>			1200				
1300					1300				
1400					1400				
1500					1500				
1600					1600				
1700					1700				
1800					1800				
1900					1900				
2000					2000		<b>becoming silty</b>		
2100					2100		<b>orange</b>		
2200					2200				
2300					2300				
2400					2400				
2500		<b>VERY SILTY CLAY</b>			2500				
2600		<b>orange</b>			2600				
2700		<b>moist; stiff</b>			2700				
2800					2800				
2900					2900				
3000					3000				
3100		<b>END BORE HOLE</b>			3100		<b>END BORE HOLE</b>		
3200					3200				
3300					3300				
3400					3400				
3500					3500				
3600					3600				
3700					3700				
3800					3800				
3900					3900				
4000					4000				

H593488

Australia and New Zealand Banking Group Limited  
Branch Securities Department  
247 Collins Street

H593488

\*\*\*73.00 M ST T

9- 2 199270 10-JUL-79 MELBOURNE

MADE AVAILABLE TO ISSUE TO

\$400  
\$73

F. R. APPEL & SON

Geelong

VICTORIA

TRANSFER OF LAND

REGD

H525919

WE, ROBERT JAMES GORDON, Salesman of 102 Flinders Avenue, Lara and JOAN ELIZABETH HART, Married Woman of Inverleigh being --- registered as the proprietors of an estate in fee simple in --- the land hereinafter described subject to the encumbrances --- notified hereunder IN CONSIDERATION of the sum of TWENTY THOUSAND DOLLARS paid to us by the Transferees DO HEREBY TRANSFER to --- IAN JOHN HINCHLIFFE, Motor Mechanic and BARBARA JOY HINCHLIFFE, Schoolteacher both of Unit 6, 138 West Fyans Street, Newtown --- as joint tenants ALL our estate and interest in ALL THAT piece of land being part of Crown Allotment 9 Section 22B Township --- of South Bannockburn Parish of Murgheboluc County of Grant --- and being <sup>NOW COMPRISED</sup> ~~part of the land more particularly described in~~ --- Certificate of Title Volume 8758 Folio 438.

Vol. 8758 Fol. 438 (Pt.)  
Tship South Bannockburn  
Murgheboluc  
Grant  
being pt. C.A 9 Sec. 22B  
Area: 5.340 ha

EX 111  
12/11/79  
Exc 116 191279

DATED this 21<sup>st</sup> day of June, One thousand nine hundred and Seventy-nine.

SIGNED in Victoria by the said  
ROBERT JAMES GORDON in the ---  
presence of:

R. J. Gordon

SIGNED in Victoria by the said  
JOAN ELIZABETH HART in the ---  
presence of:

J. E. Hart

SIGNED in Victoria by the said  
IAN JOHN HINCHLIFFE in the ---  
presence of:

Ian J. Hinchliffe

SIGNED in Victoria by the said  
BARBARA JOY HINCHLIFFE in the ---  
presence of:

Barbara J. Hinchliffe

ENCUMBRANCES REFERRED TO:

Nil.

CAVEAT

A memorandum of the within instrument has been entered in the Register Book.



VICTORIA STATE COURT

100-6-70 449750 58120

11 11 1979

0 4/10/79

PAI 1074

H525919

24

To The Registrar of Titles.

Please register this dealing and on completion new title to issue to Messrs F.R. Apted & Son & Certificate of Title Vol 8758 fol. 438 to be returned to Wylton + McDonald.  
Dated. 14 June 1979.

Wylton + McDonald.

DATED

1979

M

F.J. GORDON & J.E. HART

- to -

I.J. & B.J. HINCHLIFFE

TRANSFER OF LAND

F.R. APTEED & SON,  
SOLICITORS,  
63 YARRA STREET,  
GEEHLONG.....3220

IFA:IMK

To The Registrar of Titles.

Please Register this Transfer and on completion issue Certificate of Title Volume (see title) to Australian and New Zealand Banks and not to Messrs FRANK & SON.  
FRANK & SON per law FRANK. 15 June 1979.



