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Groundwater and Soil Vapour Data Report - Beverley Assessment Area, South Australia

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REPORT

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1 Electronic Copy to SA EPA
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1.0 INTRODUCTION

The South Australian Environment Protection Authority (SA EPA) engaged Golder Associates Pty Ltd (Golder) to conduct a groundwater and soil vapour investigation at targeted locations within a defined Assessment Area located in a portion of Beverley and Woodville South. The Assessment Area is centred around a former manufacturing facility on Pope Street, Beverley and contains numerous industrial and residential properties. The location of the Assessment Area is provided in Figure 1.

The primary objective of the investigation was to record concentrations of chemicals of interest (COIs) within soil, groundwater, soil vapour, and ambient air at targeted locations within the Assessment Area. COIs for this investigation include volatile organic compounds (VOCs), with particular focus on the chlorinated hydrocarbons perchloroethylene (PCE), trichloroethylene (TCE), cis- and trans-dichloroethylene (DCE) , vinyl chloride, and chloroform. This data will inform a subsequent assessment of the potential for vapour intrusion and associated human health risk to residents within the Assessment Area.

2.0 SCOPE OF WORKS

The investigation was undertaken in general accordance with the proposed work outlined in Golder's proposal *Beverley & Woodville South Groundwater and Soil vapour Assessment* (ref. P1418522-001-P-Rev0), dated 28 January 2015. The scope of works included the following:

- review of previous environmental reports for the Assessment Area provided by SA EPA
- preparation of a Health and Safety Environmental Plan (HaSEP) for the investigation activities
- application for the necessary permits to drill on council land
- site inspection and clearance of belowground services at nominated borehole locations
- installation of seven groundwater monitoring wells, 24 soil vapour probes and six soil vapour pins, and two outdoor ambient air samplers (the location of these installations is provided on Figure 2)
- collection of soil samples from the borehole profile during monitoring well and soil vapour probe drilling
- development of newly-installed monitoring wells (MW01-MW07) and subsequent gauging and sampling of groundwater at these locations as well as at two pre-existing monitoring wells within the Assessment Area (XMW02 and XMW03)
- sampling of soil vapour at the newly installed soil vapour probes and soil vapour pins (30 samples total)
- collection of two outdoor ambient air samples
- hydraulic conductivity testing of the newly installed and existing wells (nine locations total)
- laboratory analysis of selected soil, groundwater, soil vapour and outdoor ambient air samples
- geotechnical analysis of 21 undisturbed soil samples for bulk density and particle density and 101 samples for moisture content
- surveying the locations of the soil vapour probes and pins, and the locations and elevations of the new and existing groundwater monitoring wells
- preparation of a factual groundwater and soil vapour data report (this report).

3.0 PREVIOUS INVESTIGATIONS

The SA EPA had previously identified potential groundwater contamination within a zone incorporating approximately 3 000 properties within Beverley, Woodville South, Woodville West, Findon and Allenby Gardens. In conjunction with South Australia Health and the Department of Environment, Water, and Natural Resources, in 2008 the EPA provided advice to residents that groundwater should not be extracted in this zone.

Further review of previous investigation reports held for the Assessment Area identified concentrations of chlorinated hydrocarbons in groundwater beneath both residential dwellings and industrial properties which warranted further assessment to address potential risks to human health through vapour intrusion. These previous investigation reports have been utilised by SA EPA to assist in developing a targeted investigation scope for the current investigation.

4.0 INVESTIGATION METHODOLOGY

4.1 Soil investigation and monitoring well installation

A limited soil investigation was completed in conjunction with the groundwater well and soil vapour probe installation program. The soil investigation methodology is summarised in Table 1. Locations of the soil bores are presented in Figure 2 and the soil bore and well/probe construction logs are presented in Appendix A.

Table 1: Field activities – drilling and groundwater well installation

Activity	Details
Date of field works	13 to 22 April 2015
Subsurface clearance	Drilling locations were cleared by a qualified service locator and hand auger to 1.2 m below ground level (bgl) prior to drilling.
Drilling	Boreholes were advanced using push tubes to a depth of 10.0 m bgl and enlarged via solid stem auger prior to monitoring well installation.
Soil sampling and screening	Collected soil samples were screened in the field using a photoionization detector (PID) to detect the potential presence of VOCs.
Soil laboratory analyses	Based on the data provided by the PID screening and field indications of potential impact, seven soil samples were collected and submitted to Envirolab Group (Envirolab),a National Association of Testing Authority (NATA) certified laboratory, for analysis of VOCs and an SA EPA waste characterisation suite. Various soil samples from each assessment location were submitted to Golder's in-house geotechnical laboratory for analyses including moisture content, bulk density, dry density, and the average apparent particle density of the fraction less than 2.36 mm in diameter.
Decontamination procedure	The drill rig push tubes were decontaminated between samples with Decon 90 solution and rinsed with potable water. Augers were also decontaminated prior to use at each borehole.
Sample preservation and handling	Soil samples collected for potential chemical analyses were placed in soil jars prepared and supplied by the laboratory and placed on ice, in coolers whilst on-site and in transit to the laboratory, under chain of custody (CoC) procedures. Soil samples collected for potential geotechnical analysis were collected in polyvinyl chloride push tube sleeves, sealed to prevent moisture loss, and transported to the laboratory under CoC procedures.
Disposal of soil cuttings	Soil cuttings were temporarily stored on-site in 205 Litre (L) drums. At the time of draft report preparation, these drums are pending disposal by a licensed waste disposal subcontractor at a licensed landfill.

Activity	Details
Groundwater monitoring well construction	Groundwater monitoring wells were constructed with 50 millimetre (mm) Class 18 unplasticised polyvinyl chloride (uPVC) threaded screen and casing. Well caps and plugs were fitted to the top and bottom of the well, respectively. Screened sections were backfilled with a sandfilter pack to approximately 0.5m above the screen and a 0.5m bentonite seal placed above the filter pack. A bentonite/cement grout was then used to fill the remainder of the well annulus up to surface level. A flush-mounted steel gatic cover was installed above each well. Groundwater well installation permits are presented in Appendix B.

4.2 Groundwater investigation

Details of groundwater investigation methodology are summarised in Table 2 below**.** Locations of the monitoring wells are presented on Figure 2.

Table 2: Field activities – groundwater sampling

Activity	Details
Date of field works	30 April and 1 May 2015 (groundwater sampling); 11 May 2015 (surveying)
Groundwater monitoring well development	Newly installed Monitoring wells were developed through the removal of a minimum of three well volumes or purged until dry, to improve interconnectivity of the monitoring well and aquifer and remove fines from the surrounding filter pack.
Well survey	Newly installed groundwater monitoring wells were surveyed for coordinates in Map Grid Australia (MGA) and elevation in metres Australian Height Datum (m AHD). Survey data are presented in Appendix C.
Well gauging	Standing water levels (SWLs) were measured from the top of casing (TOC) prior to purging and sampling using an interface probe. The presence or absence of non-aqueous phase liquids within the monitoring wells was also investigated at this time using an interface probe.
Groundwater purging	Low-flow sampling using a peristaltic pump was utilised to minimise groundwater purging and the potential loss of volatile COIs. Field parameters and visual/olfactory observations were recorded during purging, and physio-chemical parameters including pH, electrical conductivity (EC), redox potential, dissolved oxygen (DO) and temperature measured ex-situ using a water quality meter. Purging of the wells continued until field parameters had stabilised within 10% over three consecutive readings.
Groundwater sampling	Groundwater samples were collected from newly installed monitoring wells MW01-MW07 and existing monitoring wells XMW02 and XMW03 using a peristaltic pump and dedicated tubing. Groundwater sampling occurred approximately one week following the development of newly-installed monitoring wells. Samples were analysed for ultra-trace chlorinated hydrocarbons, major cations and anions, total dissolved solids and natural attenuation parameters.
Decontamination procedure	Decontamination was not required for most sampling equipment as it was dedicated to each individual well and not reused. The interface probe and water quality meter were washed in Decon 90 solution and rinsed with potable water and de-ionised water between measurements.
Hydraulic conductivity testing	Slug tests (falling and rising head) were carried out in newly installed and existing monitoring wells using an electronic data logger and a 1.1 L PVC slug.
Sample preservation and handling	Groundwater samples were placed in containers prepared and supplied by the laboratory. Groundwater samples collected for ferrous iron, ferric iron, manganese and nitrate analysis were filtered on-site with 0.45 µm stericups and stored in the laboratory-supplied bottles. Samples were stored on ice in coolers whilst on-site. The samples were then refrigerated (with the exception of nitrate samples that were frozen) until being sent to the laboratory under CoC procedures.

Activity	Details
Disposal of waste water	Purged groundwater was temporarily stored on-site in 205 litre (L) drums. At the time of draft report preparation, these drums are pending disposal by a licensed waste disposal subcontractor.

Primary groundwater samples selected for chemical analyses were submitted to Envirolab. Secondary quality control samples, including one field duplicate, two rinsates, and three trip blanks, were also submitted for laboratory analysis by Envirolab. One field triplicate was also collected and submitted to Australian Laboratory Services (ALS), a NATA-accredited laboratory, for interlab quality control purposes.

Interpretation of the hydraulic testing (slug tests) was undertaken with AQTESOLV software, using the KGS Model (1994) with Skin for the analysis on most of the wells. Wells MW01, MW03, MW04 and XMW03 were not considered as part of the interpretation. In these wells, the data indicate that there was interference from the unsaturated portion of the filter pack above the screen. This interference, in conjunction with possible splashing associated with the removal of the slug, produced data that give hydraulic conductivity values that were more likely to be representative of the filter pack. As such, hydraulic conductivity values for the site were based on data obtained from monitoring wells MW02, MW05, MW06, MW07, and XMW02.

4.3 Soil vapour investigation

The soil vapour investigation methodology is summarised in Table 3. Details of soil vapour probe/pin installations are summarised in Table 4**.** Locations of the vapour probes are presented on Figure 2.

Table 3: Field activities - soil vapour probe/pin installation and sampling

Activity	Details
Date of field works	13-28 April 2015; 11 May 2015 (surveying)
Subsurface clearance	Drilling locations were cleared by a qualified service locator and hand auger non-destructive digging (NDD) to 1.2 m bgl prior to drilling.
Drilling	Boreholes were advanced using push tubes to a depth of 1.0, 2.0, 4.0 or 6.5 m bgl
Decontamination procedure	The drill rig push tube was decontaminated between samples with Decon 90 solution and rinsed with potable water. .
Soil vapour probe installation	A stainless steel vapour probe implant was installed within a sand pack at the bottom of each borehole and connected to the surface with Teflon tubing, with the tubing capped at the surface. The sand pack at each borehole was 0.5m thick and sealed above with a bentonite plug and then backfilled with grout. A flush mounted steel gatic cover was installed above each vapour probe.
Soil vapour pin installation	Vapour Pin locations were drilled (using a hammer drill) to the base of the concrete slab adjacent to selected residential buildings. A stainless steel sub-slab vapour probe (Vapor Pin^{TM}) was installed at the surface and sealed with a Teflon cap. The sub-slab locations were sealed at the surface with a temporary plastic cover
Soil vapour sampling	The soil vapour samples were collected in laboratory-provided, passivated electropolished stainless steel canisters. The soil vapour investigation methodology is detailed in the NATA accredited soil vapour monitoring data report provided in Appendix D.
Sample handling and analysis	The canisters were sent back to the laboratory under CoC procedures for the sample to be analysed according to the USEPA Method TO-15. All soil vapour samples were submitted to Eurofins Air Toxics Ltd (Eurofins). Quality control measures implemented during the program include replicate sampling, method blanks, analytical recoveries, leakage monitoring and sampling media certification.

Table 4: Soil vapour probe/pin installation details

Implant ID	Installation Depth (m bgl)	Sand Pack Interval (m bgl)	Surface Cover
SV01	4.0 (target depth)**	4.0-3.5	Brick Pavers. Adjacent to MW01.
SV02-S	2.0 (target depth)**	2.0-1.5	Brick Pavers. Adjacent to MW02.
SV02-M	4.0 (target depth)**	4.0-3.5	Brick Pavers. Adjacent to MW02.
SV02-D	6.5 (target depth)**	6.5-6.0	Brick Pavers, Adjacent to MW02.
SV03-S	2.0 (target depth)**	2.0-1.5	Brick Pavers. Adjacent to MW03.
SV03-M	4.0 (target depth)**	4.0-3.5	Brick Pavers. Adjacent to MW03.
SV03-D	6.5 (target depth)**	6.5-6.0	Brick Pavers. Adjacent to MW03.
SV04	4.0 (target depth)**	4.0-3.5	Soil. Adjacent to MW04.
SV05	4.0 (target depth)**	4.0-3.5	Asphalt. Adjacent to MW05.
SV06-S	2.0 (target depth)**	2.0-1.5	Soil. Adjacent to MW06
SV06-M	4.0 (target depth)**	4.0-3.5	Soil. Adjacent to MW06
SV06-D	6.5 (target depth)**	6.5-6.0	Soil. Adjacent to MW06
SV07-S	2.0 (target depth)**	2.0-1.5	Asphalt. Adjacent to MW07
SV07-M	4.0 (target depth)**	4.0-3.5	Asphalt. Adjacent to MW07
SV07-D	6.5 (target depth)**	6.5-6.0	Asphalt Adjacent to MW07
SV08-P1	Subslab*	-	Concrete. Adjacent to front verandah of 22 Williams Street.
SV08-P2	Subslab*	-	Concrete. Beneath rear courtyard of 22 William Street.
SV08-S	1.0 (target depth)**	1.0-0.5	Concrete. Beneath rear courtyard of 22 William Street.
SV08-M	2.0 (target depth)**	2.0-1.5	Concrete. Beneath rear courtyard of 22 William Street.
SV08-D	4.0 (target depth)**	4.0-3.5	Concrete. Beneath rear courtyard of 22 William Street.
SV09-P1	Subslab*	-	Concrete. Beneath front verandah of 34 William Street.
SV09-P2	Subslab*	-	Asphalt. Beneath rear carport of 34 William Street.
SV09-S	1.0 (target depth)**	1.0-0.5	Asphalt. Beneath rear carport of 34 William Street.
SV09-M	2.0 (target depth)**	2.0-1.5	Asphalt. Beneath rear carport of 34 William Street.
SV09-D	4.0 (target depth)**	4.0-3.5	Asphalt. Beneath rear carport of 34 William Street.
SV10-P1	Subslab*	-	Concrete. Beneath front verandah of 36 William Street.
SV10-P2	Subslab*	-	Concrete. Beneath rear garage of 36 William Street.
SV10-S	1.0 (target depth)**	1.0-0.5	Concrete. Adjacent to rear garage of 36 William Street.
SV10-M	2.0 (target depth)**	2.0-1.5	Concrete. Adjacent to rear garage of 36 William Street.

SV10-D	4.0 (target depth)**	4.0-3.5	Concrete. Adjacent to rear garage of 36 William Street.

*Implant installed as Vapour Pin™, embedded within concrete slab (to measure soil vapour directly below slab).
**Implant has 150 mm long screen – installation depth is base of screen level.

4.4 Outdoor ambient air investigation

Details of outdoor ambient air sampling methodology are summarised in Table 5. Locations of the outdoor air sampling locations are presented on Figure 2.

