Accredited Member of the Australian Contaminated Land Consultants Association (ACLCA)

Detailed Site Investigation, 65-73 Dunheved Circuit, St Marys

Borg Manufacturing Pty Ltd

FINAL

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DRC DSI 65 Dunheved Crt 110219

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Document History

Version	Status	Author	Reviewer
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EXECUTIVE SUMMARY

DRC Environmental Pty Ltd (DRC) was engaged by Borg Manufacturing Pty Ltd (Borg) to undertake a Detailed Site Investigation (DSI) works at 65-73 Dunheved Circuit, St Marys, New South Wales (the site). The site is currently in the process of re-development planning for industrial use.

DRC undertook a preliminary site investigation (PSI), review of previous reports (accessed at the City of Penrith Council and excavated 19 test pits across accessible areas of the site.

The site is currently used for industrial use and has four tenants operating separate businesses on the site. Site uses include:

- Dutch Rembrandt Clubhouse including restaurant;
- ANTQIP civil contractors and plant hire with workshop, diesel above ground storage tank (AST) and parking for plant equipment;
- Ventia (limited access) – contractor storage yard; and
- Jaybro concrete barrier fabrication and storage of products for the construction industry;

Previous tenants RCA Trucks, truck parking area, site hut and diesel AST and Superior Sandstone Supplies which crush sandstone into sand products were no longer observed at the site in 2018.

The site history review completed for the site, reported the following potential causes of contamination onsite have been noted:

- Uncontrolled Fill and Fill Quality – Derived from backfilling of the western portion of site with uncontrolled fill; and
- Inert waste items – Aesthetic impacts from inert waste within fill material

Potential offsite sources of contamination were not identified during the site history review. It is noted that an industrial area exists in the vicinity of the site (Dunheved Industrial Park).

During a site walkover in 2016 staining was noted on the ground behind the ANTQIP warehouse, together with an oily residue pooled on the ground surface on the western edge of the warehouse building. The pooled oil residue was not observed in 2018.

Test pits excavated by DRC reported fill material ranged from the surface to a thickness of 0.35 m bgl in the eastern portion of the site to over a thickness of 3.8 m in the western portion of the site. Natural soils were only encountered at locations on the eastern portion of the site.

Soil analytical results reported benzo(a)pyrene, TRH C_{16}-C_{34} and F2-napthalene above the NEPM ESL guideline. Although the reported at concentrations that may exceed NEPM ESL, analysis of the site soils reported an arithmetic mean below the ESL guideline TRH C_{16}-C_{34} and F2-napthalene. Benzo(a)pyrene 95% UCL results were slightly above the ESL guideline, but benzeo(a)pyrene TEQ results were below NEPM HIL D guidelines.

Free fibre asbestos was not identified within the shallow fill material at the site and no substantial quantities, burial zones of intensive concentrations of ACM debris or potential ACM debris were identified by this site assessment.

The outcomes of the investigation indicate that the site:

- Has been subjected to a history of industrial or commercial activities and site filling that may have a potential to contaminate land;
- Has been filled with soils that have been chemically tested by a professional environmental consulting firm to be compatible with commercial/industrial land use;

- Is not filled with soils that are of an unsuitable aesthetic quality for commercial/industrial land use as demonstrated by the current and historical intensive excavation works completed for the site;
- Has been visually inspected and validated for asbestos impacts with further analytical results reporting that no free asbestos fibres were detected. Any asbestos found during future site development is likely to be limited to isolated amounts of bonded ACM (cement sheeting) at the surface of the site or within the fill material;
- Soil results reported concentrations of benzo(a)pyrene above ESLs within fill material;
- All soil analytical results were reported to be below HIL D and HSL D and are not considered to pose a risk to future commercial/industrial users at the site;
- No waste stockpiles were noted across the subject property and there was no evidence of waste or transfer station use at the site;
- Remedial works required to remove oil stained soils and soils in the vicinity of SS01 and TP06 are envisaged to be minor in nature and would be achievable using standard equipment without a significant cost ramification; and
- Is in a current condition that, in DRC's opinion, is suitable for industrial land use and sub-division as an industrial estate with minor levels of post tenancy clean up required.

DRC note that based on correspondence from EPA NSW dated 13 February 2018, supplied as **Appendix I** to this DSI report, EPA does not intend on pursuing further regulatory action in relation to Clean-up Notice No.1540293.

1 INTRODUCTION

DRC Environmental Pty Ltd (DRC) was engaged by DDDS Pty Ltd and Borg Group Pty Ltd (Borg) to undertake a Detailed Site Investigation (DSI) works at 65-73 Dunheved Circuit, St Marys, New South Wales (the site). The site is currently in the process of re-development planning for industrial use. Borg proposes to development the site with a large warehouse (approximately 16,950m^2) and associated parking and office space.

The site location is presented on **Figure 1**. The site is an industrial property and currently has four lease holders. These lease holders included the following:

- Dutch Rembrandt Club- headquarters for the club;
- ANTQIP – Earthworks contractors with workshop, plant wash down, storage, a diesel above ground storage tank (AST) and parking;
- Ventia – construction services storage yard; and
- Jaybro – concrete barrier fabricators and storage for steel products and geofabrics, a small diesel above ground storage tank (AST) was also present at the rear of the site.

Previous tenants RCA Trucks, truck parking area, site hut and diesel AST and Superior Sandstone Supplies which crush sandstone into sand products were no longer observed at the site in 2018. Their portions of the site were being used by Jaybro for further storage of scaffolds, temporary fencing and geofabrics.

Historical environmental assessment works have previously been undertaken at the site by Golder & Associates (Golder) and Compaction & Soil Testing Services Pty Ltd (CSTS). For further detail, please refer directly to the CSTS reports provided in **Appendix B**. Golder reports were only available for review, a summary of Golder reports are provided in the Site History Review section.

The site had also been issued an EPA Clean up Notice (No.1540293, 21 June 2016) to clean up 'waste' previously noted at the site. DRC note that based on correspondence from EPA NSW dated 13 February 2018, supplied as **Appendix I** to this DSI report, EPA does not intend on pursuing further regulatory action in relation to Clean-up Notice No.1540293.

1.1 Purpose and Objectives

It is understood by DRC that the site is to be redeveloped as an industrial estate and this detailed soil investigation was undertaken to identify potential soil contamination present at the site that may inhibit land development activities for ongoing industrial use. Additionally, a site walkover was to be undertaken to assess if 'waste' identified by the EPA in 2016 had been removed.

1.2 Scope of Works

The works undertaken at the site are summarized as follows:

- Preliminary site investigation;
- Reviewing of previous environmental reports (accessed at City of Penrith Council);
- Test pitting at 19 locations; and
- Reinstatement and track rolling of soils at all locations.

The scope of works for the site was limited due to accessibility constraints to the Rembrandt Club and Ventia's leased sites, additionally due to large storm events, access was not available to a portion of the Superior Sandstone Supplies lease. The site assessment was therefore amended to gain a reasonable appraisal across the majority of the land area noting also that the Rembrandt Club portion of the site was deemed to be low risk given its history of land use.

This assessment has been undertaken in general accordance with the New South Wales Government (2018), State Environmental Planning Policy (SEPP) No. 55 – Remediation of Land.

2 SITE DETAILS

The site is located approximately 55 km north west of the Sydney CBD. For planning information regarding the site, basic and planning property reports were acquired by DRC from the NSW Government Planning and Environment website (https://www.planningportal.nsw.gov.au) on 11 April 2017 and copies of these reports are provided in **Appendix A**. A general summary of the information regarding the site and its surrounds is presented in **Table 2-1** below.

Table 2-1: General Site Information

Site Location	The site is located at 65-73 Dunheved Circuit, St Marys, New South Wales (**Figure 1**).	
Current land use zoning and planning overlays	Zone:	Industrial 1 (IN1)
	Planning Controls:	Height of Building: M-12m
		Land Application LEP: Included – Penrith Location Environmental Plan 2010
		Minimum Lot Size: U- 1,000m^2
		Scenic Protection Land: Scenic & Landscape Values
Municipality	Penrith City Council	
Title and plan information	Lot 1 on DP1175850	
Site Area (hectares)	Approximately 0.41 ha	
Current site use	The site is currently industrial land with six tenants	
Surrounding land use	A review of the Planning & Environment website (https://www.planningportal.nsw.gov.au) indicated that the surrounding properties were used for the following purposes: • North: Industrial 1 (IN1) • East: Industrial 1 (IN1) • South: Industrial 1 (IN1) • West: Private Recreation (RE2) and Environmental Conservation (E2).	
Proposed future use	Industrial Estate	

3 ENVIRONMENTAL SETTING

3.1 Geology & Hydrogeology

Survey of New South Wales Map indicates that the site is underlain by Quaternary aged fine-grained sand, silt and clay (Qal) and Tertiary Ages clay with patches of ferruginized consolidated sand (Tl) (**Figure 3**). Topography of the site is provided in **Figure 2.**

A groundwater database search using the NSW Government Department of Primary Industries Office of Water website (http://allwaterdata.water.nsw.gov.au/water.stm) was also undertaken by DRC on 11 April 2017. The search identified no wells within 500m of the site and 12 registered groundwater bores within 1km radius of the site and 20 wells were found within a 2km radius (**Figure 4**). The closest listed groundwater well (Bore ID GW113135) appeared to be within the Sims Metal Management site on Christie Street, this site appears contain eight groundwater wells (GW113127 to GW113135). Information regarding these groundwater bores is presented in **Table 3-1** below.

No domestic or stock wells exist within 2km of the site.