Lodged at the Titles Office by

6640

Titles Office Use Only

**REGD**

193591 1034 45 174 R336954B

LAMB CASSIDY & SIMMONDS

COMMONWEALTH COURT OF AUSTRALIA

1090B

Code

**VICTORIA**

**TRANSFER OF LAND**

Subject to the encumbrances affecting the land including any created by dealings lodged for registration prior to the lodging of this instrument the transferor for the consideration expressed transfers to the transferee all his estate and interest in the fee simple in the land described. (Notes 1-4)

Land Certificate of Title Volume 9338 Folio 821 (Note 5)

STAMP DUTY VICTORIA  
R401001 591 T4040313 00026629 07/05/91  
R9221058 0444 \$6,640.00

Consideration \$174,000.00 (Note 6)



Transferor ANTHONY JAMES HATCHER and MARGARET DIANNE HATCHER (Note 7)

Transferee PHILIP JAMES KENNEDY and PETRINA MARY ~~KENNEDY~~ both of 70 Clarendon Street, Newtown as joint proprietors (Note 8)

Date DO NOT DATE  
-3 MAY 1991

Execution & Attestation (Note 9)

Control of Stamps Use Only

C	44
DUTY	6640
STAMP	0
T	1
U	1400
E	5

SIGNED by the Transferors

in the presence of:

*Ray Shuttleworth*  
*Witness*

*Anthony Hatcher*  
*Margaret Hatcher*

SIGNED by the Transferees

in the presence of:

*Witness*

*Philip Kennedy*  
*P Kennedy*  
*Petrina O'Connor*  
*P Kennedy*

**T1** Office Use Only



A memorandum of the within instrument has been entered in the Register Book.



*23 MAY 1991*

Approval No. T1/1

3-70/956-08

### NOTES

1. This form must be used for all transfers by the registered proprietor of an estate in fee simple other than
  - (a) transfers by direction
  - (b) transfers creating or reserving easements
  - (c) transfers containing a restrictive covenant or a covenant created pursuant to statute
  - (d) transfers of mortgages charges or leases or leasehold estates
  - (e) transfers of other than the full interest of the transferor for which the appropriate form must be used.
2. Transfers may be lodged as an original only and must be typed or completed in ink.
3. All signatures must be in ink.
4. If there is insufficient space in any panel to accommodate the required information use the above space or an annexure sheet (Form A1). Insert only the words "See Annexure A" (or as the case may be) in the appropriate panel and enter the information above or on the annexure sheet under the appropriate heading.

Multiple annexures may appear on the same annexure sheet but each must be correctly headed.  
All annexure sheets should be properly identified and signed by the parties and securely attached to the instrument.
5. Volume and folio references must be given. If the whole of the land in a title is to be transferred no other description should be used. If the transfer affects part only of the land in a title the lot and plan number or Crown description should also be given. Any necessary diagram should be endorsed above or on an annexure sheet (Form A1).
6. Set out the amount (in figures) on the nature of the consideration.

In a transfer on sale of land subject to a mortgage it should be clearly shown whether or not the amount owing under the mortgage is included in the consideration e.g. \$ ..... which includes the amount owing under mortgage No. ....
7. Insert full name. Address is not required.
8. Insert full name and address. If two or more transferees state whether as joint tenants or tenants in common. If tenants in common specify shares.
9. If an executing party is a natural person execution should read "Signed by the transferor (transferee) in the presence of .....". The witness must be an independent person. If an executing party is a body corporate execution should conform to any prescribed formalities relating to the affixing of the common seal.

BY LETTER \$94

**TRANSFER OF LAND**  
Section 45 Transfer of Land Act 1958

Lodged by:  
Name: INGPEN & BENT  
Phone: (03) 5221 1066  
Address: 95 Yarra Street, Geelong  
Ref.: GB:ZS  
Customer Code: 1005H



**X591336W**  
110701 2105 45= \$94



MADE AVAILABLE / CHANGE CONTROL  
Land Titles Office Use Only

The transferor at the direction of the directing party (if any) transfers to the transferee the estate and interest specified in the land described for the consideration expressed and subject to the encumbrances affecting the land including any created by dealings lodged for registration before the lodging of this transfer.