Table 5: Field activities - outdoor ambient air sampling

Activity	Details
Date of field works	24 April -1 May 2015
Outdoor air sampling	One outdoor air sample was collected on Lot 26 William Street within the Assessment Area and one sample in the area to the south-southwest of the Assessment Area (this location is upwind of the predominant wind direction based on Bureau of Meteorology records). Sampling was conducted using laboratory-supplied Radiello adsorbent cartridges designed to be analysed by thermal absorption. Sampling was conducted over a one-week period which spanned the dates of soil vapour sampling.
Sample handling and analysis	The Radiello cartridges were sent back to the laboratory under CoC procedures for the sample to be analysed according to the USEPA Method TO-17. Outdoor air samples were submitted to SGS Leeder Consulting (SGS), a NATA-accredited analytical laboratory. Quality control measures implemented during the program include duplicate sampling and collection of a trip blank.

5.0 SUMMARY OF INVESTIGATION DATA

5.1 Subsurface conditions

5.1.1 Soil

Sub-surface conditions observed with the Assessment Area generally comprised gravely or clayey sand and sandy clay fill underlying the sealed ground surface overlying natural soils. Fill typically extended to depths of between 0.2 m bgl and 0.5 m bgl, with the exception of Assessment Location 1 (i.e. the location of MW01) where fill was observed to a depth of 2.3 m bgl.

Fill was generally underlain by natural material generally comprising clay, sandy clay and clayey sand. Thin layers of sand, between 0.2 and 0.3 m thick, were observed at depths of 4.2 and 4.5 m bgl at Assessment Locations 1 and 5, respectively, and at depths of 7.5 and 7.4 m bgl at Assessment Locations 3 and 4, respectively.

Borehole logs illustrating the geology encountered during drilling, together with the PID screening data, are presented in Appendix A.

One-hundred and one soil samples were collected from boreholes across the Assessment Area and submitted for analysis of moisture content. The data from this analysis are summarised by depth in Table 6. Full tabulated data from the geotechnical analyses are presented in Table 12. The soil moisture analysis records are provided in Appendix E.

Table 6: Summary of soil moisture content analysis

Sample depth (m bgl)	Average moisture content of soil samples (%)	Minimum moisture content of soil samples (%)	Maximum moisture content of soil samples (%)
0 – 1	13.7	8.4	19.4
1 – 2	18.5	11.5	35.1

Sample depth (m bgl)	Average moisture content of soil samples (%)	Minimum moisture content of soil samples (%)	Maximum moisture content of soil samples (%)
2 – 3	19.0	11.8	31.8
3 – 4	18.8	9.3	27.9
4 – 5	16.3	10.1	20.7
5 – 6	23.5	13.7	31.5
6 – 7	22.9	16.7	34.6

Twenty-one soil samples were collected from boreholes across the Assessment Area and submitted for geotechnical analysis of bulk density, dry density, and the average apparent particle density of the fraction less than 2.36 mm in diameter (APD 2.36). The data from these analyses are summarised by soil type in Table 7 and by depth in Table 8. The geotechnical analysis records are provided in Appendix E.

Table 7: Summary of geotechnical analyses by soil type

Soil type	Bulk density (tonnes/m^3)	Dry density (tonnes/m^3)	APD 2.36 (g/cm^3)
Clayey sand	1.85	1.69	2.61
Sandy clay	1.87	1.55	2.74
Silty clay	1.61	1.39	2.73
Clay	1.97	1.56	2.77

Table 8: Summary of geotechnical analyses by depth

Sample depth (m bgl)	Bulk density (tonnes/m^3)	Dry density (tonnes/m^3)	APD 2.36 (g/cm^3)
1 – 2	1.72	1.48	2.72
2 – 3	1.89	1.50	2.73
3 – 4	1.93	1.60	2.74
4 – 5	1.91	1.66	2.68
5 – 6	1.94	1.61	2.77
6 – 7	1.95	1.53	2.76

5.1.2 Groundwater

Site-specific hydrogeological details are summarised in Table 9. Figure 3 presents inferred groundwater contours for the site.

Table 9: Site-specific hydrogeology

Facet	Details
Depth to groundwater	Standing water levels in groundwater monitoring wells on 30 April 2015 ranged between 7.20 m below top of casing (bTOC) and 8.45 m bTOC.
Inferred groundwater flow direction	Based on recorded groundwater elevations, the inferred direction of groundwater flow is to the west
Hydraulic conductivity	Hydraulic conductivity ranged from 3 x 10^{-6} m/sec to 4 x 10^{-5} m/sec, with an average hydraulic conductivity of 3 x 10^{-5} m/sec. The hydraulic conductivity analyses are presented in Appendix F.
Groundwater odour	Hydrocarbon-like odours were observed in groundwater samples collected from each of the newly-installed wells and existing well XW02.
Groundwater electrical	EC ranged from 822 to 4 081 microsiemens per centimetre (µS/cm) across the site,

Facet	Details
conductivity (EC)	which is indicative of fresh to slightly brackish water
Groundwater pH	pH ranged from 6.66 to 7.02 pH units across the site, indicating groundwater was relatively neutral.
Groundwater redox potential (Eh)	Eh ranged from 17.2 to 92.8 millivolts (mV) across the site, indicating moderately reducing groundwater conditions.
Groundwater dissolved oxygen (DO)	DO ranged between 0.13 and 4.36 ppm across the site, indicating poorly to slightly oxygenated groundwater. DO was measured ex situ and therefore may not be fully representative of aquifer conditions.

5.2 Soil Analytical Data

Concentration of the COIs investigated were reported below the laboratory limit of reporting (LOR) for the samples analysed. A full tabulation of soil concentrations is presented in Table 13 and the laboratory report is provided in Appendix G.

5.3 Groundwater Analytical Data

Groundwater samples were collected from nine locations across the Assessment Area, including seven newly installed groundwater monitoring wells (MW01 - MW07) and two existing monitoring wells (XMW02 and XMW03).

A full tabulation of groundwater concentrations for VOCs, natural attenuation parameters, and major ions is presented in Table 14. The laboratory report is provided in Appendix F. Notable concentrations of COIs are discussed in the following sections and presented in Figure 4.

PCE

Detectable concentrations of PCE were reported in monitoring wells MW05 (1 µg/L) and XMW02 (0.4 µg/L). Concentrations of PCE were reported below the laboratory LOR (<0.1 µg/L) in other wells sampled.

TCE

Detectable concentrations of TCE were reported in the nine wells sampled, with concentrations ranging from 29 µg/L (MW06) to 2 700 µg/L (MW03).

The lowest concentrations, ranging from 29 to 460 µg/L were reported in monitoring wells MW01, MW06, MW07, and XMW03, located on the periphery of the Assessment Area, and MW04, located in the central portion of the Assessment Area. The highest concentrations of TCE, ranging from 700 to 2 700 µg/L, were reported in monitoring wells MW02, MW03, MW05 and XMW02, located in two areas, one within the eastern portion of the Assessment Area and the other in the central western portion of the assessment area.

DCE

Concentrations of cis-1,2-DCE were reported in all wells sampled with the exception of XMW03, with concentrations ranging from 0.2 µg/L (MW01 and MW06) to 49.8 µg/L (MW.04).

Detectable concentrations of trans-1,2-DCE were reported in monitoring wells MW04 (1.0 µg/L) and MW05 (0.4 µg/L). Concentrations of trans-1,2-DCE were reported below the laboratory LOR (<0.3 or <0.4 µg/L) in other wells sampled.

Vinyl chloride

Concentrations of vinyl chloride were reported below the laboratory LOR (<0.3 or <0.4 µg/L) for the samples analysed.

Chloroform

Detectable concentrations of chloroform were reported in monitoring wells MW01 to MW05, with concentrations of 0.9 µg/L reported in MW05, 1.0 µg/L reported in MW01 to MW03, and 2.3 µg/L in MW04. . Concentrations of chloroform were reported below the laboratory LOR (<0.1 µg/L) in other wells sampled.

5.4 Soil Vapour Analytical Data

Soil vapour samples were collected from 30 locations across the Assessment Area, including 24 soil vapour bores and six soil vapour pins. Notable concentrations of COIs are discussed in the following sections.

A full tabulation of soil vapour concentrations is presented in Table 15 and the laboratory report is provided in Appendix F. Figure 5 presents reported concentrations of COIs in soil vapour.

PCE

Concentrations of PCE marginally above the LOR were reported in soil vapour samples SV04-M (0.065 mg/m^3), SV06-S (0.13 mg/m^3), and SV06-M (0.016 mg/m^3). Concentrations of PCE were reported below the laboratory LOR (<0.04 to <0.2 mg/m^3) in other soil vapour samples.

TCE

Concentrations of TCE were reported above the LOR in most samples analysed and in at least one sample at each Assessment Location. Concentrations ranged from 0.031 mg/m^3 (SV08-P2) to 97 mg/m^3 (SV02-D).

In nested soil vapour bore locations the TCE concentrations reported generally increased with depth. The highest TCE concentrations in soil vapour (40 to 97 mg/ m^3) were reported at locations SV01, SV02 and SV03, in the northeast part of the Assessment Area.

DCE

Concentrations of cis-1,2-DCE were reported above the LOR at SV04-M only (0.19 mg/m^3). Concentrations of cis-1,2-DCE were reported below the laboratory LOR (<0.04 to <0.2 mg/m^3) in other soil vapour samples.

Concentrations of trans-1,2-DCE were reported below the laboratory LOR for the samples analysed.

Vinyl chloride

Concentrations of VC were reported above the laboratory LOR at SV01-M only (0.5 mg/m^3). Concentrations of vinyl chloride were reported below the laboratory LOR (<0.04 to <0.2 mg/m^3) in other soil vapour samples.

Chloroform

Concentrations of chloroform were reported above the LOR in at least one sample from each Assessment Location, with the exception of Assessment Locations 3 and 7. Concentrations ranged from 0.014 mg/m^3 (SV08-S) to 0.35 mg/m^3 (SV02-M). No clear pattern of chloroform concentrations was observed within or between Assessment Locations.

5.5 Outdoor air analytical data

Ambient outdoor air samples were collected from two locations, one within the Assessment Area (RD1) and one up-wind of the Assessment Area (RD2), based on the predominant wind direction recorded by the Bureau of Meteorology. It is noted that third-party construction activities were undertaken in the vicinity of RD2 subsequent to commencing sampling at this location.

Notable concentrations of COIs are discussed in the following sections. A full tabulation of outdoor air concentrations is presented in Table 16 and the laboratory report is provided in Appendix F.

PCE

Detectable concentrations of PCE were reported in both samples RD1 (0.080 µg/m^3), and RD2 (0.11 µg/m^3).

TCE

Detectable concentrations of TCE were reported in both samples RD1 (0.19 µg/m^3), and RD2 (0.10 µg/m^3).

DCE

Concentrations of DCE were reported below the laboratory LOR (<0.018 to <0.026 µg/m^3) in outdoor ambient air samples.

Vinyl chloride

Concentrations of vinyl chloride were reported below the laboratory LOR (<0.018 to <0.026 µg/m^3) in outdoor ambient air samples.

Chloroform

Detectable concentrations of chloroform reported in both samples RD1 (0.036 µg/m^3), and RD2 (0.061 µg/m^3).

6.0 QUALITY ASSURANCE AND QUALITY CONTROL

6.1 Quality assurance

Quality assurance procedures were undertaken by Golder personnel as part of the investigation. These procedures were based on the requirements of AS 4482.1 (2005), the ASC NEPM and Golder's standard procedures. The procedures adopted included the following:

- using a new pair of nitrile gloves and new laboratory supplied jars and bottles for soil and groundwater samples, respectively
- tracking of sample movement using CoC documentation
- storing soil and groundwater samples upon collection and during transport in a chilled cooler
- collecting and analysing field duplicate samples to assess analytical precision
- collecting and analysing blank samples to assess potential cross contamination
- assessing potential leakage of vapour sampling trains by using a helium tracer
- analysing samples at the laboratories within appropriate sample holding times
- using NATA-accredited laboratories for analysis
- performing laboratory control tests (completed by the laboratories).

6.2 Quality control

Groundwater

Quality control (QC) samples collected during the groundwater monitoring event conducted across the Assessment Area included the following:

- one intra-laboratory duplicate sample QAQC1, duplicate of MW04
- one inter-laboratory duplicate sample QAQC2, duplicate of MW04
- two rinsate blanks (R1 and R2).
- three trip blanks (TB1, TB2 and TB3)

The groundwater QC samples data are presented in Tables 17 and 18.

AS4482.1 (2005) and the NEPM recommend that 10% of primary samples are represented by field duplicate samples. A total of 9 primary water samples, one intra-laboratory duplicate and one inter-laboratory triplicate were analysed. The number of groundwater field duplicate samples equates to a duplicate rate of 22% for the works undertaken, which meets the specified requirements.

To assess the reproducibility of laboratory test data, the relative percent difference (RPD) was calculated for the field duplicate samples analysed. The RPD was calculated using the following formula:

$$RPD\ (\%) = \frac{(\text{Primary data} - \text{Duplicate data}) \times 100\%}{(\text{Primary data} + \text{Duplicate data})/2}$$

The SA EPA Guidelines for Regulatory Monitoring and Testing: Groundwater Sampling (2007) specifies a target RPD of 20% for groundwater duplicate pairs. RPD calculations have been tabulated and are presented in Table 17.

Calculated RPD values for the groundwater duplicate pairs were generally below the recommended comparison range of 20%, or within five times the LOR, for the compounds tested, with the exception of chloroform, trans-1,2 DCE, and bromide. These elevated RPDs indicate a level of uncertainty in the reported concentrations of DCE and bromide in groundwater. It was noted that the primary exceedances involve the inter-laboratory duplicates and may be due to differences in analytical methods used by the primary laboratory (Envirolab) and the secondary laboratory (ALS). Additionally, the concentrations reported for the duplicate pairs were within the same order of magnitude and are unlikely to lead to a significant difference in the interpretation of data. Golder has adopted a conservative approach and the highest groundwater concentrations reported for each COI from the primary and duplicate samples have been adopted. The elevated RPDs for DCE and bromide are considered unlikely to affect the overall outcomes of this investigation.

Additional field QC samples collected include rinsate and trip blanks. The data from these analyses are presented in Table 18. COIs were below the LOR for all rinsate and trip blanks analysed.

In addition to field QC samples, the laboratory prepared and analysed the following QC samples with each laboratory batch:

- laboratory duplicates (LD)
- laboratory blanks
- surrogate spikes
- matrix spikes (MS)
- laboratory control samples (LCS).

The data from the laboratory QC analyses are presented in the laboratory analysis reports in Appendix G. No relevant deviations were identified by the laboratory QC process.

Soil Vapour

QC measures implemented during the soil vapour sampling program include replicate sampling, method blanks, analytical recoveries, leakage monitoring and sampling media certification. The quality control measures are detailed in the NATA Soil Vapour Monitoring Report presented in Appendix D.

Calculated RPD values for soil vapour were below the recommended comparison range of 100% or within five times the LOR for the samples tested, indicating a high degree of confidence in the sampling data. RPD calculations have been tabulated and are presented in Table 19. Data from trip blank analyses are presented in Table 20.