Table 3-1: Registered bores within a 2km radius of the site

Bore ID	Approximate distance and direction from site	MGA Zone 56 Easting/ Northing (m)	Bore Depth (mbgl)	Standing water level	Further information
GW113127 (Sims Metals)	630m S	292963; 6263398	Not Recorded	Not Recorded	*Installation Date:* 21 April 2009 *Use:* Monitoring Bore *Lithology:* Information not provided
GW113128 (Sims Metals)	630m S	292990; 6263362	Not Recorded	Not Recorded	*Installation Date:* 21 April 2009 *Use:* Monitoring Bore *Lithology:* Information not provided
GW113129 (Sims Metals)	630m S	293027; 6263238	Not Recorded	Not Recorded	*Installation Date:* 28 April 2009 *Use:* Monitoring Bore *Operational Status:* Used *Lithology:* Information not provided
GW113130 (Sims Metals)	630m S	293126; 6263448	Not Recorded	Not Recorded	*Installation Date:* 22 April 2009 *Use:* Monitoring Bore *Operational Status:* Used *Lithology:* Information not provided

Bore ID	Approximate distance and direction from site	MGA Zone 56 Easting/ Northing (m)	Bore Depth (mbgl)	Standing water level	Further information
GW113131 (Sims Metals)	630m S	293030; 6263370	Not Recorded	Not Recorded	*Installation Date:* 27 May 2009 *Use:* Monitoring Bore *Operational Status:* Used *Lithology:* Information not provided
GW113132 (Sims Metals)	630m S	292976; 6263377	Not Recorded	Not Recorded	*Installation Date:* 25 May 2009 *Use:* Monitoring Bore *Operational Status:* Used *Lithology:* Information not provided
GW113133 (Sims Metals)	630m S	293027; 6263230	Not Recorded	Not Recorded	*Installation Date:* 27 May 2009 *Use:* Monitoring bore *Operational Status:* Used *Lithology:* Information not provided
GW113134 (Sims Metals)	630m S	292980; 6263433	Not Recorded	Not Recorded	*Installation Date:* 28 May 2009 *Use:* Monitoring Bore *Operational Status:* Used *Lithology:* Information not provided
GW113135 (Sims Metals)	630m S	293133; 6263491	Not Recorded	Not Recorded	*Installation Date:* 28 May 2009 *Use:* Monitoring Bore *Lithology:* Information not provided
GW111461 (Sydney Water)	750m N	293280; 6264950	11.02 (Screened 8.02m – 11.02m)	Not Reported	*Installation Date:* 31 March 2011 *Use:* Monitoring Bore *Operational Status:* Used *Lithology:* 0 - 0.4: Fill 0.4 – 6.6: Clay 6.6 – 9.2: Shale/Bedrock

Bore ID	Approximate distance and direction from site	MGA Zone 56 Easting/ Northing (m)	Bore Depth (mbgl)	Standing water level	Further information
GW111462 (Sydney Water)	750m N	293186; 6264746	11.02 (Screened 6.8m – 9.7m)	Not Reported	*Installation Date:* 31 March 2011 *Use:* Monitoring Bore *Operational Status:* Used *Lithology:* 0 - 0.25: Fill 0.25 – 6.8: Clay 6.8 – 11.0: Shale/Bedrock
GW111463 (Sydney Water)	750m N	293091; 6264773	9.77 (screened 6.2m – 9.2m)	No Reported	*Installation Date:* 31 March 2011 *Use:* Monitoring Bore *Operational Status:* Used *Lithology:* 0 - 0.2: Fill 0.2 – 0.4: Sand 0.4 – 3.0: Clay 3.0 – 5.0: Sand 5.0 – 5.5: Clay 5.5 – 9.8: Shale
GW109584 (Mobil/7-11)	1.1km SE	294075; 6263554	8.2	2.89	*Installation Date:* 14 January 2003 *Use:* Monitoring Bore *Operational Status:* Used *Lithology:* 0-1.6: Clay 1.6 – 2.2: Gravelly Clay 2.2 – 5.5: Clay 5.5 – 8.2: Shale/Bedrock
GW109585 (Mobil/7-11)	1.1km SE	294062; 6263554	8.2	2.40	*Installation Date:* 14 January 2003 *Use:* Monitoring Bore *Operational Status:* Used *Lithology:* 0 – 0.6: Fill Clay 0.6-3.9: Clay 3.9 – 6.2: Gravelly Clay 6.2 – 8.2: Shale/Bedrock

Bore ID	Approximate distance and direction from site	MGA Zone 56 Easting/ Northing (m)	Bore Depth (mbgl)	Standing water level	Further information
GW109586 (Mobil/7-11)	1.1km SE	294063; 6263598	1.5	Not Reported	*Installation Date:* 15 January 2003 *Use:* Monitoring Bore *Operational Status:* Used *Lithology:* 0 – 0.7: Fill Clay 0.7 – 1.5: Clay
GW109587 (Mobil/7-11)	1.1km SE	294035; 6263554	8.2	6.7	*Installation Date:* 15 January 2003 *Use:* Monitoring Bore *Operational Status:* Used *Lithology:* 0 – 0.4: Fill Clay 0.4 – 3.5: Clay 3.5 – 5.0: Gravelly Clay 5.0 – 7.5: Clay 7.5 – 8.2: Shale/Bedrock
GW109588 (Mobil/7-11)	1.1km SE	294055; 6263585	8.2	2.62	*Installation Date:* 16 January 2003 *Use:* Monitoring Bore *Operational Status:* Used *Lithology:* 0 – 0.7: Fill Clay 0.7 – 2.6: Clay 2.6 – 4.2: Gravelly Clay 4.2 – 7.2: Clay 7.2 – 8.2: Shale/Bedrock
GW112625 (Woolworths petrol)	1.7km SE	293923; 6262709	6.0 (Screened 3m – 6m)	Not Reported	*Installation Date:* 27 August 2009 *Use:* Monitoring Bore *Operational Status:* Used *Lithology:* 0 – 1.0: Fill 1.0 – 6.0: Clay

Bore ID	Approximate distance and direction from site	MGA Zone 56 Easting/ Northing (m)	Bore Depth (mbgl)	Standing water level	Further information
GW112626 (Woolworths petrol)	1.7km SE	293945; 6262719	6.0 (Screened 3m – 6m)	Not Reported	*Installation Date:* 27 August 2009 *Use:* Monitoring Bore *Operational Status:* Used *Lithology:* 0 – 1.0: Fill 1.0 – 6.0: Clay
GW112627 (Woolworths petrol)	1.7km SE	293964; 6262702	6.0 (Screened 3m – 6m)	Not Reported	*Installation Date:* 27 August 2009 *Use:* Monitoring Bore *Operational Status:* Used *Lithology:* 0 – 1.0: Fill 1.0 – 6.0: Clay

3.2 Surface water

The closest surface water bodies to the site are as follows:

- South Creek, located approximately 150 m to the southwest of the site, within the Dunheved Golf Course;
- A branch of South Creek, located approximately 800m to the north east of the site; and
- Ropes Creek, located approximately 1 km to the north east of the site.

4 SITE HISTORY REVIEW

In order to identify activities that have the potential to cause contamination that may have been undertaken at the site, a review of a range of media likely to provide insight into the history of the site was undertaken. The review is presented in the sections below.

4.1 Previous Environmental Site Assessments

It is understood by DRC that a previous soil contamination assessment (SCA) has been undertaken at the site and on the adjacent site. The following reports for the site were viewed with reports marked with a * provided in hardcopy (**Appendix B**):

- OTEK (November 1996), *Background Investigation (Potential Contaminants) 65-87 Dunheved Circuit, St Marys.*
- Golder and Associates (August 1997), *Stage 2 Site Contamination Assessment 65-87 Dunheved Circuit, St Marys.*
- Golder and Associates (December 1998), *Remediation and Validation Areas 1 and 2, 65-87 Dunheved Circuit, St Marys*;*
- CSTS (December 2013), *Potential Asbestos & Hydrocarbon Contamination Report 65-75 Dunheved Circuit, St Marys NSW (MAG 1930/427)**; and
- CSTS (January 2014), *Recycled Crushed Concrete Assessment Report 65-73 Dunheved Circuit, St Marys NSW* (MAG1930/433)*.

It should be noted that the OTEK and Golders Report are on the adjacent vacant land site, with only a small part of the investigative works undertaken on the site itself. Due to the quantity of documentation provided by Penrith City Council, only a brief review of the OTEK report was able to be undertaken. Additional enquires regarding obtaining a full copy of this report have to date been unsuccessful.

A summary of the above report is presented in **Table 4-1** below.

Table 4-1: Summary of Historical Reports

OTEK (November 1996) – Background Investigation (Potential Contamination) 65-87 Dunheved Circuit, St Marys	
Objectives	• To assess soils at the former ASP plastics site (which is partially on the site) after a fire occurred in 1991.
Scope of Works	• A review of historical site information pertaining to the site.
Key Findings	• The site contained Ray Pont Powder storage (plastic coatings powder storage), the Rembrandt Club and an abandoned residence north of the Rembrandt Club. Additionally, three fibrous-cement buildings were located to the west of the Ray Pont Powder storage, which were reported to have been used by the army but had be unoccupied for over 20 years (i.e. since at least 1976). A methylated spirits storage shed was reported to be located on the site, between the ASP Plastics and Ray Pont Powder buildings. These buildings were evident as early as 1947. • To the south of the site the ASP Plastics building was situated, this building also contained the Rural Bag and Sack Co (manufactures polypropylene and hessian bags using imported material from India). The ASP Plastics site is only partially on the 65-73 Dunheved Circuit property. ASP Plastics produced bottles, PVC, polystyrene and car battery cases between 1984 and 1991. Twpo abandoned USTs exist near the former ASP Plastics building and an additional tank was noted on their figure in the southeast corner of the building footprint. • There was a site fire that started in the building and destroyed both ASP Plastics, the Rural Bag and Sack Co. and Ray Pont Powder in 1991. According to the NSW Fire Brigade and Penrith Council, the fire was extremely intense and destroyed the factory including machinery stock, motor lorrie and LPG forklift trucks. All that remained after the fire was the brick office building and concrete slab of the former factory floor.