Land: (volume and folio reference)

Certificate of Title Volume 9381 Folio 088 and  
Certificate of Title Volume 7244 Folio 650

Estate and Interest: (e.g. "all my estate in fee simple")

All our estate in fee simple

Consideration:

Natural love and affection

Transferor: (full name)

DAVID JOHN COLLINS and INES ORSOLINA COLLINS

Transferee: (full name and address including postcode)

INES ORSOLINA COLLINS  
of 20 Ormond Road, Bannockburn 3331



DX591336W-1-8

Directing Party: (full name)

Dated: the ~~20th~~ 21st day of June 2001

Execution and attestation:

SIGNED by the Transferors in the presence of: *Zate Styan*

*D J Collins*  
*Ines Collins*

SIGNED by the Transferee in the presence of: *Zate Styan*  
Witness

*Ines Collins*

Approval No. 571007L

**ORDER TO REGISTER**  
Please register and issue title to

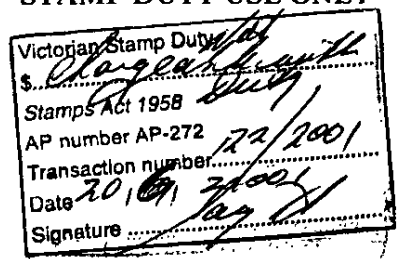
**T1**

Signed \_\_\_\_\_ Cust. Code: \_\_\_\_\_



19 JUL 2001

**STAMP DUTY USE ONLY**

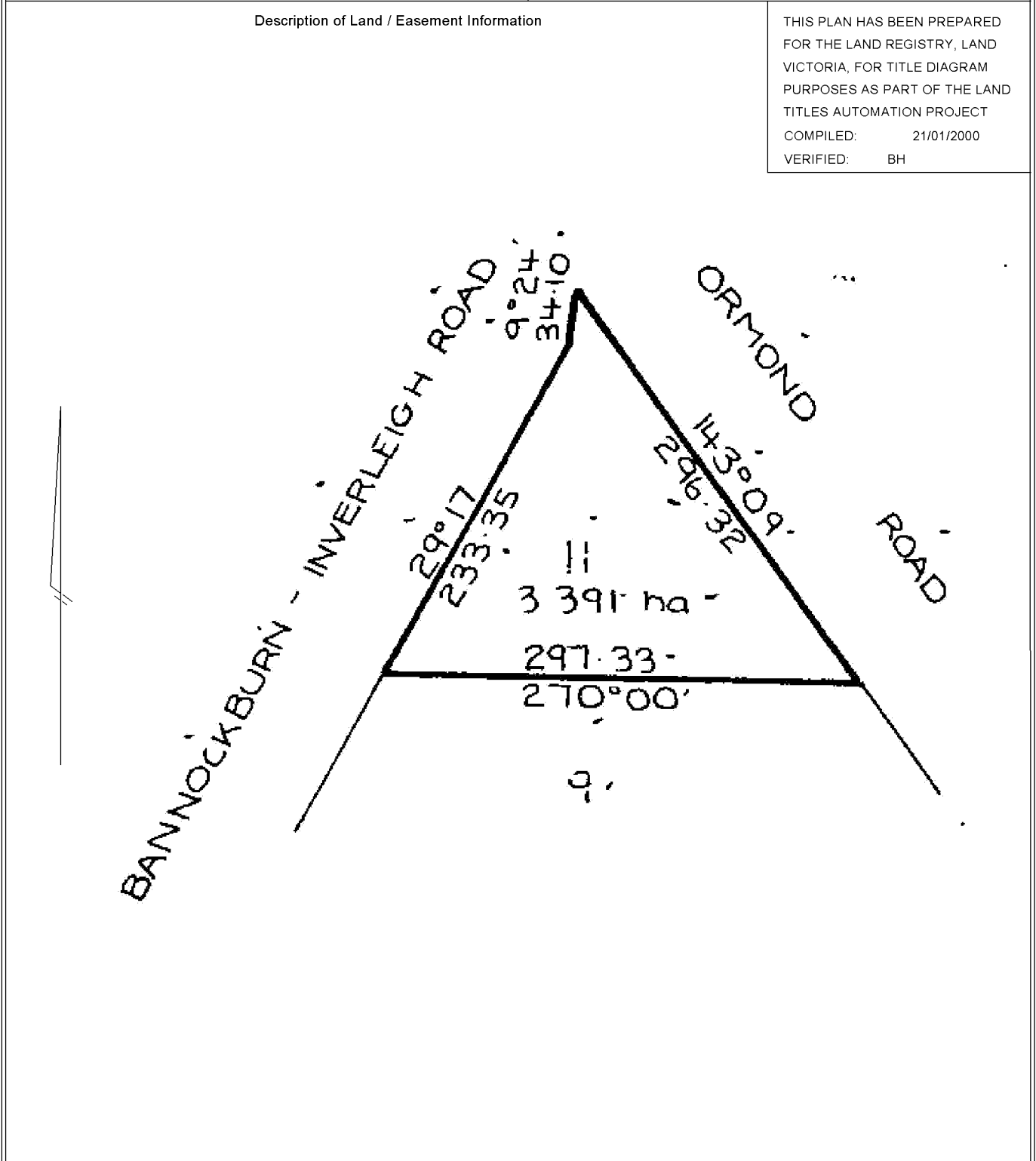


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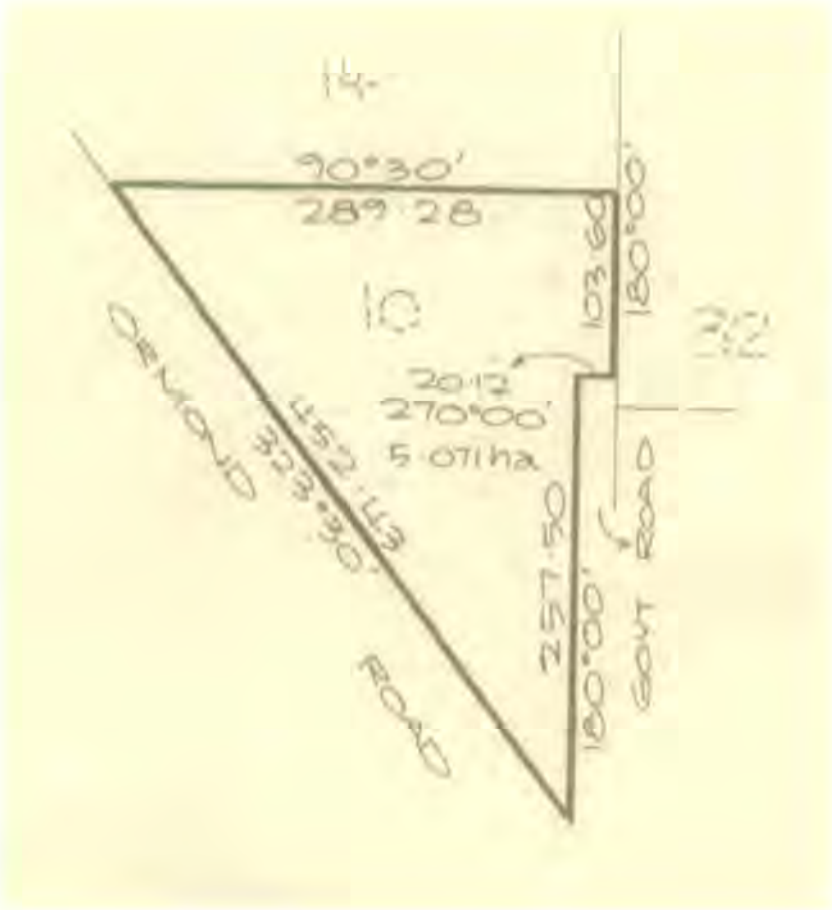
<b>TITLE PLAN</b>		<b>EDITION 1</b>	<b>TP 174543X</b>						
<b>Location of Land</b> Parish: MURGHEBOLUC Township: SOUTH BANNOCKBURN Section: 22B Crown Allotment: 9 (PT) Crown Portion:  Last Plan Reference: Derived From: VOL 9358 FOL 645 Depth Limitation: NIL		<b>Notations</b>  ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN							
<b>Description of Land / Easement Information</b>		THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT COMPILED: 19/08/2003 VERIFIED: L.S.							
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: center;">TABLE OF PARCEL IDENTIFIERS</th> </tr> <tr> <td colspan="2" style="text-align: center;">                     WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962                 </td> </tr> <tr> <td colspan="2" style="text-align: center;">                     PARCEL 1 = CA 9 (PT)                 </td> </tr> </table>				TABLE OF PARCEL IDENTIFIERS		WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962		PARCEL 1 = CA 9 (PT)	
TABLE OF PARCEL IDENTIFIERS									
WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962									
PARCEL 1 = CA 9 (PT)									
LENGTHS ARE IN METRES	Metres = 0.3048 x Feet Metres = 0.201168 x Links	Sheet 1 of 1 sheets							