Outdoor Air

QC measures implemented during the soil vapour sampling program included the following;

- one duplicate sample RD-DUP sampled simultaneously with primary sample RD-1
- one trip blank RD-Blank.

Calculated RPD values for ambient air were below the recommended comparison range of 100% or within five times the LOR for the samples tested, indicating a high degree of confidence in the sampling data. RPD calculations have been tabulated and are presented in Table 21.

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8.0 REFERENCES

Australian Standard AS4482.1 (1997). *Australian Standard Guide to the Sampling and Investigation of Potentially Contaminated Soil - Part 1: Non-volatile and semi-volatile compounds*.

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Report Signature Page

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TABLES

Groundwater and Soil Vapour Data Report -
Beverley Assessment Area, South Australia

Project No: 1418522

Table 10: Well Gauging Data

Golder Staff: Jennifer Catherine

Well ID	Date	DTP (mbtoc)	DTW (mbtoc)	DTB (mbtoc)	TOCSurvey (mAHD)	SWL (mAHD)	LNAPL Thickness	Comment (colour/ odour)
MW01	30/4/2015	-	8.445	9.94	11.011	2.566	-	Hydrocarbon-like odour
MW02	30/4/2015	-	7.947	9.97	10.458	2.511	-	Hydrocarbon-like odour
MW03	30/4/2015	-	7.798	9.86	10.293	2.495	-	Solvent-like odour
MW04	30/4/2015	-	7.495	9.82	9.968	2.473	-	Solvent-like odour
MW05	30/4/2015	-	7.195	9.96	9.642	2.447	-	Solvent-like odour
MW06	30/4/2015	-	7.497	10.05	9.919	2.422	-	Solvent-like odour
MW07	30/4/2015	-	7.580	9.99	9.951	2.371	-	Solvent-like odour
XMW02	30/4/2015	-	7.554	9.60	10.050	2.496	-	Solvent-like odour
XMW03	1/5/2015	-	7.600	9.35	10.106	2.506	-	-

Notes:

DTP = Dept to Product

DTW = Depth to Water

DTB = Dept to Bottom

SWL = Standing Water Level

mbtoc = metres below top of casing.

LNAPL = Light Non-Aqueous Phase Liquid

Prepared by	JC	Checked by	MP
Date	15/05/2015	Date	20/05/2015

Groundwater and Soil Vapour Data Report -
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Table 11: Groundwater Field Parameter Data

Location	Date Purged	Total Volume Removed (L)	DO (ppm)	EC (mS/cm)	pH	Redox (mV)	Temp(^{o} C)	Notes
MW01	30/04/2015	6	3.18	2644	6.66	76.6	21.8	Clear, slight solvent-like odour
MW02	30/04/2015	7.5	1.99	2368	6.77	62.2	21.8	Clear, slight solvent-like odour
MW03	30/04/2015	6	1.36	2596	6.76	69.7	21.2	Clear, slight solvent-like odour
MW04	1/05/2015	9	0.13	2959	6.79	17.2	21.1	Clear, slight solvent-like odour
MW05	1/05/2015	6	0.30	1767	6.79	60.8	21.3	Clear, slight earthy or solvent-like odour
MW06	1/05/2015	6	3.88	822	6.70	92.8	21.6	Clear, slight solvent-like odour
MW07	1/05/2015	7.5	4.36	2118	6.70	88.9	21.9	Clear, slight solvent-like odour
XMW02	30/04/2015	6	1.03	4981	6.67	53.3	20.9	Milky, slight solvent-like odour
XMW03	1/05/2015	4.5	1.64	2655	7.02	81.0	20.7	Slightly milky

Notes:
DO = Dissolved Oxygen
EC = Electrical Conductivity

Prepared by	JC	Checked By	MP
Date	9/10/2014	Date	10/10/2014

Groundwater and Soil Vapour Data Report - Beverley Assessment Area, South Australia

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Table 12: Tabulated Soil Geotechnical Data

Sample Identification	Sample Depth (m bgl)	Sample Date	Moisture Content	Bulk Density	Dry Density	The average apparent Particle Density of the fraction passing 2.36mm
			%	t/m^3	t/m^3	g/cm^3
MW01	0.3-0.5	18/05/2015	12.6	-	-	-
MW01	1.1-1.3	18/05/2015	11.7	2.02	1.8	2.65
MW01	1.3-1.5	18/05/2015	15.7	-	-	-
MW01	1.8-2.0	18/05/2015	35.1	-	-	-
MW01	2.5-2.7	18/05/2015	11.9	-	-	-
MW01	2.96-3.16	18/05/2015	21.2	1.95	1.61	2.72
MW01	3.5-3.7	18/05/2015	23.6	-	-	-
MW01	4.5-4.7	18/05/2015	16.2	-	-	-
MW01	5.5-5.7	18/05/2015	30.9	-	-	-
MW01	6.0-6.2	18/05/2015	30.4	1.92	1.47	2.75
MW01	6.3-6.5	18/05/2015	18.8	-	-	-
MW02	0.3-0.5	18/05/2015	17.4	-	-	-
MW02	1.3-1.5	18/05/2015	17.2	-	-	-
MW02	1.5-1.7	18/05/2015	18.2	1.73	1.46	2.73
MW02	1.8-2.0	18/05/2015	21.6	-	-	-
MW02	2.5-2.7	18/05/2015	19.1	-	-	-
MW02	3.5-3.7	18/05/2015	17.2	-	-	-
MW02	4.3-4.5	18/05/2015	9.3	1.85	1.69	2.61
MW02	4.5-4.7	18/05/2015	13.5	-	-	-
MW02	5.5-5.7	18/05/2015	13.7	-	-	-
MW02	5.9-6.1	18/05/2015	17.9	1.98	1.68	2.73
MW02	6.1-6.3	18/05/2015	17.7	-	-	-
MW03	0.3-0.5	18/05/2015	10.8	-	-	-
MW03	1.2-1.4	18/05/2015	23.5	1.76	1.43	2.73

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Table 12: Tabulated Soil Geotechnical Data

Sample Identification	Sample Depth (m bgl)	Sample Date	Moisture Content	Bulk Density	Dry Density	The average apparent Particle Density of the fraction passing 2.36mm
			%	t/m^3	t/m^3	g/cm^3
MW03	1.3-1.5	18/05/2015	20.8	-	-	-
MW03	1.8-2.0	18/05/2015	23.7	-	-	-
MW03	2.5-2.7	18/05/2015	19.5	-	-	-
MW03	2.9-3.1	18/05/2015	23.1	1.86	1.51	2.78
MW03	3.5-3.7	18/05/2015	20.6	-	-	-
MW03	4.5-4.7	18/05/2015	13.2	-	-	-
MW03	5.5-5.7	18/05/2015	29.6	-	-	-
MW03	5.86-6.01	18/05/2015	16.2	1.99	1.71	2.72
MW03	6.3-6.5	18/05/2015	20.1	-	-	-
MW04	0.3-0.5	18/05/2015	15.8	-	-	-
MW04	1.3-1.5	18/05/2015	17.4	-	-	-
MW04	1.53-1.67	18/05/2015	15.7	1.78	1.54	2.74
MW04	1.8-2.0	18/05/2015	18.9	-	-	-
MW04	2.5-2.7	18/05/2015	22.7	-	-	-
MW04	2.88-3.08	18/05/2015	24.8	1.83	1.47	2.77
MW04	3.5-3.7	18/05/2015	22.5	-	-	-
MW04	4.5-4.7	18/05/2015	20.7	-	-	-
MW04	5.5-5.7	18/05/2015	17.7	-	-	-
MW04	5.55-5.75	18/05/2015	17.7	1.85	1.57	2.81
MW04	6.3-6.5	18/05/2015	16.7	-	-	-
MW05	0.3-0.5	18/05/2015	14.1	-	-	-
MW05	1.3-1.5	18/05/2015	12.4	-	-	-
MW05	1.43-1.63	18/05/2015	12.7	1.44	1.28	2.74
MW05	1.8-2.0	18/05/2015	21.9	-	-	-
MW05	2.5-2.7	18/05/2015	11.8	-	-	-

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Table 12: Tabulated Soil Geotechnical Data

Sample Identification	Sample Depth (m bgl)	Sample Date	Moisture Content	Bulk Density	Dry Density	The average apparent Particle Density of the fraction passing 2.36mm
			%	t/m^3	t/m^3	g/cm^3
MW05	3.0-3.2	18/05/2015	16.3	1.95	1.68	2.68
MW05	3.5-3.7	18/05/2015	19.3	-	-	-
MW05	4.3-4.5	18/05/2015	19.7	1.96	1.63	2.74
MW05	4.5-4.7	18/05/2015	10.1	-	-	-
MW05	5.5-5.7	18/05/2015	31.5	-	-	-
MW05	6.3-6.5	18/05/2015	18.2	-	-	-
MW06	0.3-0.5	18/05/2015	19.4	-	-	-
MW06	1.3-1.5	18/05/2015	18.5	-	-	-
MW06	1.74-1.94	18/05/2015	28.8	1.95	1.52	2.69
MW06	1.8-2.0	18/05/2015	28.8	-	-	-
MW06	2.5-2.7	18/05/2015	31.8	-	-	-
MW06	3.5-3.7	18/05/2015	19.7	-	-	-
MW06	3.6-3.8	18/05/2015	19.7	1.99	1.66	2.73
MW06	4.5-4.7	18/05/2015	17.1	-	-	-
MW06	5.5-5.7	18/05/2015	26.4	-	-	-
MW06	6.12-6.32	18/05/2015	34.6	1.95	1.45	2.80
MW06	6.3-6.5	18/05/2015	24.7	-	-	-
MW07	0.3-0.5	18/05/2015	11.7	-	-	-
MW07	1.3-1.5	18/05/2015	14.6	-	-	-
MW07	1.8-2.0	18/05/2015	12.9	-	-	-
MW07	1.95-2.15	18/05/2015	15.6	1.61	1.39	2.73
MW07	2.5-2.7	18/05/2015	18.3	-	-	-
MW07	3.22-3.4	18/05/2015	23.4	1.88	1.52	2.78
MW07	3.5-3.7	18/05/2015	27.9	-	-	-
MW07	4.5-4.7	18/05/2015	19.9	-	-	-

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Table 12: Tabulated Soil Geotechnical Data

Sample Identification	Sample Depth (m bgl)	Sample Date	Moisture Content	Bulk Density	Dry Density	The average apparent Particle Density of the fraction passing 2.36mm
			%	t/m^3	t/m^3	g/cm^3
MW07	5.5-5.7	18/05/2015	23.4	-	-	-
MW07	5.8-6.0	18/05/2015	27.7	1.97	1.54	2.77
MW07	6.3-6.5	18/05/2015	29.6	-	-	-
SV08	0.5-0.6	18/05/2015	17.8	-	-	-
SV08	1.2-1.3	18/05/2015	18.7	-	-	-
SV08	1.5-1.6	18/05/2015	18.4	-	-	-
SV08	2.0-2.1	18/05/2015	17.5	-	-	-
SV08	2.5-2.6	18/05/2015	25.1	-	-	-
SV08	3.0-3.1	18/05/2015	9.3	-	-	-
SV08	3.5-3.6	18/05/2015	13.0	-	-	-
SV08	3.7-3.8	18/05/2015	18.5	-	-	-
SV09	0.5-0.6	18/05/2015	8.4	-	-	-
SV09	1.2-1.3	18/05/2015	11.5	-	-	-
SV09	1.5-1.6	18/05/2015	14.2	-	-	-
SV09	2.0-2.1	18/05/2015	16.8	-	-	-
SV09	2.5-2.6	18/05/2015	20.9	-	-	-
SV09	3.0-3.1	18/05/2015	17.1	-	-	-
SV09	3.5-3.6	18/05/2015	19.0	-	-	-
SV09	3.9-4.0	18/05/2015	19.9	-	-	-
SV10	0.5-0.6	18/05/2015	8.9	-	-	-
SV10	1.2-1.3	18/05/2015	13.4	-	-	-
SV10	1.5-1.6	18/05/2015	15.7	-	-	-
SV10	2.0-2.1	18/05/2015	14.8	-	-	-
SV10	2.5-2.6	18/05/2015	14.5	-	-	-
SV10	3.0-3.1	18/05/2015	13.9	-	-	-
SV10	3.5-3.6	18/05/2015	18.3	-	-	-
SV10	3.9-4.0	18/05/2015	21.2	-	-	-

Prepared by:	SM	Date:	20/05/2015
Checked by:	MP	Date:	20/05/2015

Groundwater and Soil Vapour Data Report -
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Table 13: Tabulated Soil Chemistry Data

		PCBs in Soil	Metals																SQP	TRH								TPH				
		Total +ve PCBs (1016-1260)	Arsenic	Barium	Beryllium	Cadmium	Chromium III + VI	Chromium (hexavalent)	Chromium (trivalent)	Cobalt	Copper	Lead	Manganese	Mercury	Molybdenum	Nickel	Silver	Zinc	Cyanide (total)	C6-C10 less BTEX (F1)	F2-NAPHTHALENE	Naphthalene (BTENXN)	C6-C10	C10-C16	C16-C34	C34-C40	+C10 - C40 (Sum of total)	C 6 - C 9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29-C36 Fraction	C10 - C36 Total
		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	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL		0.1	4	1	1	0.4	1	1	1	1	1	1	1	0.1	1	1	1	1	0.5	25	50	1	25	50	100	100	50	25	50	100	100	50
Field ID	**Location Code**	**Sample Date**	**Sample Code**	**Laboratory Report Number**																													
MW01-04	MW01	17/04/2015	6127-4	6127	-	<4	78	1	<0.4	37	<1	37	11	20	11	240	<0.1	<1	14	<1	31	<0.5	<25	<50	<1	<25	<50	<100	<100	NR	<25	<50	<100	<100	NR
MW02-03	MW02	16/04/2015	6103-3	6103	-	<4	78	<1	<0.4	38	<1	38	13	21	11	340	<0.1	<1	16	<1	34	<0.5	<25	<50	<1	<25	<50	<100	<100	NR	<25	<50	<100	<100	NR
MW03-05	MW03	15/04/2015	6103-15	6103	-	<4	53	<1	<0.4	34	<1	34	12	20	10	350	<0.1	<1	15	<1	32	<0.5	<25	<50	<1	<25	<50	<100	<100	NR	<25	<50	<100	<100	NR
MW04-05	MW04	14/04/2015	6103-28	6103	-	<4	100	1	<0.4	42	<1	42	15	29	12	420	<0.1	<1	22	<1	42	<0.5	<25	<50	<1	<25	<50	<100	<100	NR	<25	<50	<100	<100	NR
MW05-04	MW05	14/04/2015	6103-38	6103	-	<4	110	1	<0.4	48	<1	48	15	28	14	370	<0.1	<1	22	<1	49	<0.5	<25	<50	<1	<25	<50	<100	<100	NR	<25	<50	<100	<100	NR
MW06-04	MW06	20/04/2015	6127-14	6127	-	<4	110	1	<0.4	45	<1	45	15	25	13	470	<0.1	<1	20	<1	43	<0.5	<25	<50	<1	<25	<50	<100	<100	NR	<25	<50	<100	<100	NR
MW07-03	MW07	13/04/2015	6074-3	6074	<0.1	<4	65	<1	<0.4	23	<1	23	8	16	8	260	<0.1	<1	11	<1	25	<0.5	<25	<50	<1	<25	<50	<100	<100	NR	<25	<50	<100	<100	NR