	• After the fire a shed was built in the former Ray Pont Powder location (now current ANTQIP location) and Rural Bag and Sack Co moved in. • According to a site representative there has been significant historical illegal dumping at the site. This was evidenced by the number of tyres, rusted drums, stockpiled material and building materials located to the west and south of the former factory areas – within the flood plain areas. • OTEK concluded that there was potential to be oil impacted soils beneath the ASP Plastics building and UST areas and within fill material surrounding the buildings. • OTEK stated that no substantial soil contamination is expected to have occurred in connection with the current or previous uses of the abandoned residence, army sheds, the existing storage shed, the structure occupied by Rural Bag and Sack Co. or the Rembrandt Club.
Golder (August 1997) – Stage 2 Site Contamination Assessment 65-87 Dunheved Circuit, St Marys.	
Objectives	• Investigate the soil conditions at the site.
Scope of Works	• Undertaken 72 test pits across the site and investigate the known UST area in the vicinity of the former ASP Plastics building; and • Characterisation of soils for the ongoing industrial use of the site.
Key Findings	• Four areas were investigated. Area 1 (west of ASP Plastics concrete slab) was found to have heavy end hydrocarbon and metals impacts: TP34 (0-0.2m) and TP7 (0-0.2m) in Area 1 were found to contain concentrations of copper, lead, zinc and cadmium above the NEHF (F) criteria. Two samples Deeper samples did not report any metals exceedances. In addition, TP34 (0-0.2m) was found to have TPH C_{10}-C_{36} concentration of 22,800 mg/kg. • Area 2 (near the USTs) did not show levels of contamination above industrial use guidelines. • Area 3 (southwest corner of the ASP Plastics concrete slab) reported copper and zinc concentrations above ANZECC guidelines, but below NEHF (F) criteria. • Area 4 (beneath the ASP Plastics concrete slab) reported copper in one sample at 500 mg/kg. • Golder concluded that remediation of impacted soils in Area 1 were required to meet industrial criteria.
Golder (December 1998) – Remediation and Validation Areas 1 and 2, 65-87 Dunheved Circuit, St Marys	
Objectives	• Remediate two areas of known contamination in the vicinity of the former ASP Plastics building.
Scope of Works	• Remediate Area 1 (approximately 150 m^2) which was found to be contaminated with heavy metals and hydrocarbons, in the near surface soils, above industrial use guideline values; • Remediate Area 2, the former UST area after the removal of the USTs by the site owner, which had potential hydrocarbon and heavy metals contamination; and • Characterisation of excavated soils for offsite disposal.
Key Findings	• Area 1 was found to have metals contaminated soil to approximately 0.25m in depth. Soils from Area 1 were scraped and stockpiled based on visual and odour observations and PID screening results. The soil excavated consisted of fill 0.1m (topsoil) overlaying a shaley clay fill. • Soils were disposed of to a licensed landfill. Residual soils in the excavation and those retained onsite after segregation were validated. Results were all below the adopted criteria for industrial use of the site. • Area 2 residual spoils from the walls and base of the UST excavation and resultant stockpiled soils were validated. The excavation was approximately 6m x 6m x 2m deep. PID readings were generally low (less than 10ppm), the walls and floor of the excavation were sampled. • Area 1 results were below the NSW EPA criteria for industrial use of the site. • Excavations were backfilled by the owner with the soils retained on the site and natural material excavated from other parts of the site. • Golder concluded that based on the results of the remediation and validation, that the likelihood of hydrocarbon and heavy metals contamination in the areas of remediation are considered to be low and acceptable for ongoing industrial use.

CSTS (December 2013) – Potential Asbestos & Hydrocarbon Contamination Report 65-75 Dunheved Circuit, St Marys	
Objectives	• To assess recycled crushed concrete placed on the site and determine if the material was impacted with asbestos; and • Assess two areas of stained material to determined weather fluid has contaminated they soils.
Scope of Works	• Undertook a soil investigation, which included a site walkover, recovery of 30 samples of the recycled crushed rock (TP101 to TP130) and two samples of stained areas (ST1 and ST2)
Key Findings	• Test pits were undertaken on a 26m grid (where possible) and excavated using a backhoe to the depth of the recycled crushed concreate (i.e. 50 – 100mm). The area assessed was predominately along the main driveway in the site and in the western most portion of the site. • Recycled crushed concrete material used included brick, tile and PVC plastic pipe. Limited evidence of foam, rubber and fabric were observed. The layer varied in thickness and was on average 50-100mm thick. • Asbestos was not observed during the investigation. No asbestos fines were detected within any of the samples. • Stained areas were 1300mmx600mm in size and assumed to be from a truck and/or trailer storage at the site. • TPH was found in samples in the stained areas but of concentrations lower than HBILs for commercial/industrial land use. No concentrations of BTEX, naphthalene or volatile TPH were detected in any samples. • CSTC concluded that the recycled crushed concrete product placed on the site is of suitable condition or ongoing commercial/industrial land use, from a contamination perspective in accordance with NEPM and WA DOH guidelines.
CSTS (January 2014) – Recycled Crushed Concrete Assessment Report 65-73 Dunheved Circuit, St Marys NSW	
Objectives	• To assess recycled crushed concrete placed on the site and determine if the material was suitable for commercial/industrial land use.
Scope of Works	• Review of the report (MAG 1930/427, above) detailing previous investigations; • Walkover of the site to determine material composition and other properties through visual inspection; • Excavation of 30 test pits (TP201 to TP230), recovery of 15 samples from the recycled crushed concrete and 15 samples from the interface of the recycled crushed concrete and underlying material. • Re-sampling of stained areas noted in previous report.
Key Findings	• The material had previously covered an area of 2 hectares, however at the time of the investigation material long the western side of the site had been scraped and stockpiled. • Test pits were undertaken on a 26m grid (where possible) and excavated using a backhoe to the depth of the recycled crushed concreate (i.e. 50 – 100mm). The area assessed was predominately along the main driveway in the site and in the western most portion of the site. • Laboratory analysis of metals, PAHs, TRH, BTEX, pesticides and PCBs was undertaken. All concentrations were below commercial/industrial land use. • Only one area observed as stained during the previous investigation was able to be located. This area of stained material and a new stain, not previously identified was sampled during the investigation. TPH results for the stained areas were found to have increased, however all concentrations were below HILs for commercial/industrial use. • CSTC concluded that the recycled crushed concrete product placed on the site is of suitable condition or ongoing commercial/industrial land use, from a contamination perspective in accordance with NEPM and WA DOH guidelines.

Additional records pertaining to the site were also viewed at the at the City of Penrith Council offices. These included timelines and sampling undertaken for filling of the western portion of the site by SMEC. Filling activities were undertaken to further develop the site and to raise the site above the 1-in-10 year flood plain level.

Based on the council files the intent to fill the site were first submitted in 1997. Both SMEC and Golder undertook various sampling events, with Golder undertaking representative sampling of over 60,000 tonnes of virgin excavated natural material (VENM) imported to site in 1999. Additional unknown fill material was also imported to the site, this was described as silty clay and silty sand fill material, this material was later tested by CSTS to confirm the contamination status (if any) of the additional non-VENM fill. CSTS reports are summaries above and provided in **Appendix B.** Based on the results from all historical environmental works undertaken at the site (prior to DRC works), imported fill soils at the site did not appear to be significantly contaminated or preclude the site for continued ongoing industrial use.

SMEC undertook soil assessment (2000), soils metals testing (2001) and compaction testing (2003) at the site.

4.2 Historical Aerial Photographs

A search of relevant historical aerial photographs was undertaken by reviewing the Aerial Photograph from Google Earth satellite imagery. Eight historical aerial photographs (**Appendix B**) were reviewed for the site from the years 2002 to 2016 and are summarised in **Table 4-2** below.

Table 4-2: Historical Aerial Photographs

Date	Site Description	Surrounding Land Use	Reference
2002	The site has a house sized structure in the eastern portion, with a large industrial sized shed behind it (current location and set out of Rembrandt Club and ANTQIP). A small shed also is visible next to the ANTQIP building. The remainder of the site appears undeveloped. Western portion of the site appears to be level.	North: A large industrial sized building exists adjacent to the northern boundary, beyond which is vacant land and other industrial sized buildings. East: Large industrial size buildings are present across Dunheved Circuit. South: A large square concrete slab is visible, beyond the slab there appears to be lots of soil stockpiles. West: The golf course is visible to the west of the site.	Google Earth 21 July 2002
2004	The site appears relatively unchanged from the 2002 aerial photograph.	South: soil stockpiles are no longer visible. Other Directions: conditions remain generally unchanged from the 2002 aerial photograph.	Google Earth 22 December 2004
2007	Site appears relatively unchanged from the 2002 aerial photograph, however a dirt road is evident in the western portion and areas around the industrial sized shed appear to have been gravelled and fenced.	North: An additional industrial sized building now exists in the western portion of the block and further industrial development is evident further north.	Google Earth 11 March 2007
2011	Site appears to now have additional tenants, with a third area fenced. New area appears to have shipping containers and be a storage area. Shipping containers are also evident on the ANTQIP property, along with cars and several trucks. Shipping containers are now also visible near the southern boundary and the western portion of the site has been graded/filled with bare ground visible.	All Directions: conditions remain generally unchanged from the 2002 aerial photograph.	Google Earth 14 November 2011

Date	Site Description	Surrounding Land Use	Reference
2012	Site appears to have been gravelled (except for western most boundary). Another yard has been fenced (in area of current Jaybro lease area) and appears to have storage racks. Several trucks are parked in the southern portion of the site and parked cars are present in the eastern portion of the site.	All Directions: conditions remain generally unchanged from the 2002 aerial photograph.	Google Earth 5 December 2012
2014	Lots of machinery is parked along the southern boundary of the site. Soil stockpiles are visible in the north-western portion of the site.	All Directions: conditions remain generally unchanged from the 2002 aerial photograph.	Google Earth 1 October 2014
2015	The western portion of the site now appears to have quarry type activities, with large stockpiles of various soil products. The central portion of the site appears to have less shipping container/storage and is half vacant. The remainder of the property appears generally unchanged from the 2014 aerial photograph.	All Directions: Conditions remain generally unchanged from the 2002 aerial photograph.	Google Earth 3 March 2015
2016	The western portion of the site appears graded with several vehicles and a soil stockpile visible. The Jaybro yard appears mostly empty with the gravel surface visible. The Ventia yard is now covered with shipping containers/sheds with the ground surface only visible along road ways. ANTQIP yard now has the covered truck was visible on the northern boundary and another covered area east of the warehouse. Additional office sized buildings are visible attached to the southern end of the building. Additionally, there appears to be equipment stored along the western and northern boundaries of this lease area.	All Directions: Conditions remain generally unchanged from the 2002 aerial photograph.	Google Earth 30 November 2016

Based on OTEKs findings the eastern portion of the site was developed by 1947. At that time the Rembrandt Club building was present, along with a warehouse scale building (Ray Pont Powder storage). The ASP Plastics building was visible by the 1970s. After the 1991 fire which destroyed Ray Pont Powder and ASP Plastics, a new warehouse scale building was built on the Ray Pont Powder storage footprint, and Rural Bag and Sack Co moved in.

By 1994 only the Rembrandt Club and Rural Bag and Sack Co. occupied the site. The site also contained three fibrous-cement buildings to the west (abandoned by the army) and a small vacant shed to the south of the Rural Bag and Sack Co.

DRC noted by 2002, there only existed a residential scale building and a warehouse scale building behind. The remainder of the site appeared to be vacant grassed land. By 2011 the site was becoming more developed, with an additional fenced yard behind the warehouse and the site appeared to be used predominately for industrial and storage purposes. Further areas were fenced and used for storage from 2012 to the current time.

The former ASP Plastics building footprint has been visible in the aerial photos, with the northeastern corner of the former building extending into the site.

Over time further industrial development has occurred within the area, with residential development occurring north of the industrial estate (to the north).

Features identified during the aerial photograph review with the potential to cause contamination is the uncontrolled fill and fill quality – Derived from backfilling of the site with uncontrolled fill and the potential contaminating activities of current tenants at the site.