TITLE PLAN		EDITION 1	TP 283839R
------------	--	-----------	------------

<p><b>Location of Land</b></p> <p>Parish: MURGHEBOLUC          Township: SOUTH BANNOCKBURN          Section: 22B          Crown Allotment: 11          Crown Portion:</p> <p>Last Plan Reference:          Derived From: VOL 9381 FOL 088          Depth Limitation: NIL</p>	<p style="text-align: center;"><b>Notations</b></p> <p>ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN</p>
--	--

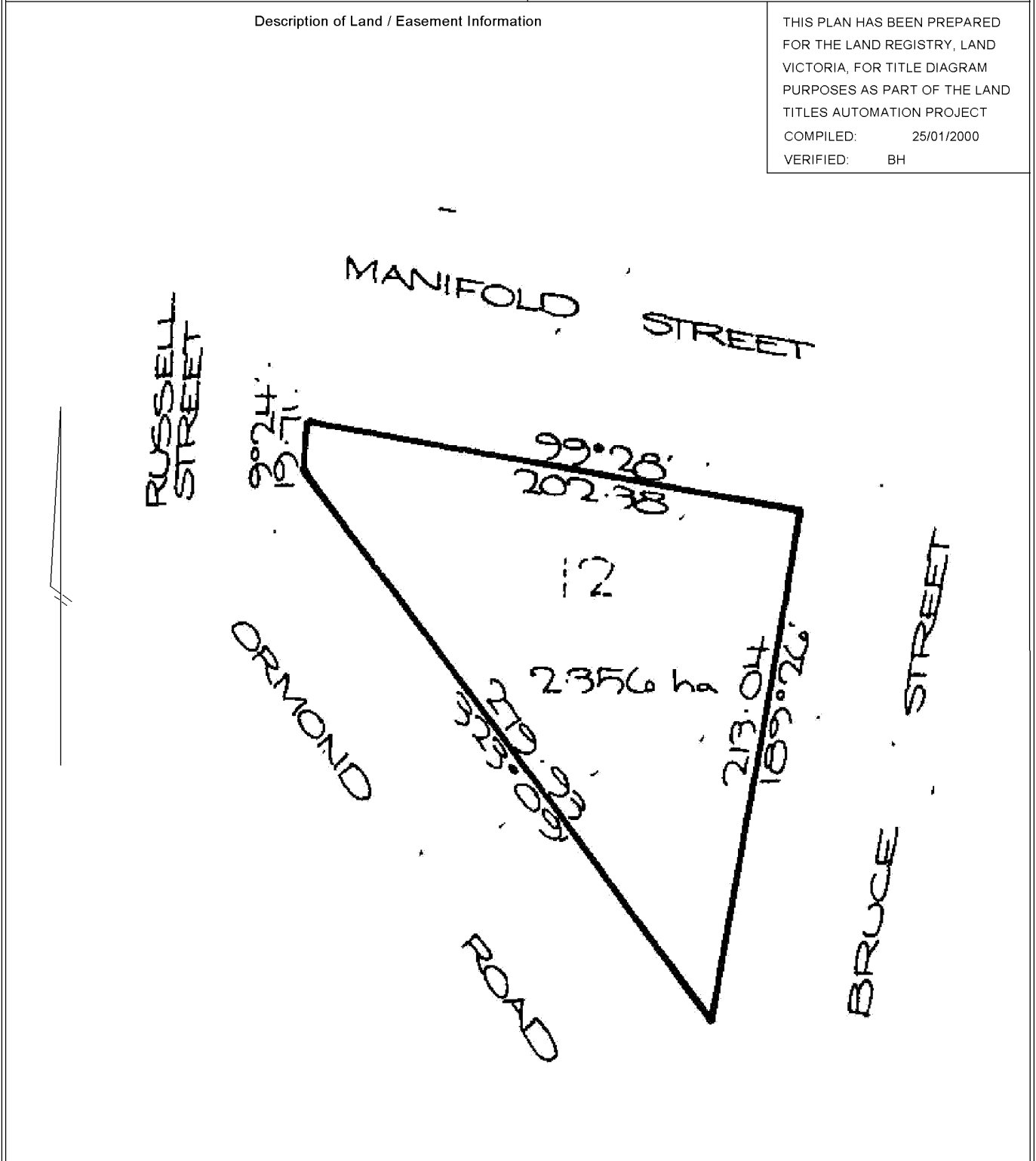


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TITLE PLAN	EDITION 1	TP 284414V
<p><b>Location of Land</b></p> <p>Parish: MURGHEBOLUC                  Township: SOUTH BANNOCKBURN                  Section: 22B                  Crown Allotment: 10                  Crown Portion:</p> <p><b>Last Plan Reference:</b>                  Derived From: VOL 9338 FOL 821                  Depth Limitation: NIL</p>		<p><b>Notations</b></p> <p>ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN</p>
<p><b>Description of Land / Easement Information</b></p> 		<p>THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT</p> <p>COMPILED: 21/01/2000                  VERIFIED: GB</p>
<p>LENGTHS ARE IN METRES</p>	<p>Metres = 0.3048 x Feet                  Metres = 0.201168 x Links</p>	<p>Sheet 1 of 1 sheets</p>

TITLE PLAN	EDITION 1	TP 287934B
------------	-----------	------------