Comments

A range isprovided for OCPs and VOCsas no analyte in these categories was above the EQL.

mg/kg - milligrams per kilogram

< - less than laboratory limit of reporting

Abbreviations:

EQL - Effective Quantitative Limit

TPH - Total Petroleum Hydrocarbons

TRH - Total Recoverable Hydrocarbons

PAH - Polycyclic Aromatic Hydrocarbons

NR - No Result above the Laboratory Reporting Limits

SQP - Sample Quality Parameters

OCP - Organochlorine Pesticides

PCB - Polychlorinated Biphenyls

MAH - Monocyclic Aromatic Hydrocarbons

Prepared by:	KB	Date:	20/05/2015
Checked by:	MP	Date:	20/05/2015

Groundwater and Soil Vapour Data Report -
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Table 13: Tabulated Soil Chemistry Data

					PCB								OCP	Phenols	PAH	MAH														VOC	Other			Solvents
					Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	PCB Total	OCP Range	Phenolics Total	PAH Total	1,2,4-trimethylbenzene	1,3,5-Trimethylbenzene	Isopropylbenzene	n-Butylbenzene	n-Propylbenzene	p-Isopropyltoluene	Benzene	sec-Butylbenzene	Ethylbenzene	Styrene	tert-Butylbenzene	Toluene	Xylene (o)	Xylenes (m & p)	Xylenes Total	VOC Range	Benzo(a)pyrene (TEQs)	Benzo(a)pyrene TEQ (half LOR)	Benzo(a)pyrene TEQ (LOR)	Cyclohexane
					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	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.2	0.05	0.5	0.5	0.5	0.5	0.5	0.5	0.2	0.5	0.5	0.5	0.5	0.5	0.5	1	1		0.5	0.5	0.5	1
Field ID	Location Code	Sample Date	Sample Code	Laboratory Report Number																															
MW01-04	MW01	17/04/2015	6127-4	6127	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1 - <0.2	NR	NR	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5 - <1	<0.5	<0.5	<0.5	<1
MW02-03	MW02	16/04/2015	6103-3	6103	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1 - <0.2	NR	NR	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5 - <1	<0.5	<0.5	<0.5	<1
MW03-05	MW03	15/04/2015	6103-15	6103	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1 - <0.2	NR	NR	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5 - <1	<0.5	<0.5	<0.5	<1
MW04-05	MW04	14/04/2015	6103-28	6103	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1 - <0.2	NR	NR	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5 - <1	<0.5	<0.5	<0.5	<1
MW05-04	MW05	14/04/2015	6103-38	6103	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1 - <0.2	NR	NR	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5 - <1	<0.5	<0.5	<0.5	<1
MW06-04	MW06	20/04/2015	6127-14	6127	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1 - <0.2	NR	NR	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5 - <1	<0.5	<0.5	<0.5	<1
MW07-03	MW07	13/04/2015	6074-3	6074	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1 - <0.2	NR	NR	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5 - <1	<0.5	<0.5	<0.5	<1

Comments

A range isprovided for OCPs and VOCsas no analyte in these categories was above the EQL.

mg/kg - milligrams per kilogram

< - less than laboratory limit of reporting

Abbreviations:

EQL - Effective Quantitative Limit

TPH - Total Petroleum Hydrocarbons

TRH - Total Recoverable Hydrocarbons

OCP - Organochlorine Pesticides

PCB - Polychlorinated Biphenyls

MAH - Monocyclic Aromatic Hydrocarbons

PAH - Polycyclic Aromatic Hydrocarbons

NR - No Result above the Laboratory Reporting Limits

SQP - Sample Quality Parameters

Prepared by:	KB	Date:	20/05/2015
Checked by:	MP	Date:	20/05/2015

Groundwater and Soil Vapour Data Report -
Beverley Assessment Area, South Australia

Project No: 1418522

Table 14: Tabulated Groundwater Chemistry Data

	Physico - Chemical				Metals				SQP		Major Anions & Cations							Nutrients	VOC										Gases	
	Total Dissolved Solids	Bicarbonate Alkalinity (as CaCO3)	Carbonate Alkalinity (as CaCO3)	Alkalinity (total)	Iron (Filtered)	Iron (ferric)	Iron (ferrous)	Manganese (Filtered)	Bromide	Hydroxide	Calcium	Magnesium	Potassium	Sodium	Ionic Balance	Chloride	Sulphate (as SO4)	Nitrate (as N)	1,1,2-Trichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	1,2-Dichloropropane	Chloroform	cis-1,2-Dichloroethene	Tetrachloroethene	trans-1,2-dichloroethene	Trichloroethene	VOC Range	Ethane	Methane
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	%	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L
EQL	5	5	5	5	0.01	0.05	0.05	0.005	0.2	5	0.5	0.5	0.5	0.5		1	1	0.005	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.005	0.005
MW01	1,800	630	<5	630	<0.01	<0.05	<0.05	0.006	1.3	<5	120	78	9.2	360	3.7	300	260	18	0.2	<0.1	<0.1	<0.1	1	0.2	<0.1	<0.1	460	<0.1 - 460	<0.005	<0.005
MW02	1,500	540	<5	540	<0.01	<0.05	<0.05	<0.005	0.6	<5	90	63	7.1	320	-0.66	400	97	15	<0.4	0.1	<0.1	<0.1	1	1	<0.1	<0.1	2,000	<0.1 - 2000	<0.005	<0.005
MW03	1,200	550	<5	550	<0.01	<0.05	<0.05	<0.005	0.8	<5	96	66	7.5	380	-0.52	480	130	10	<0.5	0.1	<0.1	<0.1	1	0.7	<0.1	<0.1	2,700	<0.1 - 2700	<0.005	<0.005
MW04	1,900	550	<5	550	<0.01	<0.05	<0.05	<0.005	0.8	<5	92	61	7.8	420	-2.3	550	150	9.3	0.2	0.7	0.1	<0.1	1	39	<0.1	1	320	<0.1 - 320	<0.005	<0.005
MW05	1,400	810	<5	810	<0.01	<0.05	<0.05	0.015	<0.2	<5	46	32	5.9	330	-1.1	70	82	2.6	2	2	1	<0.1	0.9	20	1	0.4	2,000	<0.1 - 2000	<0.005	<0.005
MW06	570	380	<5	380	<0.01	<0.05	<0.05	<0.005	<0.2	<5	34	21	4.3	110	-2	30	13	2	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	29	<0.1 - 29	<0.005	<0.005
MW07	1,300	580	<5	580	<0.01	<0.05	<0.05	0.008	<0.2	<5	100	70	8	250	0.34	210	200	6.2	0.2	0.1	<0.1	0.2	<0.1	0.6	<0.1	<0.1	110	<0.1 - 110	<0.005	<0.005
XMW02	2,600	600	<5	600	<0.01	<0.05	<0.05	<0.005	2.4	<5	140	95	8.9	580	-3.9	910	280	16	1	0.5	<0.1	<0.1	<0.1	2	0.4	<0.1	700	<0.1 - 700	<0.005	<0.005
XMW03	2,100	660	<5	660	<0.01	<0.05	<0.05	<0.005	0.4	<5	65	48	6.8	440	-0.13	310	220	37	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	73	<0.1 - 73	<0.005	<0.005

Field ID	Location Code	Sample Date	Sample Code	Laboratory Report Number
MW01	MW01	30/04/2015	6232-1	6232
MW02	MW02	30/04/2015	6232-2	6232
MW03	MW03	30/04/2015	6232-3	6232
MW04	MW04	1/05/2015	6232-4	6232
MW05	MW05	1/05/2015	6232-5	6232
MW06	MW06	1/05/2015	6232-6	6232
MW07	MW07	1/05/2015	6232-7	6232
XMW02	XMW02	30/04/2015	6232-8	6232
XMW03	XMW03	1/05/2015	6232-9	6232

Comments

mg/L - milligrams per litre

ug/L - micrograms per litre

A range isprovided for VOCs as no analyte in these categories was above the EQL, except those shown.

< - less than laboratory limit of reporting

Abbreviations:

EQL - Effective Quantitative Limit

SQP - Sample Quality Parameters

VOC - Volatile Organic Compounds

Prepared by:	KB	Date:	20/05/2015
Checked by:	MP	Date:	20/05/2015

Groundwater and Soil Vapour Data Report -
Beverley Assessment Area, South Australia

Project No: 1418522

Table 15: Tabulated Soil Vapour Data

				NA								SVOCs			MAH																				
				3-Chloropropene	4-Ethyltoluene	2,2,4-Trimethylpentane	alpha-Chlorotoluene	Freon 11	Freon 114	Freon 12	Propylbenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2,4-trimethylbenzene	1,3,5-Trimethylbenzene	Isopropylbenzene	Benzene	Ethylbenzene	Styrene	MTBE	Toluene	Xylene (o)	Xylenes (m & p)	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2,4-Trichlorobenzene	1,2-Dibromoethane	1,2-Dichloroethane	1,2-Dichloropropane	1,3-Butadiene
				mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	ug/m3	µg/m3	ug/m3	ug/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	ug/m3
																									60000										
Location Code	Sample Date	Sample Depth	Sample Code																																
SV01-M	28/04/2015	3.85	15-417	<0.3	<0.2	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<200	<200	<200	<200	<200	<200	<80	<100	<100	<90	840	<100	290	<200	<200	<200	<100	<100	<700	<200	<100	<100	<60
SV02-D	27/04/2015	6.35	15-421	<0.6	<0.2	<0.2	<0.2	<0.3	<0.3	<0.2	<0.2	<300	<300	<300	<200	<200	<200	<200	<200	<200	<200	230	<200	260	<300	<300	<300	<200	<200	<2,000	<400	<200	<200	<90
SV02-M	27/04/2015	3.85	15-420	<0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<200	<200	<200	<200	<200	<200	<80	<100	<100	<90	230	<100	460	<200	<200	<200	<100	<100	<800	<200	<100	<200	<60
SV02-S	27/04/2015	1.85	15-418	<0.3	<0.09	<0.09	<0.1	<0.1	<0.2	<0.1	<0.09	<100	<100	<100	<90	<90	<90	<60	<80	<80	<70	390	<80	540	<100	<200	<100	<80	<80	<600	<200	<80	<90	<40
SV03-D	27/04/2015	6.35	15-424	<0.3	<0.1	<0.1	<0.2	<0.2	<0.2	<0.1	<0.1	<200	<200	<200	<100	<100	<100	<70	<100	<100	<80	360	<100	260	<200	<200	<200	<90	<90	<700	<200	<90	<100	<50
SV03-M	27/04/2015	3.85	15-423	<0.02	<0.006	<0.006	<0.007	<0.007	<0.009	<0.006	<0.006	<8	<8	<8	<6	<6	<6	<4	<6	<6	<5	<5	<6	<6	<7	<9	<7	<5	<5	<40	<10	<5	<6	<3
SV03-S	27/04/2015	1.85	15-422	<0.07	<0.03	<0.03	<0.03	<0.03	<0.04	<0.03	<0.03	<40	<40	<40	<30	<30	<30	<20	<30	<30	<20	140	46	320	<30	<40	<30	<30	<20	<200	<40	<30	<30	<20
SV04-M	28/04/2015	3.85	15-425	<0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<20	<20	<20	<20	<20	<20	<9	<10	<10	<10	60	<10	48	<20	<20	<20	<10	<10	<80	<20	<10	<20	<6
SV05-M	28/04/2015	3.85	15-426	<0.07	<0.03	<0.03	<0.03	<0.03	<0.04	<0.03	<0.03	<40	<40	<40	<30	<30	<30	<20	<30	120	<20	460	58	360	<30	<40	<30	<20	<20	<200	<40	<20	<30	<20
SV06-D	28/04/2015	6.35	15-430	<0.02	<0.005	<0.005	<0.006	<0.006	<0.007	<0.005	<0.005	<6	<6	<6	<5	<5	<5	<4	<5	<5	<4	12	<5	18	<6	<7	<6	<4	<4	<30	<8	<4	<5	<3
SV06-M	28/04/2015	3.85	15-428	<0.02	<0.006	<0.006	<0.007	0.012	<0.009	<0.007	<0.006	<8	<8	<8	<6	<6	<6	<4	<6	<6	<5	57	9.8	75	<7	<9	<7	<5	<5	<40	<10	<5	<6	<3
SV06-S	28/04/2015	1.85	15-427	<0.02	<0.007	<0.006	<0.007	0.012	<0.009	<0.007	<0.007	<8	<8	<8	<7	<7	<7	<4	<6	<6	<5	21	6.2	39	<7	<9	<7	<6	<5	<40	<10	<6	<6	<3
SV07-D	28/04/2015	6.35	15-434	<0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<20	<20	<20	<20	<20	<20	<9	71	<10	<10	910	220	1,500	<20	<20	<20	<10	<10	<80	<20	<10	<20	<6
SV07-M	28/04/2015	3.85	15-432	<0.02	<0.007	<0.007	<0.007	<0.008	<0.01	<0.007	<0.007	<8	<8	<8	<7	<7	<7	<5	51	<6	<5	610	160	1,000	<8	<10	<8	<6	<6	<40	<10	<6	<7	<3
SV07-S	28/04/2015	1.85	15-431	<0.02	<0.007	<0.006	<0.007	<0.008	<0.009	<0.007	<0.007	<8	<8	<8	<7	<7	<7	<4	30	<6	<5	260	100	660	<7	<9	<7	<6	<5	<40	<10	<6	<6	<3
SV08-D	27/04/2015	3.85	15-439	<0.02	<0.006	<0.006	<0.006	<0.007	<0.009	<0.006	<0.006	<7	<7	<7	<6	<6	<6	<4	<5	<5	<5	4.9	<5	<5	<7	<8	<7	<5	<5	<40	<9	<5	<6	<3
SV08-M	27/04/2015	1.85	15-438	<0.02	<0.006	<0.006	<0.007	<0.007	<0.009	<0.006	<0.006	<8	<8	<8	<6	<6	<6	<4	<6	<5	<5	7.1	<6	<6	<7	<9	<7	<5	<5	<40	<10	<5	<6	<3
SV08-P1	28/04/2015	Sub-Slab	15-435	<0.02	<0.006	<0.006	<0.006	<0.007	<0.008	<0.006	<0.006	<7	<7	<7	<6	<6	<6	<4	<5	<5	<4	4.6	<5	<5	<7	<8	<7	<5	<5	<40	<9	<5	<6	<3
SV08-P2	28/04/2015	Sub-Slab	15-436	<0.02	<0.007	<0.007	<0.007	<0.008	<0.01	<0.007	<0.007	<8	<8	<8	<7	<7	<7	<5	<6	<6	<5	<5	<6	<6	<8	<9	<8	<6	<6	<40	<10	<6	<6	<3
SV08-S	28/04/2015	0.85	15-437	<0.02	<0.007	<0.006	<0.007	<0.008	<0.01	<0.007	<0.007	<8	<8	<8	<7	<7	<7	<5	<6	<6	<5	77	<6	41	<7	<9	<7	<6	<6	<40	<10	<6	<6	<3
SV09-D	28/04/2015	3.85	15-444	<0.05	<0.02	<0.02	<0.02	<0.02	<0.03	<0.02	<0.02	<30	<30	<30	<20	<20	<20	<20	<20	<20	<20	36	<20	54	<20	<30	<20	<20	<20	<100	<30	<20	<20	<9
SV09-M	28/04/2015	1.85	15-443	<0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<20	<20	<20	13	<20	<20	<9	<10	<10	<10	81	16	110	<20	<20	<20	<10	<10	<80	<20	<10	<20	<6
SV09-P1	27/04/2015	Sub-Slab	15-440	<0.02	<0.007	<0.006	<0.007	<0.008	<0.009	<0.007	<0.007	<8	<8	<8	<7	<7	<7	<4	<6	<6	<5	<5	<6	<6	<7	<9	<7	<6	<5	<40	<10	<6	<6	<3
SV09-P2	27/04/2015	Sub-Slab	15-441	<0.02	<0.007	<0.006	<0.007	<0.008	<0.009	<0.007	<0.007	<8	<8	<8	<7	<7	<7	<4	<6	<6	<5	7	<6	9.4	<7	<9	<7	<6	<5	<40	<10	<6	<6	<3
SV09-S	27/04/2015	0.85	15-442	<0.02	<0.007	<0.007	<0.008	<0.008	<0.01	<0.007	<0.007	<9	<9	<9	<7	<7	<7	<5	<6	<6	<5	27	<6	37	<8	<10	<8	<6	<6	<40	<10	<6	<7	<3
SV10D	27/04/2015	3.85	15-449	<0.2	<0.07	<0.06	<0.07	<0.08	<0.09	<0.07	<0.07	<80	<80	<80	<70	<70	<70	<40	<60	<60	<50	63	<60	<60	<70	<90	<70	<60	<50	<400	<100	<60	<60	<30
SV10M	27/04/2015	1.85	15-448	<0.06	<0.02	<0.02	<0.03	<0.03	<0.03	<0.02	<0.02	<30	<30	<30	<20	<20	<20	<20	<20	<20	<20	33	<20	46	<30	<30	<30	<20	<20	<200	<40	<20	<20	<10
SV10-P1	28/04/2015	Sub-Slab	15-445	<0.02	<0.007	<0.006	<0.007	<0.008	<0.009	<0.007	<0.007	<8	<8	<8	<7	<7	<7	<5	<6	<6	<5	<5	<6	<6	<7	<9	<7	<6	<6	<40	<10	<6	<6	<3
SV10-P2	27/04/2015	Sub-Slab	15-446	<0.02	<0.007	<0.006	<0.007	<0.008	<0.009	<0.007	<0.007	<8	<8	<8	<7	<7	<7	<5	<6	<6	<5	31	<6	<6	<7	<9	<7	<6	<6	<40	<10	<6	<6	<3
SV10-S	27/04/2015	0.85	15-447	<0.02	<0.009	<0.008	<0.009	<0.01	<0.02	<0.009	<0.009	<10	<10	<10	<9	<9	<9	<6	<8	<7	<6	70	<8	60	<9	<10	<9	<7	<7	<50	<20	<7	<8	<4