4.3 Historical Certificates of Title

Copies of the current registered certificate of title and plan were obtained through SAI Global on 27 April 2017and information provided in the OTEK report. A summary of the certificates of title is provided in **Table 4-3** below.

Table 4-3: Current and Historical Certificates of Title

Volume/Folio Reference	Land Description/Activity	Period of Ownership	Proprietor
Unknown	Site granted to Phillip King as a part of 874 hectares	1806	Commonwealth of Australia
Unknown	Various private purchases take over the site	1877 - 1942	
14/31908 **15/31908** **16/31908** **207/31908**	Subdivision of land – Lots 16 and 207 are bought and sold several times before combining again all the lots together	1942 - 1973	H.K. Porter Australia Pty Ltd / Prospect County Council
	Purchase of combined titles	1979	Peshawar Pty Ltd
Lot 1/DP1175850	None listed	17 December 2014 to present	Maganic Brothers & Sister Pty Ltd

The certificates detailed the development of the land occurred in the early 1940s, with unidentified proprietors prior to 2014.

Copies of the above-mentioned certificates of title are presented in **Appendix A**.

4.4 Site Inspection

DRC undertook a site inspection in March 2017 prior to works commencing. The site was found to be an active site with six leaseholders. The site was fenced and gated.

The following features were observed during the first site inspection for each lease area. Details are also presented on **Figure 5A**.

Dutch Rembrandt Club:

- A residential scale building which contains a restaurant, seating and meeting space.
- Covered stage area, shipping container storage and large covered pergola.
- The ground surface is predominately gravel with areas of grass.
- Although access was partially available, due to the annual Dutch Festival fundraiser from Friday through the weekend, excavation within the area was no able to be undertaken. It was deemed though based on the existing use of the site and discussions with the site's caretaker that the site is of low risk in the context of this assessment.
- Site has overhead power and plumbed water.
- No sources of contamination or visible observations of contaminated were noted during the site walkover.

ANTQIP (civil contracting and plant hire):

- Site contains a large workshop/shed with concrete floor, a site office and a covered work area in the north-western corner of the site.
- Site has overhead power and plumbed water.
- The ground surface was generally gravel, with the exception of concrete areas north of the warehouse where equipment was washed down and worked on and areas where drums and other items were stored.
- Several large shipping containers were observed, these appeared to be used for storage.
- Several drums on pallets were noted within the concrete area.
- A large diesel AST was noted to the east of the workshop, staining was noted on and around the AST.
- Outside the north-western corner of the warehouse steel racking was noted, beneath the racking oily residue was noted on the ground and floating on puddles (in an area of approximately 3m x 2m).
- Staining was noted on graveled surfaces to the north and east of the workshop area – in areas used for truck parking.
- Equipment parking was also noted along the southern boundary of the site. Due to the amount and size of equipment and muddy ground conditions it was difficult to view the ground surface beneath. Based on the age (and some ill-repair) of the equipment there may be some surficial staining of the gravel beneath the equipment, however this would need to be confirmed once equipment was removed.

Ventia (contractors):

- Access to the site was limited to a site walkover only.
- Site contained storage of civil contractor materials both on the ground surface and in shipping containers, a site hut and portable toilet.
- The ground surface was generally clay with steel sheets covering parts of the main driveway. .
- No sources or visible evidence of contamination were noted during the site walkover.

Jaybro (concrete barrier fabrication and storage of products for the construction industry):

- Concrete barrier fabrication area surface was a mix of gravel and clay. .
- Site office present which uses a generator to power, no plumbed water to the site.
- Two storage shipping containers and covered area was observed for machinery. No staining or contamination sources noted.
- Storage yard has compacted gravel base. A site shed is present. The area is used for storage or geofabrics, steel grates and concrete products. No visible sources of contamination were noted. It was noted that the north-western corner of the site was approximately 1m above the adjacent northern property height and over 2m higher than Links Road on the western boundary.

RCA Trucks:

- Parking area and site hut were viewed on this portion of the site.
- Trucks with trailers used the area to park overnight after deliveries.
- Ground was generally covered in large ballast size material. Further importation of crushed rock was to be undertaken to cover the western most portion of the site within the week.
- A large diesel AST was present to refuel trucks, AST was in good condition and powered by an internal generator. Several drums of oil were also noted. No staining was noted on surface gravels.

Superior Sandstone Supplies (crushing of sandstone into sand products):

- Area contained several large stockpiles of sand products.
- No evidence of waste or resource transfer station were observed at the site (as per EPA site inspection 6 April 2016).
- No 'waste' or stockpiles of waste materials was observed on the site.
- Movement and loading of trucks using an excavator and conveyor belt were noted.
- Access to area was limited due to equipment movement, works were viewed from other properties boundaries.
- Two site sheds were present with covered seating area and portable toilets.
- No sources of contamination were observed.

An additional site visit was undertaken by DRC on 24 January 2019 to inspect if any changes had occurred at the site since March 2017. The following was observed, details are presented on **Figure 5B**:

Dutch Rembrandt Club:

- No significant changes noted.
- Potential asbestos containing materials (ACM) sheeting within eaves noted.
- No sources of contamination or visible observations of contaminated were noted during the site walkover.

ANTQIP (civil contracting and plant hire):

- A small stockpile of crushed glass was noted in the rear driveway of the property.
- Area previously noted to the east of the workshop, staining was noted on and around the AST.
- Area outside the north-western corner of the warehouse steel racking which was noted to contain oily residue was noted to be residue free, but due to overgrown vegetation full inspection was not able to be undertaken.

Ventia (contractors):

- No access was available during 2018, all observations were taken from outside the site fence.
- Additional storage of equipment was noted in the south western portion of the site. Site still used for storage of equipment.
- No sources or visible evidence of contamination were noted during the site walkover.

Jaybro (concrete barrier fabrication and storage of products for the construction industry):

- Site now consists of original viewed area (2017) and entire back of the site.
- Large amount of stored construction items (temporary fencing, geofabrics, scaffolding) and concrete fabricated items (pits and barriers)
- Small (approximately 5,000L) diesel AST present where former large AST operated by RCA was observed in 2017. AST was in good condition and powered by an internal generator. No staining was noted on surface gravels.
- No visible evidence of contamination were noted during the site walkover.

4.5 Historical Maps

A search of the 1934 edition of UBD/Gregory's was undertaken online (http://voommaps.com/historical-maps/1934-gregorys-sydney-street-directory/) on 11 April 2017. The map did not extend out as far as St Marys, a review of the 1939 directory also did not extend to St Marys.

A review of a 1939 Sydney Suburban railway map which showed the train running west from Parramatta to Penrith (and beyond to the Blue Mountains), by the 1950s a spur line running north from near St Marys to "Dunheved" and "Rope's Creek" stations. The line was used to transport workers to military ammunitions factories to St Marys during World War II. By 1969 an additional station (after Dunheved) called "Cochrane" was added. It is understood that the spur line closed in the mid-1980s.

The current Gregory's street directory shows Rembrandt Dutch Club at the site with a disused railway along the western boundary.

4.6 Potential of Acid-Sulfate Soils (PASS)

A review of the Australian Soil Resource Information System was undertaken online (http://www.asris.csiro.au) was undertaken on 11 April 2016, the risk for PASS was considered extremely low. No further assessment of PASS is considered warranted.

4.7 Environmental Protection Authority

A search of the NSW EPA Public Register list of Certificates and Statements of Environmental Audit Reports (http://www.epa.nsw.gov.au/prpoeoapp) for the St Marys area on 18 April 2017, found three Audits within a 2 km radius of the site. Two Environmental Audits undertaken at Sims Metals 76-100 Christie Street, St Marys (compliance audit), which is approximately 630m south of the site and one audit at Tyrecycle located at 81-85 Christie Street (mandatory audit- pending, no details available), located 360m south of the site. Given the distance between the site and other Environmental Audit sites, a review of these EPA Audit Reports is not considered to be relevant for the purposes of this assessment.

4.8 Summary of Site History Review

Given the observations/findings relating to the site history review completed for the site, the following potential causes of contamination onsite have been noted:

- Uncontrolled Fill and Fill Quality – Derived from backfilling of the western portion of site with uncontrolled fill; and
- Inert waste items – Aesthetic impacts from inert waste within fill material

The risk for potentially acid sulphate soil (PASS) was considered extremely low for natural soils at the site.

Potential offsite sources of contamination were not identified during the site history review. It is noted that an industrial area exists in the vicinity of the site (Dunheved Industrial Park).

5 ENVIRONMENTAL WORKS METHODOLOGY

5.1 Relevant Documents

The soil assessments and validation works were undertaken in general accordance with the following:

- Australian Standards including:
  - AS4482.1 (2005) *Guide to the investigation and sampling of sites with potentially contaminated soil, Part 1: Non-volatile and semi volatile compounds* (AS4482.1); and
  - AS4482.2 (1999) *Guide to sampling and investigation of potentially contaminated soil, Part 2: Volatile substances* (AS4482.2).
- NSW EPA (1997) Contaminated Land Management Act (CLM Act);
- NSW EPA (2014), Waste Classification Guidelines, Part 1: Classification of Waste;
- National Environment Protection (Assessment of Site Contamination) Measure 1999. National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (No. 1); and
- New South Wales Government (2018), State Environmental Planning Policy (SEPP) No. 55 – Remediation of Land, 31 August 2018.

5.2 Contaminants of potential concern (COPCs)

COPCs have been identified for the site, as described in **Table 5-1** below, based on the contaminants identified during previous investigations and by DRC. In addition to the most likely COPCs listed below, a number of samples were analyzed for broad contaminant screens to cross check for unexpected contaminants.

Table 5-1: Contaminants of Potential Concern Applicable to this Site

Site Use	Contaminants of Potential Concern	Likely media in which COPCs may be identified at the subject site
Subject Site		
Industrial activities and parking of equipment	Total Recoverable Hydrocarbons (TRH) metals, PAHs, BTEXN	Ground surface and shallow soils
Uncontrolled Fill used for levelling of site	TRH, metals, PAHs, asbestos	Fill, shallow soils, deeper soils in the western portion of the site
Offsite		
Industrial land surrounding the site	TRH, metals, asbestos	Ground surface and shallow soils

5.3 Data quality objectives

To assist with the design of the assessment program the following data quality objectives have been considered.