<b>Location of Land</b> Parish: MURGHEBOLUC Township: SOUTH BANNOCKBURN Section: 22B Crown Allotment: 12 Crown Portion:  Last Plan Reference: Derived From: VOL 9523 FOL 914 Depth Limitation: NIL	<b>Notations</b>  ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN
---	---



LENGTHS ARE IN METRES	Metres = 0.3048 x Feet Metres = 0.201168 x Links	Sheet 1 of 1 sheets
-----------------------	---	---------------------

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The Victorian Government acknowledges the Traditional Owners of Victoria and pays respects to their ongoing connection to their Country, History and Culture. The Victorian Government extends this respect to their Elders, past, present and emerging.

REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 09338 FOLIO 821

Security no : 124102104226Y  
Produced 23/11/2022 04:06 PM

LAND DESCRIPTION

Crown Allotment 10 Section 22B Township of South Bannockburn Parish of Murgheboluc.  
PARENT TITLE Volume 08758 Folio 438  
Created by instrument H525919 21/05/1979

REGISTERED PROPRIETOR

Estate Fee Simple  
Joint Proprietors  
PHILIP JAMES KENNEDY  
PETRINA MARY KENNEDY both of 70 CLARENDON ST NEWTOWN  
R336954B 13/05/1991

ENCUMBRANCES, CAVEATS AND NOTICES

MORTGAGE T896067C 04/10/1995  
BENDIGO BANK LTD

MORTGAGE AB755211U 12/12/2002  
BENDIGO BANK LTD

For details of any other encumbrances see the plan or imaged folio set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE TP284414V FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