Comments

ug/L - micrograms per litre^3

< - less than laboratory limit of reporting

Abbreviations:

EQL - Effective Quantitative Limit

MAH - Monocyclic Aromatic Hydrocarbons

VOC - Volatile Organic Compounds

Prepared by:	KB	Date:	20/05/2015
Checked by:	MP	Date:	20/05/2015

Groundwater and Soil Vapour Data Report -
Beverley Assessment Area, South Australia

Project No: 1418522

Table 15: Tabulated Soil Vapour Data

				VOC																							Other	Solvents							
				2-Hexanone	4-Methyl-2-pentanone	Acetone	Bromodichloromethane	Bromoform	Bromomethane	Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dichloromethane	Hexachlorobutadiene	Methyl Ethyl Ketone	Tetrachloroethene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Trichloroethene	Vinyl chloride	Freon 113	1,4-Dioxane	2-Propanol	Cyclohexane	Ethanol	Heptane	Hexane	Tetrahydrofuran
				ug/m3	ug/m3	ug/m3	µg/m3	µg/m3	µg/m³	ug/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	ug/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
																	80					2000				20	30								
Location Code	Sample Date	Sample Depth	Sample Code																																
SV01-M	28/04/2015	3.85	15-417	<400	<100	<300	<200	<300	<100	<80	<200	<100	<200	<300	190	<200	<100	<100	<90	<1,000	<300	<200	<100	<100	78,000	<60	<200	<400	<300	<90	<200	<100	<90	<70
SV02-D	27/04/2015	6.35	15-421	<700	<200	<400	<300	<500	<200	<200	<300	<200	<400	<500	280	<400	<200	<200	<200	<2,000	<500	<300	<200	<200	97,000	<100	<400	<600	<400	<200	<300	<200	<200	<200
SV02-M	27/04/2015	3.85	15-420	<400	<100	<300	<200	<300	<100	<80	<200	<200	<200	<300	350	<200	<100	<100	<90	<1,000	<300	<200	<100	<100	93,000	<70	<200	<400	<300	<90	<200	<100	<90	<80
SV02-S	27/04/2015	1.85	15-418	<300	<80	<200	<200	<200	<80	<60	<200	<90	<200	<200	240	<200	<80	<90	<70	<800	<300	<200	<80	<90	40,000	<50	<200	<300	<200	<70	<200	<80	<70	<60
SV03-D	27/04/2015	6.35	15-424	<400	<90	<200	<200	<300	<90	<70	<200	<100	<200	<300	<100	<200	<90	<100	<80	<1,000	<300	<200	<90	<100	57,000	<60	<200	<400	<300	<80	<200	<90	<80	<70
SV03-M	27/04/2015	3.85	15-423	<20	<5	<30	<9	<20	<50	28	<8	<6	<10	<20	<6	<30	<5	<6	<50	<60	<20	<9	<5	<6	<7	<4	<10	<20	14	<5	37	<5	<5	<4
SV03-S	27/04/2015	1.85	15-422	<90	<30	<200	<40	<60	<200	<70	<40	<30	<50	<60	<30	<100	<20	<30	<200	<300	<70	<40	<20	<30	7,000	<20	<40	<80	<60	<20	<40	<30	<20	<20
SV04-M	28/04/2015	3.85	15-425	<50	<10	<70	<20	<30	<100	<40	<20	<20	<30	<30	190	<60	190	<20	<90	<100	<30	65	<10	<20	3,100	<7	<20	<40	<30	<9	<20	<10	<10	<8
SV05-M	28/04/2015	3.85	15-426	<90	<30	<200	<40	<60	<200	<70	<40	<30	<50	<60	51	<100	<20	<30	<200	<300	<70	<40	<20	<30	5,600	<20	<40	<80	<60	<20	<40	<30	<20	<20
SV06-D	28/04/2015	6.35	15-430	<20	<4	<30	<7	<10	<40	<20	<7	<5	<9	<10	<5	<20	<4	<5	<40	<50	<20	<7	<4	<5	33	<3	<8	<20	<10	<4	<8	<4	<4	<3
SV06-M	28/04/2015	3.85	15-428	<20	<5	<30	<9	<20	<50	<20	<8	<6	<10	<20	50	<30	<5	<6	<50	<60	<20	16	<5	<6	1,100	<4	<10	<20	<20	<5	<10	<5	<5	<4
SV06-S	28/04/2015	1.85	15-427	<20	<6	<30	<9	<20	<50	<20	<8	<6	<10	<20	16	<30	<5	<6	<50	<60	<20	13	<5	<6	530	<4	<10	<20	<20	<5	<10	<6	<5	<4
SV07-D	28/04/2015	6.35	15-434	<50	<10	<70	<20	<30	<100	<40	<20	<20	<30	<30	<20	<60	<10	<20	<100	<100	<30	<20	<10	<20	2,700	<7	<20	<40	<30	<9	<20	<10	<10	<8
SV07-M	28/04/2015	3.85	15-432	<30	<6	<40	<9	<20	<60	<20	<9	<6	<10	<20	<7	<30	<6	<6	<50	<60	<20	<9	<6	<6	270	<4	<10	<20	<20	<5	<10	<6	<5	<4
SV07-S	28/04/2015	1.85	15-431	<20	<6	<30	<9	<20	<50	<20	<8	<6	<10	<20	<7	<30	<5	<6	<50	<60	<20	<9	<5	<6	69	<4	<10	<20	<20	<5	<10	<6	<5	<4
SV08-D	27/04/2015	3.85	15-439	<20	<5	<30	<8	<20	<50	<20	<8	<6	<10	<20	<6	<30	<5	<6	<40	<50	<20	<8	<5	<6	<7	<3	<9	<20	<20	<4	8.6	<5	<4	<4
SV08-M	27/04/2015	1.85	15-438	<20	<5	<30	<8	<20	<50	<20	<8	<6	<10	<20	<6	<30	<5	<6	<50	<50	<20	<8	<5	<6	<7	<3	<10	<20	<20	<4	<9	<5	<5	<4
SV08-P1	28/04/2015	Sub-Slab	15-435	<20	<5	<30	<8	<20	<50	<20	<7	<6	<10	<20	<6	<30	<5	<6	<40	<50	<20	<8	<5	<6	<6	<3	<9	<20	<10	<4	<9	<5	<4	<4
SV08-P2	28/04/2015	Sub-Slab	15-436	<30	<6	<40	<9	<20	<60	<20	<9	<6	<10	<20	<7	<30	<6	<6	<50	<60	<20	<9	<6	<6	31	<4	<10	<20	<20	<5	14	<6	<5	<4
SV08-S	28/04/2015	0.85	15-437	<20	<6	<30	<9	<20	<50	<20	<9	<6	<10	<20	14	<30	<6	<6	<50	<60	<20	<9	<6	<6	240	<4	<10	<20	<20	<5	<10	<6	<5	<4
SV09-D	28/04/2015	3.85	15-444	<70	<20	<90	<30	<40	<200	<50	<30	<20	<40	<40	<20	<80	<20	<20	<200	<200	<50	<30	<20	<20	5,500	<10	<30	<60	60	<20	<30	<20	<20	<10
SV09-M	28/04/2015	1.85	15-443	<50	<10	<70	<20	<30	<100	<40	<20	<20	<30	<30	21	<60	<10	<20	<90	<100	<30	<20	<10	<20	3,600	<7	<20	<40	<30	<9	<20	<10	<9	<8
SV09-P1	27/04/2015	Sub-Slab	15-440	<20	<6	<30	<9	<20	<50	<20	<8	<6	<10	<20	<7	<30	<5	<6	<50	<60	<20	<9	<5	<6	1,000	<4	<10	<20	<20	<5	11	<6	<5	<4
SV09-P2	27/04/2015	Sub-Slab	15-441	<20	<6	<30	<9	<20	<50	<20	<8	<6	<10	<20	11	<30	<5	<6	<50	<60	<20	<9	<5	<6	600	<4	<10	<20	<20	<5	12	<6	<5	<4
SV09-S	27/04/2015	0.85	15-442	<30	<6	<40	<10	<20	<60	<20	<9	<7	<20	<20	28	<30	<6	<7	<50	<60	<20	<10	<6	<7	2,400	<4	<10	<20	<20	<5	<10	<6	<5	<4
SV10D	27/04/2015	3.85	15-449	<200	<60	<300	<90	<200	<500	<200	<80	<60	<100	<200	<70	<300	<50	<60	<500	<600	<200	<90	<50	<60	17,000	<40	<100	<200	<200	<50	<100	<60	<50	<40
SV10M	27/04/2015	1.85	15-448	<70	<20	<100	<30	<50	<200	<60	<30	<20	<40	<50	<20	<90	<20	<20	<200	<200	<50	<30	<20	<20	6,000	<10	<40	<70	<50	<20	160	<20	<20	<20
SV10-P1	28/04/2015	Sub-Slab	15-445	<20	<6	<30	<9	<20	<50	<20	<9	<6	<10	<20	<7	<30	<6	<6	<50	<60	<20	<9	<6	<6	2,100	<4	<10	<20	<20	<5	<10	<6	<5	<4
SV10-P2	27/04/2015	Sub-Slab	15-446	<20	<6	<30	<9	<20	<50	33	<9	<6	<10	<20	<7	<30	<6	<6	<50	<60	<20	<9	<6	<6	2,100	<4	<10	<20	<20	<5	<10	<6	<5	<4
SV10-S	27/04/2015	0.85	15-447	<30	<7	<40	<10	<20	<70	<20	<10	<8	<20	<20	42	<40	<7	<8	<60	<70	<20	<10	<7	<8	3,100	<5	<20	<30	<20	<6	<20	<7	<6	<5

Comments

ug/L - micrograms per litre^3

< - less than laboratory limit of reporting

Abbreviations:

EQL - Effective Quantitative Limit

MAH - Monocyclic Aromatic Hydrocarbons

VOC - Volatile Organic Compounds

Prepared by:	KB	Date:	20/05/2015
Checked by:	MP	Date:	20/05/2015

Groundwater and Soil Vapour Data Report -
Beverley Assessment Area, South Australia

Project No: 1418522

Table 16: Tabulated Ambient Outdoor Air Chemistry Data

	SVOCs			MAH									VOC							
	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2,4-trimethylbenzene	1,3,5-Trimethylbenzene	Benzene	Ethylbenzene	Styrene	Toluene	Xylene (o)	Xylenes (m & p)	Xylenes Total	Chloroform	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Tetrachloroethene	Trichloroethene
	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	ug/m3	ug/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3
EQL	0.022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.025	0.025	0	0
RD1 RJ700	<0.022	0.07	0.04	1.4	0.55	0.89	0.76	0.16	5.8	0.94	2.3	3.3	0.036	<0.018	<0.018	<0.018	<0.025	<0.025	0.08	0.19
R2 RJ702	<0.031	0.55	0.34	1.9	0.82	1.2	1.1	0.21	6.9	1.4	3.3	4.7	0.061	<0.026	<0.026	<0.026	<0.035	<0.035	0.11	0.1

Field ID	Location Code	Sample Date	Sample Code	Laboratory Report Number
RD1 RJ700	RD1	1/05/2015	2015010659	M151001
R2 RJ702	R2	1/05/2015	2015010661	M151001

Comments
mg/kg - milligrams per kilogram
< - less than laboratory limit of reporting

Abbreviations:
EQL - Effective Quantitative Limit
MAH - Monocyclic Aromatic Hydrocarbons
VOC - Volatile Organic Compounds

Prepared by:	KB	Date:	20/05/2015
Checked by:	MP	Date:	20/05/2015

Groundwater and Soil Vapour Data Report -
Beverley Assessment Area, South Australia