Table 5-2: Data Quality Objectives

Step	Objective	Site Relevant Comments
1	State the problem	*Has contamination of soil occurred that may impact upon future industrial use of the site.*
2	Identify the decision	*Collection of data to establish:* • *If uncontrolled fill is suitable for the site;* • *to reasonably investigate the extent and magnitude of soil pollution given site constraints.*

3	Identify inputs to the decision	*The completion of sufficient soil sampling to provide confidence in a dataset to characterise soil quality across the site, to the extent practicable.*
4	Define the study of boundaries	The subject site is defined as the site proposed for continued industrial use. The investigation is targeted to soils likely to be subject to human exposure.
5	Develop a decision rule	*Have we determined the extent of contamination with a degree of certainty as expected of environmental assessments?* *Test pits were located to provide coverage of the site to the extent practicable in the context of this assessment. Additional broad screen analysis and detailed analysis for COPCs was undertaken to provide additional certainty and consistency to the data set.*
6	Specify limits on decision errors	*Quality assurance and quality control measures based on AS4482.1 and NSW EPA Waste Classification Guidelines.*
7	Optimise the design for obtaining data	*Undertaking the investigation in a manner and to a level of accuracy and confidence as described in NEPM documentation.* *AS4482 will form the basis upon which requirements for sampling are determined. Given the broad acre scale of the site, an iterative approach to data collection will be adopted with a broad scale grid applied to determine fill quality and thickness.* *All sample locations to attempt to intersect natural ground or extend to at least 2.0m BGS.*

5.4 Assessment Domain

Previous assessment works (Golder and CSTS) the site have resulted over 60 investigation locations across the area.

An additional 19 test pits (TP01 to TP19) were undertaken, by DRC, across accessible areas of the site to assess fill quality and contamination levels.

The location of test pits are also described on **Figure 6**.

Based on information obtained from Penrith City Council the western portion of the site had been filled (to a depth unknown) as part of works conducted between approximately 1999 and 2003 to level the site and to raise it above the surrounding1 in 10-year flood plain level.

5.4.2 Soil Sampling

The soil sampling for the site was conducted in the following manner:

- Pre-site investigation planning including underground services location;
- Advancement of test pits into natural soils (where possible);
- Test pit field logging including lithology and geology encountered, photographs of the sub-surface conditions and observations for potential contamination;
- Inspection of test pits for potential asbestos containing materials (ACM);
- PID screening;
- Collection of test pit soil samples directly from the excavator bucket using a nitrile gloved hand;
- Based on the site's history of use, field observations and the PID screening, selected samples were analysed for:
    - Four fill samples for NSW DECC Waste Classification suite;
    - TRH, PAHs, BTEX, metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Zn), pH and EC; and
    - Selected shallow samples for asbestos.
- Collection of quality control (QC) samples including duplicate and inter-lab split samples at a rate of 1 sample pair per 20 samples, daily field blank samples and decontamination rinsate samples;
- Preservation of samples with ice during field activities and transport from the field to the laboratory;

- Transportation of samples to a NATA accredited laboratory with accompanying chain of custody (COC) documentation; and
- Analysis by NATA accredited laboratories.

There was no driver to indicate soil vapour could be a media to assess and therefore soil vapour sampling was not undertaken.

5.5 Decontamination Procedures

During test pit excavation works care was taken to ensure all loose soil was shaken from the excavator bucket between sample locations to minimize the potential of cross contamination between locations. Soil samples were taken directly from the excavator bucket with nitrile gloved hand, making sure that samples were taken from the centre of the excavator bucket and not from soil touching the bucket sides. Gloves were changed between each location.

Disposable equipment (i.e. nitrile gloves, tubing, bailers) do not require decontamination due to its single use.

5.6 Quality Assurance and Quality Control Objectives

Table 5-3 summarises QA/QC objectives for this assessment. These objectives are consistent with current EPA guidance and NEPM objectives and are considered appropriate for this investigation.

Table 5-3: Summary of QA/QC Objectives

Item	Objective
Comparison of field and analytical data	Agreement between visual, olfactory & PID measurements with laboratory results, where contamination is suspected in the field, laboratory analysis results support the observations.
Calibration of field instruments	Relevant equipment to be used to be supplied with certificates confirming equipment is in calibration. Calibration sheets are provided in **Appendix H**.
Chain of Custody documentation	Signed and complete for all samples analysed.
Sample analysis and extraction holding times	Compliant with guides provided by laboratory (that are generally NEPM compliant).
Analysis of inorganic duplicate samples	RPDs <50%.
Analysis of organic duplicate samples	RPDs <50%.
Analysis of field blanks, including trip and equipment blanks as appropriate	No contamination of blanks for soil samples.
Analysis of laboratory method blanks	No contamination of blanks.
Analysis of spike recoveries	Recoveries 70-130%.
Analysis of laboratory duplicates	RPDs within 20-35%.

Where QC results are outside those specified above, a specific investigation of the cause has been completed and provided within the QA/QC report supplied as **Appendix F**, including an interpretation of the potential impacts upon the reliability of the dataset.

Based on the results of the QA/QC program as detailed above, the following is concluded:

- The internal laboratory quality control program reported acceptable results.
- The field sampling procedure was carried out in general accordance with the DRC QA/QC program.

- The RPDs for blind and split samples were acceptable, although a few elevated RPD (>50%) were noted. However, these are not considered to impact on the integrity of the data set.
- Laboratories used were NATA accredited for the analyses performed.
- Samples were analysed within the applicable holding times.

DRC consider that the sampling and analytical programs were acceptable, and the results obtained are of reliable quality.

6 ASSESSMENT FIELDWORKS SUMMARY

Fieldworks conducted by DRC were undertaken in March 2017. All works were undertaken under the supervision of an experienced Environmental Scientist from DRC, who is trained and experienced in soil investigation and environmental site assessment works.
A summary of fieldworks undertaken is presented in **Table 6-1** below.

Table 6-1: Summary of Fieldworks Undertaken

Activity	Works Undertaken By	Date	Description of works
Soil Investigation	DRC	23 March 2017	Utility Location and site walkover.
		24 – 25 March 2017	Excavation of 19 test pits across the site for visual assessment of fill and natural soil conditions. No access was granted to the Ventia tenanted area or to the Dutch Rembrandt Club, so these areas could not be assessed.
		24 January 2018	Site walkover

7 ASSESSMENT CRITERIA

7.1 Soil Assessment

7.1.1 Adopted Soil Assessment Criteria

For the purpose of assessing analytical results of the soil samples collected during the assessment, primary reference has been made to the various guidelines contained within the NEPM 2013.

The adopted soil assessment criteria are presented in **TABLE 7-1**.

Table 7-1: Soil Assessment Criteria

Protected Land Uses	Adopted Assessment Criteria
Ecosystems Protection	To establish the presence of soil contamination with regards to ecological risks the following criteria have been adopted, as recommended in the NEPM 2013: • General Ecological Investigation Levels (EILs) for arsenic and lead, and site specific ecological investigation levels for copper, nickel, chromium III and zinc (based on the average pH at the site of 7.14, the conservative cation exchange capacity of 5 and clay content of 10%); and • Generic Ecological Screening Levels (ESLs) for DDT, benzene, toluene, ethylbenzene, xylenes, naphthalene, B(a)P and TPH fractions. • As stated in the NEPM 2013, EILs and ESLs are generally only applicable to the top two metres of the soil profile. For the purposes of this assessment the *Commercial/Industrial* exposure setting has been adopted.
Human Health	In order to assess the soils potential risk to human health, reference has been made to Health Investigation Levels and Health Screening Levels (HILs/HSLs), within the NEPM 2013. The HSLs are based on a range of site-specific conditions including land use, soil type and depth. The following exposure settings have been adopted for the purposes of this assessment: • HIL – Exposure setting 'D', which is applicable to the land use setting *Commercial/Industrial such as shops, offices, factories and industrial sites* and • HSL – Exposure setting 'D, which is applicable to the land use setting described above. Based on soil type, silty clay/sandy clay to be conservative, "Sand" guidelines have been adopted. If asbestos containing materials (ACM) are identified within soils, we refer to the guidance supplied within Chapter 4 of Schedule B1 - Guideline on Investigation Levels for Soil and Groundwater. With respect to the land surface from which asbestos has been removed, the Schedule B2 of the May 2013 revision of the NEPM (NEPM 2013) provides the following health investigation levels for assessment of protection of residential beneficial use land: • Bonded ACM must not exceed 0.01% of soil mass (w/w); • fibrous asbestos (FA) and asbestos fines (AF) must not exceed 0.001% of soil mass (w/w); and • No visible asbestos must be present in surface soils.
Buildings and Structures	To establish the risk soils pose to buildings and structures at the site, criteria outlined in the Australian Standard 2159 (2009) *Piling Design and Installation* have been adopted. For the purposes of this assessment and in accordance with the Land SEPP, pH and sulphate have been adopted as the relevant indicators of the potential risks associated with this beneficial use.
Waste Classification	In order to chemically classify soils for off-site disposal to a licensed landfill facility, reference has been made to the criteria noted within NSW EPA *Waste Classification Guidelines Part 1: Classifying Waste* - Table 1: CT1 and CT2 values for classifying waste by chemical assessment without TCLP test.

8 FIELD QA/QC PROGRAM

A Quality Control / Quality Assurance (QA/QC) program was conducted by DRC at the site in accordance with the current regulatory requirements.

Specific elements of the QA/QC program included:

- The use of appropriately qualified/trained environmental scientists to perform the intrusive works;
- The use of standardised field sheets to record the findings of the site assessment activities;
- Undertaking appropriate equipment decontamination and/or avoiding the use of re-usable items for collection of samples in order to avoid/minimise sample cross-contamination and to ensure confidence in the sampling methodology employed, which in-turn allows the quantitative data-set to be relied upon;
- The collection and analysis of Quality Control samples;
- The use of Chain of Custody procedures to ensure the traceability of sample transport and handling (**Appendix E**);
- The use of laboratories accredited by National Association of Testing Authorities (NATA) for the analysis of soil, groundwater and surface water samples collected during the assessment works. As part of their NATA accreditation, both the primary and secondary laboratories perform a number of internal laboratory procedures to ensure precision and accuracy of laboratory sample preparation and analytical techniques are sufficient. Internal laboratory procedures include the following:
  - Internal duplicate analysis of samples for comparison of results to demonstrate precision;
  - Laboratory standards including matrix spike samples, laboratory control samples, certified reference material and surrogates are conducted as a basis to demonstrate accuracy; and
  - Internal laboratory blank samples are run to assess the potential for laboratory equipment errors.
- All sample analyses to be conducted using NATA registered methods in accordance with ANZECC (1992) and NEPM (2013) guidelines;
- Data quality objectives (DQO) are used for the assessment of the field and laboratory QA/QC analytical data and are outlined in the relevant sections within Sampling and Analysis Plan submitted for the site. Where any of the data quality indicators are not achieved for particular samples, steps were taken to rectify the non-conformance, if possible; and
- An assessment of the quality assurance program is required to be made in terms of completeness. The completeness is equal to the percentage of valid quality assurance and quality control results. The target for overall completeness is a minimum of 95%. A data completeness of less than 95% may be accepted where it can be justified based on unique issues such as:
  - Prevailing site conditions.
  - Data confidence required for assessment.
  - Testing methods adopted.