-----END OF REGISTER SEARCH STATEMENT-----

Additional information: (not part of the Register Search Statement)

Street Address: 25 ORMOND STREET BANNOCKBURN VIC 3331

ADMINISTRATIVE NOTICES

NIL

eCT Control 03500L BENDIGO AND ADELAIDE BANK LTD - SAFE CUSTODY  
Effective from 21/07/2017

DOCUMENT END

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 09358 FOLIO 645

Security no : 124102104293C  
Produced 23/11/2022 04:07 PM

LAND DESCRIPTION

Lot 1 on Title Plan 174543X (formerly known as part of Crown Allotment 9 Section 22B Township of South Bannockburn Parish of Murgheboluc).  
PARENT TITLE Volume 08758 Folio 438  
Created by instrument H593488 10/07/1979

REGISTERED PROPRIETOR

Estate Fee Simple  
Joint Proprietors  
IAN JOHN HINCHLIFFE  
BARBARA JOY HINCHLIFFE both of UNIT 6 NO 138 WEST FYANS STREET NEWTOWN  
H593488 10/07/1979

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE TP174543X FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

-----END OF REGISTER SEARCH STATEMENT-----

Additional information: (not part of the Register Search Statement)

Street Address: 30 ORMOND STREET BANNOCKBURN VIC 3331

DOCUMENT END

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The Victorian Government acknowledges the Traditional Owners of Victoria and pays respects to their ongoing connection to their Country, History and Culture. The Victorian Government extends this respect to their Elders, past, present and emerging.

REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 09381 FOLIO 088

Security no : 124102104149H  
Produced 23/11/2022 04:05 PM

LAND DESCRIPTION

Crown Allotment 11 Section 22B Township of South Bannockburn Parish of Murgheboluc.  
PARENT TITLE Volume 08758 Folio 438  
Created by instrument H888935 03/03/1980

REGISTERED PROPRIETOR

Estate Fee Simple  
Sole Proprietor  
INES ORSOLINA COLLINS of 20 ORMOND RD BANNOCKBURN 3331  
X591336W 11/07/2001

ENCUMBRANCES, CAVEATS AND NOTICES

For details of any other encumbrances see the plan or imaged folio set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE TP283839R FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

-----END OF REGISTER SEARCH STATEMENT-----

Additional information: (not part of the Register Search Statement)

Street Address: 20 ORMOND STREET BANNOCKBURN VIC 3331

DOCUMENT END

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 09523 FOLIO 914

Security no : 124102104066X  
Produced 23/11/2022 04:04 PM

LAND DESCRIPTION

Crown Allotment 12 Section 22B Township of South Bannockburn Parish of Murgheboluc.  
PARENT TITLE Volume 08758 Folio 438  
Created by instrument K499656 11/08/1983

REGISTERED PROPRIETOR

Estate Fee Simple  
TENANTS IN COMMON  
As to 1 of a total of 2 equal undivided shares  
Joint Proprietors  
RUSSELL THOMAS INGLIS  
JOAN MARION INGLIS both of 12 HARVEY RD, BANNOCKBURN  
AB568058S 18/09/2002  
As to 1 of a total of 2 equal undivided shares  
Joint Proprietors  
KELLY ANN INGLIS  
DANIEL JOHN THORP both of 12 HARVEY ROAD BANNOCKBURN VIC 3331  
AH031121G 11/02/2010

ENCUMBRANCES, CAVEATS AND NOTICES

MORTGAGE AK100304P 24/12/2012  
BENDIGO AND ADELAIDE BANK LTD

For details of any other encumbrances see the plan or imaged folio set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE TP287934B FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

-----END OF REGISTER SEARCH STATEMENT-----

Additional information: (not part of the Register Search Statement)

Street Address: 5 ORMOND STREET BANNOCKBURN VIC 3331

ADMINISTRATIVE NOTICES

NIL

eCT Control 03500L BENDIGO AND ADELAIDE BANK LTD - SAFE CUSTODY  
Effective from 21/07/2017

DOCUMENT END