Project No: 1418522

Table 17: Grpoundwater RPD Data

	Laboratory Report Number	ENVIROLAB 2015-05-05T00:00:00	ENVIROLAB 2015-05-05T00:00:00			ENVIROLAB 2015-05-05T00:00:00	Interlab_D			
	Field ID	MW04	QAQC1	**RPD**		MW04	QAQC2	**RPD**		
	Sampled Date/Time	1/05/2015	1/05/2015			1/05/2015	1/05/2015			
Chemical Group	**Chemical Name**	**Units**	**EQL**							
02-Physico - Chemical	Total Dissolved Solids	mg/l	5 (Primary): 10 (Interlab)	1900.0	2000.0	5	1900.0	1910.0	1	
	Bicarbonate Alkalinity (as CaCO3)	mg/l	5 (Primary): 1 (Interlab)	550.0	530.0	4	550.0	602.0	9	
	Carbonate Alkalinity (as CaCO3)	mg/l	5 (Primary): 1 (Interlab)	<5.0	<5.0	NA	<5.0	<1.0	NA	
	Alkalinity (total)	mg/l	5	550.0	530.0	4	550.0			
03-Metals	Iron (Filtered)	mg/l	0.01 (Primary): 0.05 (Interlab)	<0.01	<0.01	NA	<0.01	<0.05	NA	
	Iron (ferric)	mg/l	0.05	<0.05	<0.05	NA	<0.05	<0.05	NA	
	Iron (ferrous)	mg/l	0.05	<0.05	<0.05	NA	<0.05	<0.05	NA	
	Manganese (Filtered)	mg/l	0.005 (Primary): 0.001 (Interlab)	<0.005	<0.005	NA	<0.005	0.003	NA	
04-SQP	Bromide	mg/l	0.2 (Primary): 0.01 (Interlab)	0.8	0.8	0	0.8	2.01	86	
	Hydroxide	mg/l	5	<5.0	<5.0	NA	<5.0	<1	NA	
05-Major Anions & Cations	Calcium	mg/l	0.5	92.0	94.0	2	92.0	88	4	
	Magnesium	mg/l	0.5	61.0	63.0	3	61.0	65	6	
	Potassium	mg/l	0.5	7.8	7.7	1	7.8	8	3	
	Sodium	mg/l	0.5	420.0	440.0	5	420.0	465	10	
	Chloride	mg/l	1	550.0	610.0	10	550.0	602.0	9	
	Sulphate (as SO4)	mg/l	1	150.0	170.0	13	150.0	206	52	
06-Nutrients	Nitrate (as N)	mg/l	0.005 (Primary): 0.01 (Interlab)	9.3	10.0	7	9.3	11.2	19	
13-SVOCs	1,2,3-Trichlorobenzene	µg/L	0.1	<0.1	<0.1	NA	<0.1	-	NA	
	1,2-Dichlorobenzene	µg/L	0.1	<0.1	<0.1	NA	<0.1	-	NA	
	1,3-Dichlorobenzene	µg/L	0.1	<0.1	<0.1	NA	<0.1	-	NA	
	1,4-Dichlorobenzene	µg/L	0.1	<0.1	<0.1	NA	<0.1	-	NA	
15-VOC	1,1,1,2-Tetrachloroethane	µg/L	0.1	<0.1	<0.1	NA	<0.1	-	NA	
	1,1,1-Trichloroethane	µg/L	0.1	<0.1	<0.1	NA	<0.1	-	NA	
	1,1,2,2-Tetrachloroethane	µg/L	0.1	<0.1	<0.1	NA	<0.1	-	NA	
	1,1,2-Trichloroethane	µg/L	0.1	0.2	0.2	NA	0.2	-		
	1,1-Dichloroethane	µg/L	0.1	<0.1	<0.1	NA	<0.1	-	NA	
	1,1-Dichloroethene	µg/L	0.1	0.7	0.7	0	0.7	0.8	13	
	1,1-Dichloropropene	µg/L	0.1	<0.1	<0.1	NA	<0.1	-	NA	
	1,2,3-Trichloropropane	µg/L	0.1	<0.1	<0.1	NA	<0.1	-	NA	
	1,2,4-Trichlorobenzene	µg/L	0.1	<0.1	<0.1	NA	<0.1	-	NA	
	1,2-Dibromo-3-chloropropane	µg/L	0.1	<0.1	<0.1	NA	<0.1	-	NA	
	1,2-Dibromoethane	µg/L	0.1	<0.1	<0.1	NA	<0.1	-	NA	
	1,2-Dichloroethane	µg/L	0.1	0.1	0.1	0	0.1	-	NA	
	1,2-Dichloropropane	µg/L	0.1	<0.1	<0.1	NA	<0.1	-	NA	
	1,3-Dichloropropane	µg/L	0.1	<0.1	<0.1	NA	<0.1	-	NA	
	2,2-Dichloropropane	µg/L	0.1	<0.1	<0.1	NA	<0.1	-	NA	
	Bromochloromethane	µg/L	0.1	<0.1	<0.1	NA	<0.1	-	NA	
	Bromodichloromethane	µg/L	0.1	<0.1	<0.1	NA	<0.1	-	NA	
	Bromoform	µg/L	0.1	<0.1	<0.1	NA	<0.1	-	NA	
	Bromomethane	µg/L	1	<1.0	<1.0	NA	<1.0	-	NA	
	Carbon tetrachloride	µg/L	0.1	<0.1	<0.1	NA	<0.1	-	NA	
	Chlorobenzene	µg/L	0.1	<0.1	<0.1	NA	<0.1	-	NA	
	Chlorodibromomethane	µg/L	0.1	<0.1	<0.1	NA	<0.1	-	NA	
	Chloroethane	µg/L	1	<1.0	<1.0	NA	<1.0	-	NA	
	Chloroform	µg/L	0.1	1.0	1.0	0	1.0	2.27	78	
	Chloromethane	µg/L	1	<1.0	<1.0	NA	<1.0	-	NA	
	cis-1,2-Dichloroethene	µg/L	0.1	39.0	41.0	5	39.0	49.8	24	
	cis-1,3-Dichloropropene	µg/L	0.1	<0.1	<0.1	NA	<0.1	-	NA	
	Dibromomethane	µg/L	0.1	<0.1	<0.1	NA	<0.1	-	NA	
	Dichlorodifluoromethane	µg/L	1	<1.0	<1.0	NA	<1.0	-	NA	
	Hexachlorobutadiene	µg/L	0.1	<0.1	<0.1	NA	<0.1	-	NA	
	Tetrachloroethene	µg/L	0.1 (Primary): 0.05 (Interlab)	<0.1	<0.1	NA	<0.1	0.09	NA	
	trans-1,2-dichloroethene	µg/L	0.1	1.0	0.7	35	1.0	0.4	86	
	trans-1,3-dichloropropene	µg/L	0.1	<0.1	<0.1	NA	<0.1	-	NA	
	Trichloroethene	µg/L	0.1 (Primary): 0.05 (Interlab)	320.0	330.0	3	320.0	271.0	17	
	Trichlorofluoromethane	µg/L	1	<1.0	<1.0	NA	<1.0	-	NA	
	Vinyl chloride	µg/L	0.3	<0.3	<0.3	NA	<0.3	<0.3	NA	
17-Gases	Ethane	mg/l	0.005 (Primary): 0.01 (Interlab)	<0.005	<0.005	NA	<0.005	<0.01	NA	
	Methane	mg/l	0.005 (Primary): 0.01 (Interlab)	<0.005	<0.005	NA	<0.005	<0.01	NA	

*RPDs have only been considered where a concentration is greater than 5 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 100 (5-10 x EQL); 100 (10-30 x EQL); 100 (> 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
EQL - Effective Quantitative Limit
NA denotes Not Available as RPD can only be calculated where both concentrations are above the limit of reporting
< - less than laboratory limit of reporting
mg/L - milligrams per litre
ug/L - micrograms litre

Prepared by:	KB	Date:	20/05/2015
Checked by:	MP	Date:	20/05/2015

Groundwater and Soil Vapour Data Report -
Beverley Assessment Area, South Australia

Project No: 1418522

Table 18: Groundwater Rinsate and Filed Blank Data

Laboratory Report Number			ENVIROLAB 2015-05-05T00:00:00	ENVIROLAB 2015-05-05T00:00:00	ENVIROLAB 2015-05-05T00:00:00	ENVIROLAB 2015-05-05T00:00:00	ENVIROLAB 2015-05-05T00:00:00
Field ID			R1	R2	TB1	TB2	TB3
Sampled Date			30/04/2015	1/05/2015	28/04/2015	28/04/2015	28/04/2015
Sample Type			Rinsate	Rinsate	Trip_B	Trip_B	Trip_B
Chemical Group	**Chemical Name**	**Units**	**EQL**					
13-SVOCs	1,2,3-Trichlorobenzene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	1,2-Dichlorobenzene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	1,3-Dichlorobenzene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	1,4-Dichlorobenzene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
15-VOC	1,1,1,2-Tetrachloroethane	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	1,1,1-Trichloroethane	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	1,1,2,2-Tetrachloroethane	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	1,1,2-Trichloroethane	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	1,1-Dichloroethane	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	1,1-Dichloroethene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	1,1-Dichloropropene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	1,2,3-Trichloropropane	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	1,2,4-Trichlorobenzene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	1,2-Dibromo-3-chloropropane	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	1,2-Dibromoethane	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	1,2-Dichloroethane	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	1,2-Dichloropropane	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	1,3-Dichloropropane	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	2,2-Dichloropropane	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Bromochloromethane	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Bromodichloromethane	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Bromoform	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Bromomethane	µg/L	1	<1	<1	<1	<1	<1
	Carbon tetrachloride	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Chlorobenzene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Chlorodibromomethane	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Chloroethane	µg/L	1	<1	<1	<1	<1	<1
	Chloroform	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Chloromethane	µg/L	1	<1	<1	<1	<1	<1
	cis-1,2-Dichloroethene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	cis-1,3-Dichloropropene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Dibromomethane	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Dichlorodifluoromethane	µg/L	1	<1	<1	<1	<1	<1
	Hexachlorobutadiene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Tetrachloroethene	µg/L	0.05	<0.1	<0.1	<0.1	<0.1	<0.1
	trans-1,2-dichloroethene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	trans-1,3-dichloropropene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Trichloroethene	µg/L	0.05	<0.1	<0.1	<0.1	<0.1	<0.1
	Trichlorofluoromethane	µg/L	1	<1	<1	<1	<1	<1
	Vinyl chloride	µg/L	0.3	<0.3	<0.3	<0.3	<0.3	<0.3

< - less than laboratory limit of reporting
ug/L - micrograms per litre

Prepared by:	KB	Date:	20/05/2015
Checked by:	MP	Date:	20/05/2015

Groundwater and Soil Vapour Data Report -
Beverley Assessment Area, South Australia

Project No: 1418522

Table 197: Soil Vapour RPD Data

	Field ID	SV02-S_Sample1.85_27/04/2015	SV02-S_Replicate1.85_27/04/2015	RPD	SV06-M_Sample3.85_28/04/2015	SV06-M_Replicate3.85_28/04/2015	RPD	SV07-M_Sample3.85_28/04/2015	SV07-M_Replicate3.85_28/04/2015	RPD
	Sampled Date/Time	27/04/2015	27/04/2015		28/04/2015	28/04/2015		28/04/2015	28/04/2015	
Chemical Group	**Chemical Name**	**Units**	**EQL**							
NA	3-Chloropropene	mg/m3		<0.3	<0.3	NA	<0.02	<0.02	NA	<0.02	<0.02	NA
	4-Ethyltoluene	mg/m3		<0.09	<0.1	NA	<0.006	<0.007	NA	<0.007	<0.007	NA
	2,2,4-Trimethylpentane	mg/m3		<0.09	<0.09	NA	<0.006	<0.006	NA	<0.007	<0.006	NA
	alpha-Chlorotoluene	mg/m3		<0.1	<0.1	NA	<0.007	<0.007	NA	<0.007	<0.007	NA
	Freon 11	mg/m3		<0.1	<0.1	NA	0.012	0.011	NA	<0.008	<0.008	NA
	Freon 114	mg/m3		<0.2	<0.2	NA	<0.009	<0.009	NA	<0.01	<0.009	NA
	Freon 12	mg/m3		<0.1	<0.1	NA	<0.007	<0.007	NA	<0.007	<0.007	NA
	Propylbenzene	mg/m3		<0.09	<0.1	NA	<0.006	<0.007	NA	<0.007	<0.007	NA
13-SVOCs	1,2-Dichlorobenzene	µg/m3	0.022 : 0.026 (Dupe)									
	1,2-Dichlorobenzene	µg/m3		<100.0	<200.0	NA	<8.0	<8.0	NA	<8.0	<8.0	NA
	1,3-Dichlorobenzene	µg/m3	0									
	1,3-Dichlorobenzene	µg/m3		<100.0	<200.0	NA	<8.0	<8.0	NA	<8.0	<8.0	NA
	1,4-Dichlorobenzene	µg/m3	0									
	1,4-Dichlorobenzene	µg/m3		<100.0	<200.0	NA	<8.0	<8.0	NA	<8.0	<8.0	NA
14-MAH	1,2,4-trimethylbenzene	µg/m3	0									
	1,2,4-trimethylbenzene	µg/m3		<90.0	<100.0	NA	<6.0	<7.0	NA	<7.0	<7.0	NA
	1,3,5-Trimethylbenzene	µg/m3	0									
	1,3,5-Trimethylbenzene	µg/m3		<90.0	<100.0	NA	<6.0	<7.0	NA	<7.0	<7.0	NA
	Isopropylbenzene	µg/m3		<90.0	<100.0	NA	<6.0	<7.0	NA	<7.0	<7.0	NA
	Benzene	µg/m3	0									
	Benzene	µg/m3		<60.0	<70.0	NA	<4.0	<4.0	NA	<5.0	<4.0	NA
	Ethylbenzene	µg/m3	0									
	Ethylbenzene	µg/m3		<80.0	<90.0	NA	<6.0	<6.0	NA	51.0	30.0	52
	Styrene	µg/m3	0									
	Styrene	µg/m3		<80.0	<90.0	NA	<6.0	<6.0	NA	<6.0	<6.0	NA
	MTBE	ug/m3		<70.0	<70.0	NA	<5.0	<5.0	NA	<5.0	<5.0	NA
	Toluene	µg/m3	0									
	Toluene	µg/m3		390.0	290.0	29	57.0	34.0	51	610.0	360.0	52
	Xylene (o)	ug/m3	0									
	Xylene (o)	ug/m3		<80.0	<90.0	NA	9.8	5.8	51	160.0	96.0	50
	Xylenes (m & p)	ug/m3	0									
	Xylenes (m & p)	ug/m3		540.0	340.0	45	75.0	44.0	52	1000.0	620.0	47
	Xylenes Total	µg/m3	0									
15-VOC	1,1,1-Trichloroethane	µg/m3	0.025 : 0.029 (Dupe)									
	1,1,1-Trichloroethane	µg/m3		<100.0	<100.0	NA	<7.0	<7.0	NA	<8.0	<7.0	NA
	1,1,2,2-Tetrachloroethane	µg/m3		<200.0	<200.0	NA	<9.0	<9.0	NA	<10.0	<9.0	NA
	1,1,2-Trichloroethane	µg/m3	0.025 : 0.029 (Dupe)									
	1,1,2-Trichloroethane	µg/m3		<100.0	<100.0	NA	<7.0	<7.0	NA	<8.0	<7.0	NA
	1,1-Dichloroethane	µg/m3		<80.0	<80.0	NA	<5.0	<6.0	NA	<6.0	<6.0	NA
	1,1-Dichloroethene	µg/m3		<80.0	<80.0	NA	<5.0	<5.0	NA	<6.0	<5.0	NA
	1,2,4-Trichlorobenzene	µg/m3		<600.0	<600.0	NA	<40.0	<40.0	NA	<40.0	<40.0	NA
	1,2-Dibromoethane	µg/m3		<200.0	<200.0	NA	<10.0	<10.0	NA	<10.0	<10.0	NA
	1,2-Dichloroethane	µg/m3		<80.0	<80.0	NA	<5.0	<6.0	NA	<6.0	<6.0	NA
	1,2-Dichloropropane	µg/m3		<90.0	<90.0	NA	<6.0	<6.0	NA	<7.0	<6.0	NA
	1,3-Butadiene	ug/m3		<40.0	<50.0	NA	<3.0	<3.0	NA	<3.0	<3.0	NA
	2-Hexanone	ug/m3		<300.0	<400.0	NA	<20.0	<20.0	NA	<30.0	<20.0	NA
	4-Methyl-2-pentanone	ug/m3		<80.0	<80.0	NA	<5.0	<6.0	NA	<6.0	<6.0	NA
	Acetone	ug/m3		<200.0	<200.0	NA	<30.0	45.0	NA	<40.0	<30.0	NA
	Bromodichloromethane	µg/m3		<200.0	<200.0	NA	<9.0	<9.0	NA	<9.0	<9.0	NA
	Bromoform	µg/m3		<200.0	<200.0	NA	<20.0	<20.0	NA	<20.0	<20.0	NA
	Bromomethane	µg/m3		<80.0	<80.0	NA	<50.0	<50.0	NA	<60.0	<50.0	NA
	Carbon disulfide	ug/m3		<60.0	<60.0	NA	<20.0	<20.0	NA	<20.0	<20.0	NA
	Carbon tetrachloride	µg/m3		<200.0	<200.0	NA	<8.0	<8.0	NA	<9.0	<8.0	NA
	Chlorobenzene	µg/m3		<90.0	<90.0	NA	<6.0	<6.0	NA	<6.0	<6.0	NA
	Chlorodibromomethane	µg/m3		<200.0	<200.0	NA	<10.0	<10.0	NA	<10.0	<10.0	NA
	Chloroethane	µg/m3		<200.0	<200.0	NA	<20.0	<20.0	NA	<20.0	<20.0	NA
	Chloroform	µg/m3		240.0	260.0	NA	50.0	44.0	NA	<7.0	<7.0	NA
	Chloromethane	µg/m3		<200.0	<200.0	NA	<30.0	<30.0	NA	<30.0	<30.0	NA
	cis-1,2-Dichloroethene	µg/m3		<80.0	<80.0	NA	<5.0	<5.0	NA	<6.0	<5.0	NA
	cis-1,3-Dichloropropene	µg/m3		<90.0	<90.0	NA	<6.0	<6.0	NA	<6.0	<6.0	NA
	Dichloromethane	ug/m3		<70.0	<70.0	NA	<50.0	<50.0	NA	<50.0	<50.0	NA
	Hexachlorobutadiene	µg/m3		<800.0	<900.0	NA	<60.0	<60.0	NA	<60.0	<60.0	NA
	Methyl Ethyl Ketone	ug/m3		<300.0	<300.0	NA	<20.0	<20.0	NA	<20.0	<20.0	NA
	Tetrachloroethene	µg/m3	0									
	Tetrachloroethene	µg/m3		<200.0	<200.0	NA	16.0	16.0	0	<9.0	<9.0	NA