Summaries of the field and laboratory QA/QC programs and reviews of the laboratory data are provided in the sections below and the QA/QC results are presented in **Appendix D** and **Appendix F** of this report.

9 SOIL ASSESSMENT

9.1 Soil profile

After the excavation of 19 test pit locations across the site, DRC has investigated the subsurface profile and undertaken and evaluation of the soil profile at the site.

All test pits excavated by DRC reported fill material ranged from the surface to a thickness of 0.35 m bgl in the eastern portion of the site to over a thickness of 3.8 m in the western portion of the site. Natural soils were only encountered at locations TP01 to TP07 on the eastern portion of the site.

Soil logging of each test pit is provided as **Appendix G** to this report. Photographic logs of each test pit describing sub-surface conditions is supplied as **Appendix C**.

Information regarding the soil profile of the site are detailed in **TABLE 9-1** below.

Table 9-1: Geological Profile Beneath the Site

Sequence		Composition/ Lithology	Thickness / Depth	Comment
	Fill	In all areas, a gravel layer, asphalt or grass layer exists.	Uneven distribution across the site, approximately 200mm thickness.	Present across the site with varying amounts of gravels and vegetation. Staining was noted at locations TP06 and SS01.
		Majority silty CLAY or sandy CLAY with occasional interbedded SAND layers and minor gravels. Small amounts of inert waste (bricks, concrete, pvc, wire, timber and sandstone cobbles) were identified in the majority of test pits.	Fill depth to 3.8m depth with occasional sand layers at 300mm thickness.	Predominantly silty Clay, well compacted, occasional sandy or gravel layer. No odours or staining were noted within the fill.
		Sandy SILT/ SILT, light brown, loose, powdery, dry.	At base of excavations at TP08 and TP15.	100mm thick at TP08 at a depth of 3.8m and 3.5m-3.8m in TP15.
	Natural	Silty CLAY, with red, brown and grey mottle, medium plasticity, dry, hard/firm, dense.	Generally consistent across the eastern portion of the site.	Not encountered in the western portion of the site.

9.2 Anecdotal Information

Based on the visual findings during excavation works and discussion with Penrith City Council representatives the following was noted:

- Several complaints were received by the Penrith City Council pertaining to the mud on roadways and filling activities during the site filling works; and

- Filling was commenced to raise the level of the site, data pertaining to the source of the fill was not obtained prior to filling, environmental soil sampling works were undertaken to assess the fill quality once it was placed on the site.

9.3 Soil Assessment Analytical Results

Tabulation of all analytical results is provided in the **Tables Section** at the end of this report. **Figure 6** provides a description of the test pit locations (Via GPS) from which samples were collected.

NATA certified analytical laboratory reports for DRC collected data are provided in **Appendix D.** **TABLE 9-2** provides a further assessment of analytes noted to exceed adopted investigation levels.

Table 9-2: DRC Investigation Soil Validation Sampling Results (mg/kg)

Analyte	Reported Concentration Range (mg/kg)	Number of Samples (including QA)	Mean (mg/kg)	Median (mg/kg)	Std. Dev	95% UCL (mg/kg)	Exceedance of Default Investigation Levels (Shaded Cell)	
							NEPM ESL (Commercial/ Industrial)	Human Health – Commercial/ Industrial (HIL D)[a]
Benzo(a)pyrene	<0.5 – 3.7	43	1.75	1.25	1.323	0.766	0.7	NS
Benzo(a)pyrene TEQ	1.2 – 3.4	43	1.307	1.2	0.396	1.415	NS	40
TRH C_{16}-C_{34}	<100 – 22,000	43	2236	200	5914	3143	1700	NS
TRH C_{34}-C_{40}	<100 – 5,500	43	855	215	1668	518.4	3300	NS
F2-Naphthalene	<50 – 800	40	306	64	427.8	106	170	NS

Average assumes samples below LOR = LOR value

Underline = statistic is greater than guideline value

a: NEPM Schedule B(1) (NEPC 2013) Table 1A(1) – Health Investigation Levels (HILs) for soil contaminants.

NS – No investigation or screening level.

The arithmetic mean, standard deviation and 95% UCL for the above analytes was found to be above the adopted ESL guidelines for TRH C_{16}-C_{34}.

If surface scraping in the vicinity of TP06 is undertaken and soils disposed of offsite, statistical analysis shows that the arithmetic mean, standard deviation and 95% UCL would be below the guideline values for TRH C_{16}-C_{34}.

The mean, standard deviation and 95% UCL were noted to be above ESL guideline values for benzo(a)pyrene, however benzo(a)pyrene TEQ was below human health HIL D criteria.

The mean and standard deviation were noted to be above guideline values for F2-naphthalene, however the 95% UCL was found to be below the guideline value.

It should be noted that NEPM Table 1B(7) Management Limits were breached for at locations SS01 and TP06_0.1, however these management limits have "*less relevance at operational industrial sites…which have no or limited sensitive receptors in the area of potential impact*".

DRC recommends that during site development that these areas (SS01 and TP06) be cleaned up to the extent practicable.

9.3.1 Asbestos in Soil Assessment

In accordance with the assessment's initial phase of asbestos identification, each test pit excavated across the site were inspected for ACM by environmental scientist.

In addition to inspections, analysis for asbestos fibres in soil was undertaken at all locations.

The results of this analysis are reported in **Appendix D** of this report. A total of 18 samples were analysed for asbestos.

Analysis of surface soils across the site did not report free asbestos fibres within samples. A pieced of bonded cement sheeting was found during excavation of TP19 (70mmx65mmx3mm) and submitted for analysis. This piece of cement sheeting reported the detection of chrysotile asbestos. It is noted that with reference to NEPM 2013 guidelines, Chapter 4 of Schedule B1, the assessed condition of the site is not deemed a health risk or non-compatible with industrial land use with respect to asbestos contamination.

It is noted though that all industrial land use site retain a potential for ACM cement sheeting to be present. During site re-development any encountered ACM is readily manageable under a Soil Management Plan during future construction works. If minor non-friable ACM is found during construction works a licensed person or a competently trained non-licensed person will be required to undertake the removal and disposal of asbestos.

In summary, free fibre asbestos was not identified within the shallow fill material at the site and no substantial quantities, burial zones of intensive concentrations of ACM debris or potential ACM debris were identified by this site assessment.

9.4 Summary of Soil Contamination

A discussion of the results obtained by DRC are provided below.

9.4.1 Ecosystem Protection

Upon review of collected analytical data benzo(a)pyrene TRH C_{16}-C_{34} and F2-napthalene were reported above the NEPM ESL guideline. Although the reported at concentrations that may exceed NEPM ESL, analysis of the site soils reported an arithmetic mean below the ESL guideline TRH C_{16}-C_{34} and F2-napthalene. Benzo(a)pyrene 95% UCL results were slightly above the ESL guideline.

It is deemed highly unlikely that the reported concentrations of the above compounds at the site will have any detrimental impact to the ecosystem.

9.4.2 Human Health

Based on the data set collected by DRC as reported within this DSI, all analytes assessed were reported at concentrations below the Health Investigation Level D (HIL D).

Extensive or persistent ACM has not been encountered at the site. As such, any asbestos encountered at the site is likely to be limited to isolated amounts of bonded ACM (cement sheeting) within the fill material. Any risk associated with asbestos during civil works at the site will be managed by a soil management plan (SMP).

9.4.3 Building and Structures

Based on field observations and pH results the soil conditions onsite are not considered to preclude the buildings and structures beneficial use. This conclusion is based on comparison to the applicable criterion as referenced within the *AS2159 Piling – Design and Installation*, indicating that the site is in the "Non-aggressive to Mild" condition range based on the pH reported at the site (4.9 to 9.8).

9.4.4 Aesthetics

The NEPM states that aesthetic impacts to soil including solid inert foreign material is common in fill soil. To trigger an assessment of aesthetics the material would need to exhibit strong odours, have hydrocarbon sheen on surface water, have soil staining, show signs of putrescible refuse or animal burial. None of the fill soils exhibited any of these characteristics and as such, only a visual assessment of aesthetics has been undertaken.

The presence of small amounts of building rubble/solid inert waste (metal, pvc, timber, bricks, tiles, concrete, clay piping) was noted during excavation works within fill material. Fill material increased in thickness from east to west, with natural soils not encountered to a maximum depth of 3.8m in the western portion of the site.

No odours or staining were noted, with the exception of the following locations:

- SS01 – beneath steel racking system an oily residue was noted on the ground surface and floating on top of pooled water; and
- TP06 – surface soils were noted to be stained and have a diesel odour.

Both of these locations were assessed to be minor in scale and quantity and can readily be remediated with minimal cost and standard excavation equipment at the cessation of tenancy.

DRC recommends that soils in the vicinity of SS01 and TP06 be scraped, sampled and disposed of at a licensed landfill (anticipated to be less than 10m^3 in volume)

9.4.5 Classification of Fill Material

Based on the guideline values, the majority of the fill material analysed was classified as general solid waste.

Locations TP02_0.05, TP11_0.7 and TP15_ 2.0 reported benzo(a)pyrene above the general waste guideline, however as shown below in **TABLE 9-3** statistical analysis shows that the 95% UCL for benzo(a)pyrene and TPH C_{10}-C_{36} are less than the general solid waste value and therefore meets the CT1 general solid waste classification.

Table 9-3: Soil Classification Sampling Results (mg/kg)

Analyte	Reported Concentration Range (mg/kg)	Number of Samples (including QA)	Mean (mg/kg)	Median (mg/kg)	Std. Dev	95% UCL (mg/kg)	Exceedance of Default Investigation Levels (Shaded Cell)	
							CT1 (General Solid Waste)	CT2 (Restricted Solid Waste)
Benzo(a)pyrene	<0.5 – 3.7	43	1.75	1.25	1.323	0.766	0.9	3.2
TPH C_{10}-C_{36}	<50 – 26,060	43	2,060	220	6,106	3,721	10,000	40,000

10 ASSESSMENT CONCLUSIONS

The site subject to this report, namely 65-73 Dunheved Circuit, St Marys, has been subjected to environmental investigation, assessment and review.