Groundwater and Soil Vapour Data Report -
Beverley Assessment Area, South Australia

Project No: 1418522

Table 197: Soil Vapour RPD Data

	Field ID	SV02-S_Sample1.85_27/04/2015	SV02-S_Replicate1.85_27/04/2015	RPD	SV06-M_Sample3.85_28/04/2015	SV06-M_Replicate3.85_28/04/2015	RPD	SV07-M_Sample3.85_28/04/2015	SV07-M_Replicate3.85_28/04/2015	RPD
	Sampled Date/Time	27/04/2015	27/04/2015		28/04/2015	28/04/2015		28/04/2015	28/04/2015	
Chemical Group	**Chemical Name**	**Units**	**EQL**							
	trans-1,2-dichloroethene	µg/m3		<80.0	<80.0	NA	<5.0	<5.0	NA	<6.0	<5.0	NA
	trans-1,3-dichloropropene	µg/m3		<90.0	<90.0	NA	<6.0	<6.0	NA	<6.0	<6.0	NA
	Trichloroethene	µg/m3	0									
	Trichloroethene	µg/m3		40000.0	42000.0	5	1100.0	1100.0	0	270.0	290.0	7
	Vinyl chloride	µg/m3		<50.0	<50.0	NA	<4.0	<4.0	NA	<4.0	<4.0	NA
915-Other	Freon 113	ug/m3		<200.0	<200.0	NA	<10.0	<10.0	NA	<10.0	<10.0	NA
99-Solvents	1,4-Dioxane	ug/m3		<300.0	<300.0	NA	<20.0	<20.0	NA	<20.0	<20.0	NA
	2-Propanol	ug/m3		<200.0	<200.0	NA	<20.0	<20.0	NA	<20.0	<20.0	NA
	Cyclohexane	ug/m3		<70.0	<70.0	NA	<5.0	<5.0	NA	<5.0	<5.0	NA
	Ethanol	ug/m3		<200.0	<200.0	NA	<10.0	<10.0	NA	<10.0	<10.0	NA
	Heptane	ug/m3		<80.0	<80.0	NA	<5.0	<6.0	NA	<6.0	<6.0	NA
	Hexane	ug/m3		<70.0	<70.0	NA	<5.0	<5.0	NA	<5.0	<5.0	NA
	Tetrahydrofuran	ug/m3		<60.0	<60.0	NA	<4.0	<4.0	NA	<4.0	<4.0	NA

*RPDs have only been considered where a concentration is greater than 5 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 100 (5-10 x EQL); 100 (10-30 x EQL); 100 (> 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
EQL - Effective Quantitative Limit
NA denotes Not Available as RPD can only be calculated where both concentrations are above the limit of reporting
< - less than laboratory limit of reporting
ug/m - micrograms per metre^3

Prepared by:	KB	Date:	20/05/2015
Checked by:	MP	Date:	20/05/2015

Groundwater and Soil Vapour Data Report -
Beverley Assessment Area, South Australia

Project No: 1418522

Table 20: Soil Vapour Field Blank Data

Field ID				FB1_FB_27/04/2015	FB2_FB_28/04/2015	FB3_FB_28/04/2015
Sampled Date				27/04/2015	28/04/2015	28/04/2015
Sample Type				Field_B	Field_B	Field_B
Chemical Group	**Chemical Name**	**Units**	**EQL**			
13-SVOCs	1,2-Dichlorobenzene	µg/m3	0.022	<8	<7	<7
	1,3-Dichlorobenzene	µg/m3	0	<8	<7	<7
	1,4-Dichlorobenzene	µg/m3	0	<8	<7	<7
14-MAH	1,2,4-trimethylbenzene	µg/m3	0	<6	<6	<5
	1,3,5-Trimethylbenzene	µg/m3	0	<6	<6	<5
	Isopropylbenzene	µg/m3		<6	<6	<5
	Benzene	µg/m3	0	<4	<4	<4
	Ethylbenzene	µg/m3	0	<6	<5	<5
	Styrene	µg/m3	0	<6	<5	<5
	MTBE	ug/m3		<5	<5	<4
	Toluene	µg/m3	0	**13**	<5	<4
	Xylene (o)	ug/m3	0	<6	<5	<5
	Xylenes (m & p)	ug/m3	0	<6	<5	<5
	Xylenes Total	µg/m3	0			
15-VOC	1,1,1-Trichloroethane	µg/m3	0.025	<7	<7	<6
	1,1,2,2-Tetrachloroethane	µg/m3		<9	<8	<7
	1,1,2-Trichloroethane	µg/m3	0.025	<7	<7	<6
	1,1-Dichloroethane	µg/m3		<5	<5	<4
	1,1-Dichloroethene	µg/m3		<5	<5	<4
	1,2,4-Trichlorobenzene	µg/m3		<40	<40	<30
	1,2-Dibromoethane	µg/m3		<10	<9	<8
	1,2-Dichloroethane	µg/m3		<5	<5	<4
	1,2-Dichloropropane	µg/m3		<6	<6	<5
	1,3-Butadiene	ug/m3		<3	<3	<3
	2-Hexanone	ug/m3		<20	<20	<20
	4-Methyl-2-pentanone	ug/m3		<5	<5	<5
	Acetone	ug/m3		<30	<30	<30
	Bromodichloromethane	µg/m3		<9	<8	<7
	Bromoform	µg/m3		<20	<20	<10
	Bromomethane	µg/m3		<50	<50	<40
	Carbon disulfide	ug/m3		<20	<20	<20
	Carbon tetrachloride	µg/m3		<8	<8	<7
	Chlorobenzene	µg/m3		<6	<6	<5
	Chlorodibromomethane	µg/m3		<10	<10	<9
	Chloroethane	µg/m3		<20	<20	<10
	Chloroform	µg/m3		<6	<6	<5
	Chloromethane	µg/m3		<30	<30	<20
	cis-1,2-Dichloroethene	µg/m3		<5	<5	<4
	cis-1,3-Dichloropropene	µg/m3		<6	<6	<5
	Dichloromethane	ug/m3		<50	<40	<40
	Hexachlorobutadiene	µg/m3		<60	<50	<50
	Methyl Ethyl Ketone	ug/m3		<20	<20	<20
	Tetrachloroethene	µg/m3	0	<9	<8	<7
	trans-1,2-dichloroethene	µg/m3		<5	<5	<4
	trans-1,3-dichloropropene	µg/m3		<6	<6	<5
	Trichloroethene	µg/m3	0	<7	**6.7**	<6
	Vinyl chloride	µg/m3		<4	<3	<3
915-Other	Freon 113	ug/m3		<10	<9	<8
99-Solvents	1,4-Dioxane	ug/m3		<20	<20	<20
	2-Propanol	ug/m3		<20	<20	<10
	Cyclohexane	ug/m3		<5	<4	<4
	Ethanol	ug/m3		**15**	<9	<8
	Heptane	ug/m3		<5	<5	<5
	Hexane	ug/m3		<5	<5	<4
	Tetrahydrofuran	ug/m3		<4	<4	<3
NA	3-Chloropropene	mg/m3		<0.02	<0.02	<0.02
	4-Ethyltoluene	mg/m3		<0.006	<0.006	<0.005
	2,2,4-Trimethylpentane	mg/m3		<0.006	<0.006	<0.005
	alpha-Chlorotoluene	mg/m3		<0.007	<0.006	<0.006
	Freon 11	mg/m3		<0.007	<0.007	<0.006
	Freon 114	mg/m3		<0.009	<0.009	<0.008
	Freon 12	mg/m3		<0.007	<0.006	<0.005
	Propylbenzene	mg/m3		<0.006	<0.006	<0.005

< - less than laboratory limit of reporting
mg/m - milligrams per metre^3

Prepared by:	KB	Date:	20/05/2015
Checked by:	MP	Date:	20/05/2015

Groundwater and Soil Vapour Data Report -
Beverley Assessment Area, South Australia

Project No: 1418522

Table 21: Outdoor Ambient Air RPD Data

Laboratory Report Number	M151001	M151001	
Field ID	RD1 RJ700	RD-Dup RJ701	**RPD**
Sampled Date/Time	1/05/2015	1/05/2015	

Chemical Group	Chemical Name	Units	EQL			
13-SVOCs	1,2-Dichlorobenzene	µg/m3	0.022 : 0.026 (Dupe)	<0.022	<0.026	0
	1,3-Dichlorobenzene	µg/m3	0	0.07	0.09	25
	1,4-Dichlorobenzene	µg/m3	0	0.04	0.06	40
14-MAH	1,2,4-trimethylbenzene	µg/m3	0	1.4	2.4	53
	1,3,5-Trimethylbenzene	µg/m3	0	0.55	0.73	28
	Benzene	µg/m3	0	0.89	1.2	30
	Ethylbenzene	µg/m3	0	0.76	1.1	37
	Styrene	µg/m3	0	0.16	0.21	27
	Toluene	µg/m3	0	5.8	7.3	23
	Xylene (o)	ug/m3	0	0.94	1.3	32
	Xylenes (m & p)	ug/m3	0	2.3	3.2	33
	Xylenes Total	µg/m3	0	3.3	4.5	31
15-VOC	1,1,1-Trichloroethane	µg/m3	0.025 : 0.029 (Dupe)	<0.025	<0.029	0
	1,1,2-Trichloroethane	µg/m3	0.025 : 0.029 (Dupe)	<0.025	<0.029	0
	Tetrachloroethene	µg/m3	0	0.08	0.1	22
	Trichloroethene	µg/m3	0	0.19	0.28	38

*RPDs have only been considered where a concentration is greater than 5 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 100 (5-10 x EQL); 100 (10-30 x EQL); 100 (> 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
EQL - Effective Quantitative Limit
NA denotes Not Available as RPD can only be calculated where both concentrations are above the limit of reporting
< - less than laboratory limit of reporting
ug/m - micrograms per metre^3

Prepared by:	KB	Date:	20/05/2015
Checked by:	MP	Date:	20/05/2015

FIGURES

LOCATION MAP

LEGEND

Assessment Area

0 50 100 150 200
METRES

REFERENCE SCALE: 1:5,000 (at A3)

PROJECTION: GDA 1994 MGA Zone 54

CLIENT
ENVIRONMENT PROTECTION AUTHORITY

PROJECT
GROUNDWATER AND SOIL VAPOUR DATA REPORT - BEVERLEY ASSESSMENT AREA, SOUTH AUSTRALIA

TITLE
ASSESSMENT AREA LOCATION PLAN

CONSULTANT
Golder Associates

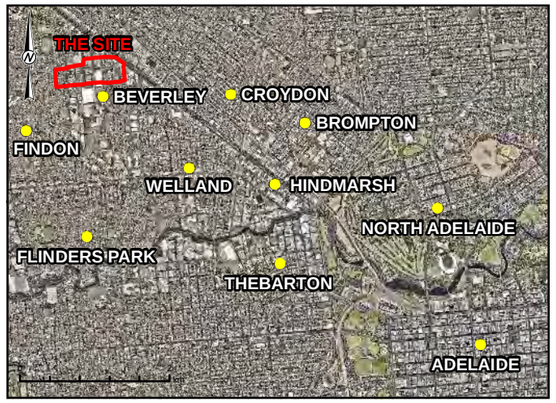
YYYY-MM-DD	2015-05-27
PREPARED	KB
DESIGN	-
REVIEW	MP
APPROVED	-

PROJECT No.	CONTROL	Rev.	FIGURE
1418522	003-R	1	**1**

25mm
0

Path: S:\Enviro Jobs\2014\1418522 - EPA Beverley GW and Soil Vapour Assessment\Project\Deliverable\Production Fig\003 - GW and Vap Report\Rev1\1418522-003-R-F0001-Rev1.mxd

LOCATION MAP



LEGEND

- Groundwater Monitoring Well Location
- Soil Vapour Probe / Pin Location
- Outdoor Ambient Air Sampling Location
- Assessment Area

0 50 100 150 200 METRES

REFERENCE SCALE: 1:3,250 (at A3)

PROJECTION: GDA 1994 MGA Zone 54

CLIENT
ENVIRONMENT PROTECTION AUTHORITY

PROJECT
GROUNDWATER AND SOIL VAPOUR DATA REPORT - BEVERLEY ASSESSMENT AREA, SOUTH AUSTRALIA

TITLE
SOIL VAPOUR PROBES/PINS AND GROUNDWATER MONITORING WELLS LOCATION PLAN

CONSULTANT
Golder Associates

YYYY-MM-DD	2015-05-27
PREPARED	KB
DESIGN	-
REVIEW	MP
APPROVED	-

PROJECT No.	CONTROL	Rev.	FIGURE
1418522	003-R	1	**2**

25mm

0

LOCATION MAP

LEGEND

- Groundwater Monitoring Well Location and Groundwater Level (m AHD)
- 2.49 Inferred Groundwater Contour (m AHD)
- Assessment Area

0 50 100 150 200
METRES

REFERENCE SCALE: 1:3,250 (at A3)

PROJECTION: GDA 1994 MGA Zone 54

CLIENT
ENVIRONMENT PROTECTION AUTHORITY

PROJECT
GROUNDWATER AND SOIL VAPOUR DATA REPORT - BEVERLEY ASSESSMENT AREA, SOUTH AUSTRALIA

TITLE
INFERRED GROUNDWATER CONTOUR PLAN

CONSULTANT
Golder Associates

YYYY-MM-DD	2015-05-27
PREPARED	KB
DESIGN	-
REVIEW	MP
APPROVED	-

PROJECT No.	CONTROL	Rev.	FIGURE
1418522	003-R	1	3

MW03	µg/L
perchloroethylene	<0.1
trichloroethylene	2700
cis-1,2-dichloroethylene	0.7
trans-1,2-dichloroethylene	<0.1
vinyl chloride	<0.3
chloroform	1

MW02	µg/L
perchloroethylene	<0.1
trichloroethylene	2000
cis-1,2-dichloroethylene	1
trans-1,2-dichloroethylene	<0.1
vinyl chloride	<0.3
chloroform	1

MW01	µg/L
perchloroethylene	<0.1
trichloroethylene	460
cis-1,2-dichloroethylene	0.2
trans-1,2-dichloroethylene	<0.1
vinyl chloride	<0.3
chloroform	1

MW04	µg/L
perchloroethylene	<0.1
trichloroethylene	320
cis-1,2-dichloroethylene	49.8
trans-1,2-dichloroethylene	1
vinyl chloride	<0.3
chloroform	2.27

MW07	µg/L
perchloroethylene	<0.1
trichloroethylene	110
cis-1,2-dichloroethylene	0.6
trans-1,2-dichloroethylene	<0.1
vinyl chloride	<0.3
chloroform	<0.1

MW06	µg/L
perchloroethylene	<0.1
trichloroethylene	29
cis-1,2-dichloroethylene	0.2
trans-1,2-dichloroethylene	<0.1
vinyl chloride	<0.3
chloroform	<0.1

MW05	µg/L
perchloroethylene	1
trichloroethylene	2000
cis-1,2-dichloroethylene	20
trans-1,2-dichloroethylene	0.4
vinyl chloride	<0.4
chloroform	0.9

XMW03	µg/L
perchloroethylene	<0.1
trichloroethylene	73
cis-1,2-dichloroethylene	<0.1
trans-1,2-dichloroethylene	<0.1
vinyl chloride	<0.3
chloroform	<0.1

XMW02	µg/L
perchloroethylene	0.4
trichloroethylene	700
cis-1,2-dichloroethylene	2
trans-1,2-dichloroethylene	<0.1
vinyl chloride	<0.3
chloroform	<0.1

FAIRWEATHER AVENUE
LEDGER ROAD
OLVESTON AVENUE
SHORT STREET
ELFORD STREET
JEANETTE STREET
KILKENNY ROAD
PORT ROAD
GLEN LOSSIE STREET
ALTON STREET
GLENAVON STREET
POPE STREET
COURTOY STREET
FIFE STREET
PEGLER STREET
WEST STREET
WILLIS STREET
MW01
MW02
MW03
MW04
XMW02
XMW03
HAYNES CRESCENT
HOWARDS ROAD
WOOLGINA STREET
MAIN STREET
DAVIS STREET
MW06
MW05
MW07
CHARLES ROAD
WILLIAM STREET
JEANES STREET
DEE STREET
WODONGA STREET
BRANWHITE STREET
GEMMELL STREET
HILL STREET
WILLSMORE STREET
GOLDING STREET
GODSON STREET
ALFRED AVENUE

LOCATION MAP

LEGEND

- Groundwater Monitoring Well Location
- Assessment Area

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0 50 100 150 200
METRES

REFERENCE SCALE: 1:3,250 (at A3)

PROJECTION: GDA 1994 MGA Zone 54

CLIENT
ENVIRONMENT PROTECTION AUTHORITY

PROJECT
GROUNDWATER AND SOIL VAPOUR DATA REPORT - BEVERLEY ASSESSMENT AREA, SOUTH AUSTRALIA

TITLE
GROUNDWATER CONCENTRATIONS

CONSULTANT
Golder Associates

YYYY-MM-DD	2015-05-27
PREPARED	KB
DESIGN	-
REVIEW	MP
APPROVED	-

PROJECT No. 1418522 | CONTROL 003-R | Rev. 1 | FIGURE **4**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm 0

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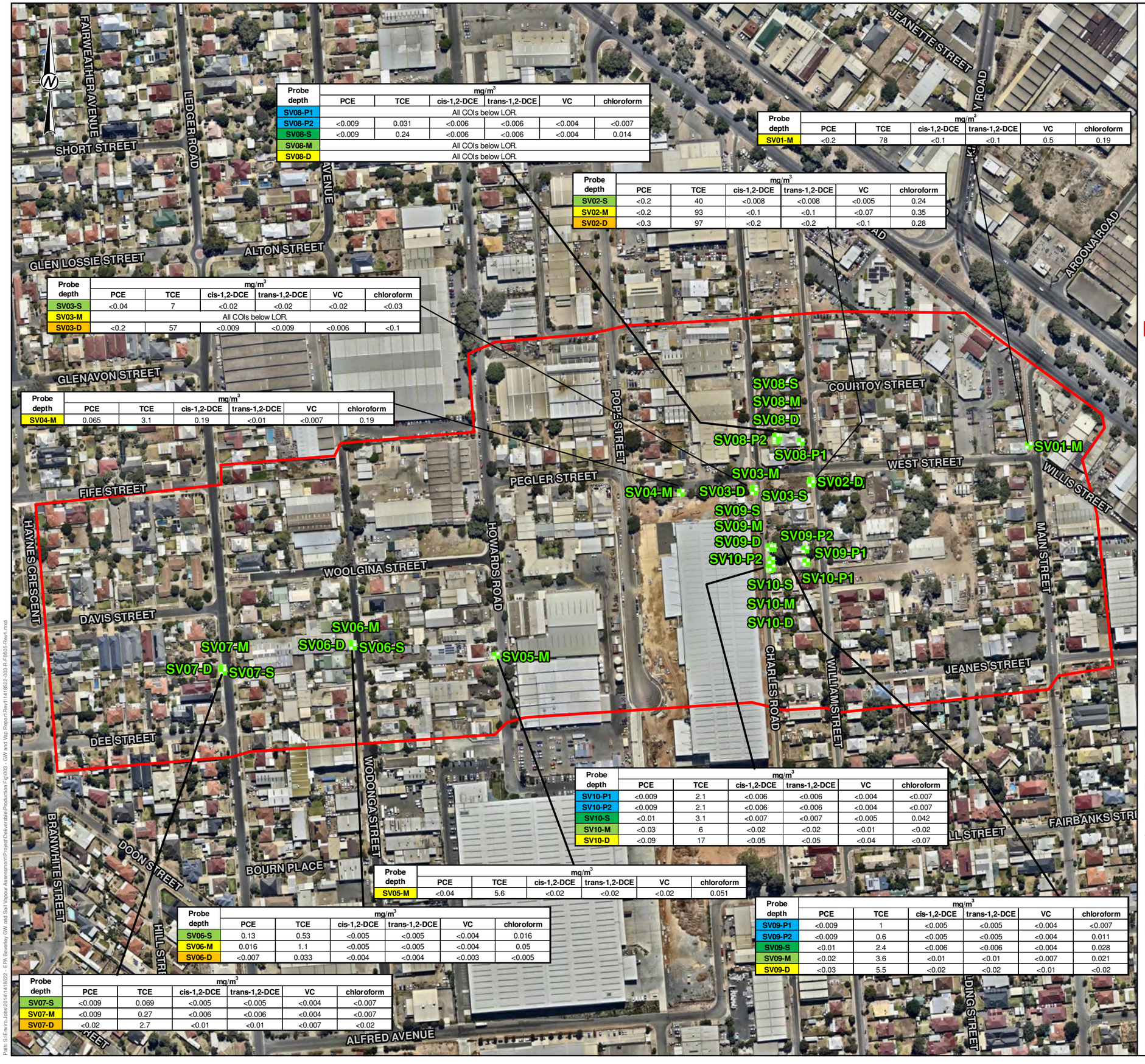

Probe depth	mg/m³					
	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC	chloroform
SV08-P1	All COIs below LOR.					
SV08-P2	<0.009	0.031	<0.006	<0.006	<0.004	<0.007
SV08-S	<0.009	0.24	<0.006	<0.006	<0.004	0.014
SV08-M	All COIs below LOR.					
SV08-D	All COIs below LOR.					

Probe depth	mg/m³					
	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC	chloroform
SV01-M	<0.2	78	<0.1	<0.1	0.5	0.19

Probe depth	mg/m³					
	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC	chloroform
SV02-S	<0.2	40	<0.008	<0.008	<0.005	0.24
SV02-M	<0.2	93	<0.1	<0.1	<0.07	0.35
SV02-D	<0.3	97	<0.2	<0.2	<0.1	0.28

Probe depth	mg/m³					
	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC	chloroform
SV03-S	<0.04	7	<0.02	<0.02	<0.02	<0.03
SV03-M	All COIs below LOR.					
SV03-D	<0.2	57	<0.009	<0.009	<0.006	<0.1

Probe depth	mg/m³					
	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC	chloroform
SV04-M	0.065	3.1	0.19	<0.01	<0.007	0.19

Probe depth	mg/m³					
	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC	chloroform
SV10-P1	<0.009	2.1	<0.006	<0.006	<0.004	<0.007
SV10-P2	<0.009	2.1	<0.006	<0.006	<0.004	<0.007
SV10-S	<0.01	3.1	<0.007	<0.007	<0.005	0.042
SV10-M	<0.03	6	<0.02	<0.02	<0.01	<0.02
SV10-D	<0.09	17	<0.05	<0.05	<0.04	<0.07

Probe depth	mg/m³					
	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC	chloroform
SV05-M	<0.04	5.6	<0.02	<0.02	<0.02	0.051

Probe depth	mg/m³					
	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC	chloroform
SV06-S	0.13	0.53	<0.005	<0.005	<0.004	0.016
SV06-M	0.016	1.1	<0.005	<0.005	<0.004	0.05
SV06-D	<0.007	0.033	<0.004	<0.004	<0.003	<0.005

Probe depth	mg/m³					
	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC	chloroform
SV07-S	<0.009	0.069	<0.005	<0.005	<0.004	<0.007
SV07-M	<0.009	0.27	<0.006	<0.006	<0.004	<0.007
SV07-D	<0.02	2.7	<0.01	<0.01	<0.007	<0.02

Probe depth	mg/m³					
	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC	chloroform
SV09-P1	<0.009	1	<0.005	<0.005	<0.004	<0.007
SV09-P2	<0.009	0.6	<0.005	<0.005	<0.004	0.011
SV09-S	<0.01	2.4	<0.006	<0.006	<0.004	0.028
SV09-M	<0.02	3.6	<0.01	<0.01	<0.007	0.021
SV09-D	<0.03	5.5	<0.02	<0.02	<0.01	<0.02

LOCATION MAP

LEGEND

- Soil Vapour Probe / Pin Location
- Assessment Area

Depth Key

- sub-slab
- 0.85 m
- 1.85 m
- 3.85 m
- 6.35 m

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0 50 100 150 200 METRES

REFERENCE SCALE: 1:3,250 (at A3)

PROJECTION: GDA 1994 MGA Zone 54

CLIENT
ENVIRONMENT PROTECTION AUTHORITY

PROJECT
GROUNDWATER AND SOIL VAPOUR DATA REPORT - BEVERLEY ASSESSMENT AREA, SOUTH AUSTRALIA

TITLE
SOIL VAPOUR CONCENTRATIONS

CONSULTANT
Golder Associates

YYYY-MM-DD	2015-05-27
PREPARED	KB
DESIGN	-
REVIEW	MP
APPROVED	-

PROJECT No. 1418522 | CONTROL 003-R | Rev. 1 | FIGURE 5

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm 0

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RD-1	µg/m³
perchloroethylene	0.08
trichloroethylene	0.19
cis-1,2-dichloroethylene	<0.018
trans-1,2-dichloroethylene	<0.018
vinyl chloride	<0.018
chloroform	0.036

RD-2	µg/m³
perchloroethylene	0.11
trichloroethylene	0.1
cis-1,2-dichloroethylene	<0.026
trans-1,2-dichloroethylene	<0.026
vinyl chloride	<0.026
chloroform	0.061

RD1

RD2

FAIRWEATHER AVENUE
LEDGER ROAD
OLVESTON AVENUE
SHORT STREET
ELFORD STREET
JEANETTE STREET
KILKENNY ROAD
PORT ROAD
AROONA ROAD
GLEN LOSSIE STREET
ALTON STREET
GLENAVON STREET
POPE STREET
COURTOY STREET
FIFE STREET
PEGLER STREET
WEST STREET
WILLIS STREET
HAYNES CRESCENT
HOWARDS ROAD
WOOLGINA STREET
MAIN STREET
DAVIS STREET
CHARLES ROAD
WILLIAM STREET
JEANES STREET
DEE STREET
WODONGA STREET
BRANWHITE STREET
DOON STREET
BOURN PLACE
GEMMELL STREET
HILL STREET
WILLSMORE STREET
GODSON STREET
GOLDING STREET
ALFRED AVENUE

LOCATION MAP

LEGEND

- Outdoor Ambient Air Sampling Location
- Assessment Area

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1. Aerial image sourced from Nearmap Pty. Ltd, aerial dated 11.03.2015, sourced 18.05.2015.
2. Roads data sourced from DPTI, Department for Transport Energy and Infrastructure, South Australian Government, sourced http://www.dptiapps.com.au/dataportal/Roads.zip, sourced 19.06.2014.

0 50 100 150 200 METRES

REFERENCE SCALE: 1:3,250 (at A3)

PROJECTION: GDA 1994 MGA Zone 54

CLIENT
ENVIRONMENT PROTECTION AUTHORITY

PROJECT
GROUNDWATER AND SOIL VAPOUR DATA REPORT - BEVERLEY ASSESSMENT AREA, SOUTH AUSTRALIA

TITLE
OUTDOOR AIR CONCENTRATIONS

CONSULTANT
Golder Associates

YYYY-MM-DD	2015-05-27
PREPARED	KB
DESIGN	-
REVIEW	MP
APPROVED	-

PROJECT No.	CONTROL	Rev.	FIGURE
1418522	003-R	1	6

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI A1

25mm

0

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