The outcomes of the investigation program recently completed at the site and reported, summarized or referred to by this document, indicate that the site:

- Has been subjected to a history of industrial or commercial activities and site filling that may have a potential to contaminate land;
- Has been filled with soils that have been chemically tested by a professional environmental consulting firm to be compatible with commercial/industrial land use;
- Is not filled with soils that are of an unsuitable aesthetic quality for commercial/industrial land use as demonstrated by the current and historical intensive excavation works completed for the site;
- Has been visually inspected and validated for asbestos impacts with further analytical results reporting that no free asbestos fibres were detected. Any asbestos found during future site development is likely to be limited to isolated amounts of bonded ACM (cement sheeting) at the surface of the site or within the fill material;
- Soil results reported concentrations of benzo(a)pyrene above ESLs within fill material;
- All soil analytical results were reported to be below HIL D and HSL D and are not considered to pose a risk to future commercial/industrial users at the site;
- No waste stockpiles were noted across the subject property and there was no evidence of waste or transfer station use at the site;
- Remedial works required to remove oil stained soils and soils in the vicinity of SS01 and TP06 are envisaged to be minor in nature and would be achievable using standard equipment without a significant cost ramification; and
- Is in a current condition that, in DRC's opinion, is suitable for industrial land use and sub-division as an industrial estate with minor levels of post tenancy clean up required.

11 STATEMENT OF LIMITATIONS

This document has been prepared based on a specific brief provided to DRC Environmental by Borg Manufacturing Pty Ltd. This document has been prepared with care and consideration to acceptable standards and current industry practice. This document is based on sub-surface conditions that may be variable which may result in changes to procedures, advice, recommendations or professional conclusions established by this document. DRC Environmental therefore reserve the right to change or withdraw this report.

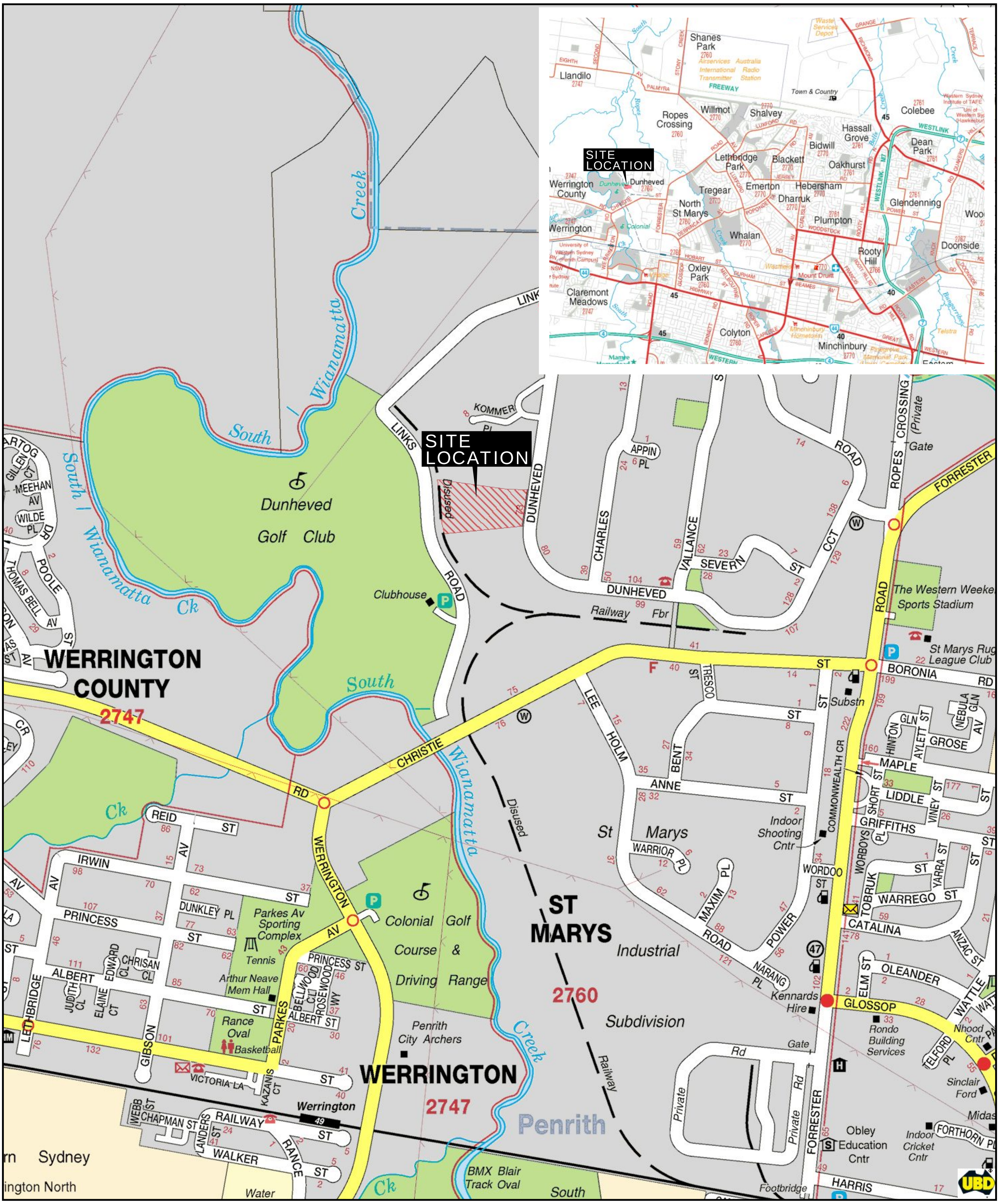
DRC Environmental recommends only suitably qualified and experienced contractors and consultants should undertake technical assessment of this document and attempt contaminated land remediation projects.

Report prepared by:

Patrick Baldwin CEnvP SC
Principal Environmental Engineer

DRC Environmental Pty Ltd
11 February 2019

FIGURES



0 100 200 300 400 500

Scale in Metres

N

DRC Environmental Pty Ltd *"Development Remediation Consultants"*
PO Box 586, Rosanna VIC 3084
Website:www.drcenviro.com.au Email:admin@drcenviro.com.au
Phone: 0402 455 638

PROJECT:
DETAILED SITE INVESTIGATION
65-73 DUNHEVED CIRCUIT,
ST MARYS, NSW

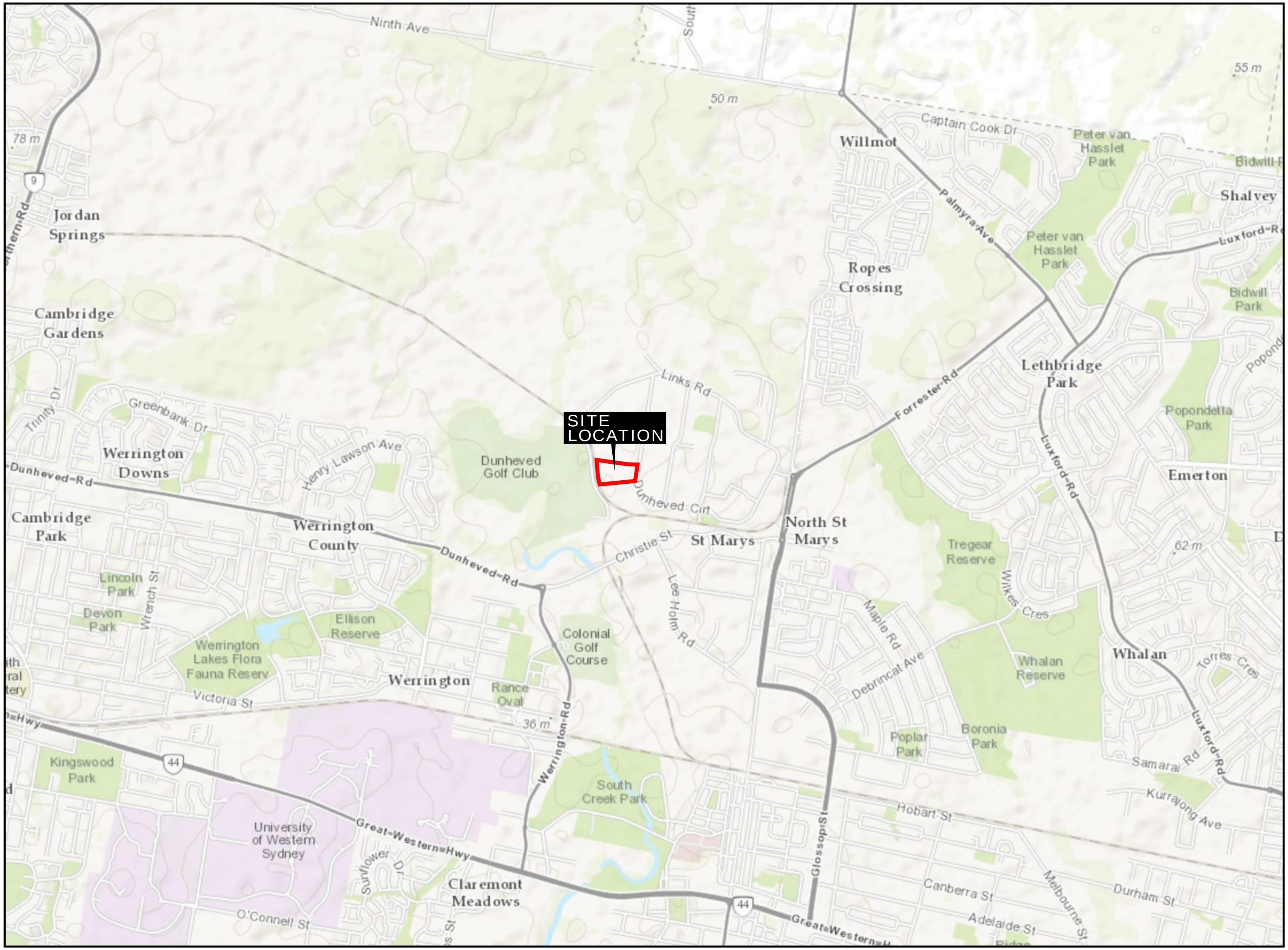
CLIENT:
BORG MANUFACTURING

TITLE:
SITE LOCATION PLAN

DATE:	**April 2017**	DRAWN:	**LB**
DESIGNED:	**RP**	SOURCE:	**UBD City Streets**

FIGURE: **1**

A4 size



DRC ENVIRONMENTAL
DEVELOPMENT REMEDIATION CONSULTANTS

LEGEND:

Site location

N

0 1000
Scale in Metres

TITLE:
SITE TOPOGRAPHY

PROJECT:
DETAILED SITE INVESTIGATION
65-73 DUNHEVED CIRCUIT,
ST MARYS, NSW

CLIENT:
BORG MANUFACTURING

DATE: **April 2017**

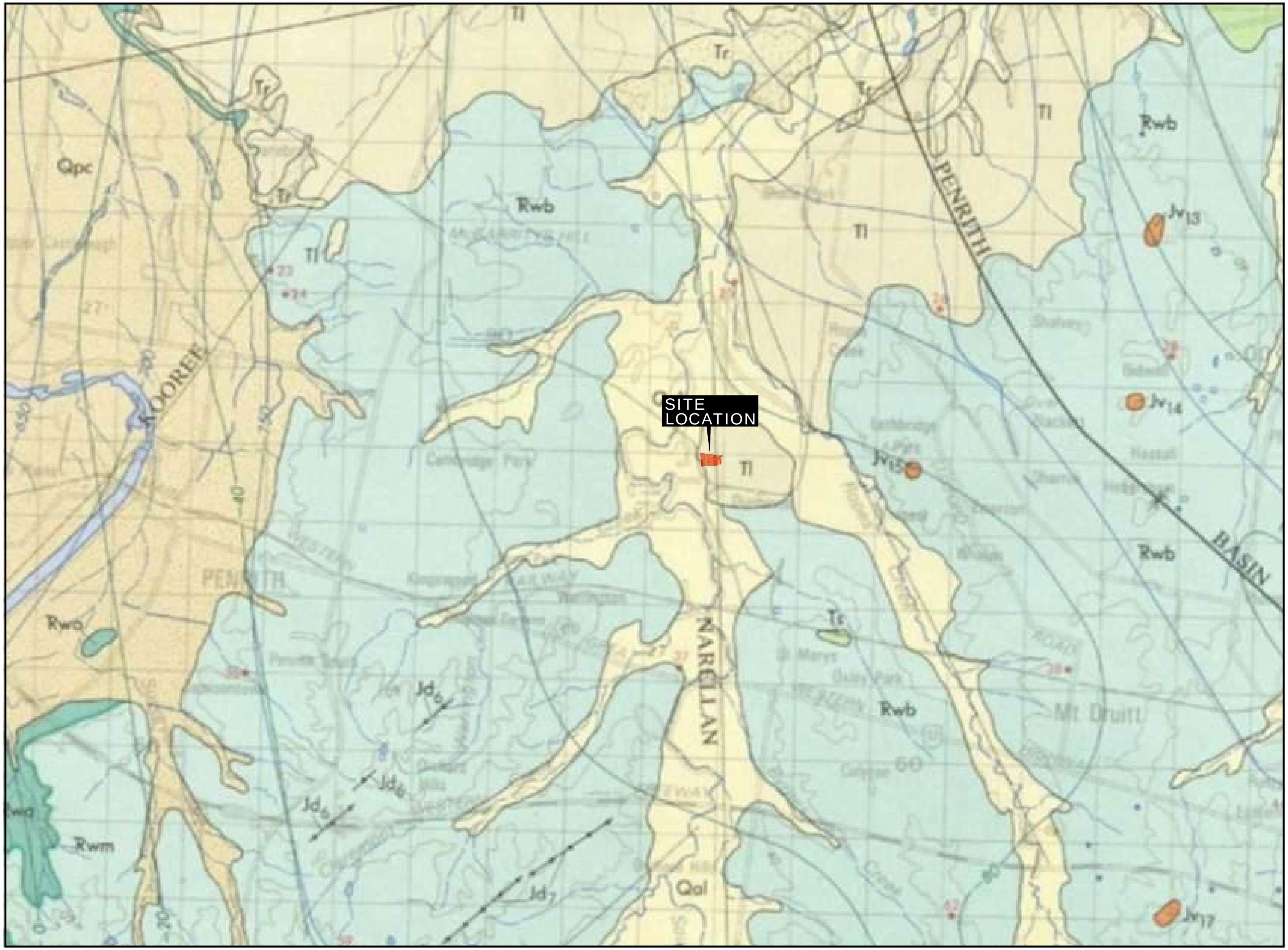
DESIGNED: **RP**

DRAWN: **LB**

SOURCE:
ESRI
ArcGIS online

FIGURE: **2**

A4 size



Rwa	Ashfield Shale	Qal	Fine grained sand, silt and clay		Volcanics
Rwb	Bringelly Shale	Qpc	Gravel, Sand, Silt, Clay		
Tl	Londonderry Clay	Tr	Conglomerate, matrix supported		

DRC ENVIRONMENTAL
DEVELOPMENT REMEDIATION CONSULTANTS

N

0 1 2 3
Scale in Kilometres

TITLE:
SITE GEOLOGY

PROJECT:
DETAILED SITE INVESTIGATION
65-73 DUNHEVED CIRCUIT,
ST MARYS, NSW

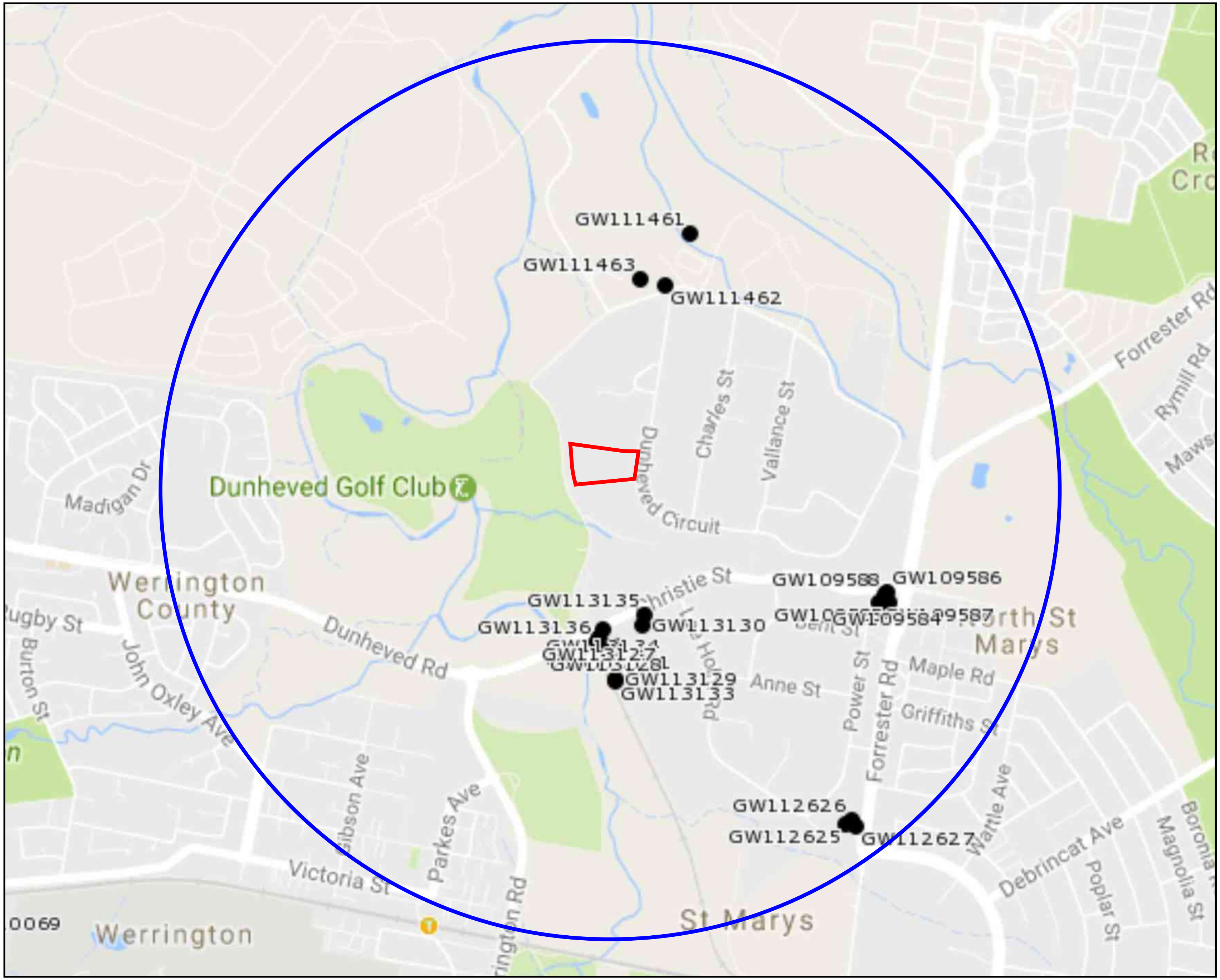
CLIENT:
BORG MANUFACTURING

DATE: **April 2017**
DESIGNED: **RP**
DRAWN: **LB**

SOURCE:
Resources and Energy.nsw.gov.au
Penrith Geological Sheet 9035

FIGURE: **3**

A4 size



DRC ENVIRONMENTAL
DEVELOPMENT REMEDIATION CONSULTANTS

LEGEND:
- 2Km radius from site
- Site boundary
- ● bore

N

0 200 400 600 800 1000
Scale in Metres

TITLE:
REGIONAL HYDROLOGY WITHIN 2Km OF THE SITE

PROJECT:
**DETAILED SITE INVESTIGATION
65-73 DUNHEVED CIRCUIT,
ST MARYS, NSW**

CLIENT:
BORG MANUFACTURING

DATE:	**April 2017**
DESIGNED:	**RP**
DRAWN:	**LB**

SOURCE:
NSW Govt. Dept. Primary Industries

FIGURE: **4**

A4 size

DRC ENVIRONMENTAL
DEVELOPMENT REMEDIATION CONSULTANTS

LEGEND:

- Site boundary
- Approximate Lease Boundaries
- Above Ground Storage Tanks
- Area of oily sludge noted

N

0 10 20 30 40 50
Scale in Metres

TITLE:
SITE LAYOUT 2017

PROJECT:
DETAILED SITE INVESTIGATION 65-73 DUNHEVED CIRCUIT, ST MARYS, NSW

CLIENT:
BORG MANUFACTURING

DATE: **April 2017**
DESIGNED: **RP**
DRAWN: **LB**

SOURCE:
© 2017 Google Maps

FIGURE: **5A**

DRC ENVIRONMENTAL
DEVELOPMENT REMEDIATION CONSULTANTS

LEGEND:

- Site boundary
- Approximate Lease Boundaries
- Above Ground Storage Tanks

N

0 10 20 30 40 50

Scale in Metres

TITLE:
SITE LAYOUT 2018

PROJECT:
DETAILED SITE INVESTIGATION
65-73 DUNHEVED CIRCUIT,
ST MARYS, NSW

CLIENT:
BORG MANUFACTURING

DATE: **January 2018**

DESIGNED: **RP**

DRAWN: **LB**

SOURCE:
© 2017 Google Maps

FIGURE: **5B**

DRC ENVIRONMENTAL
DEVELOPMENT REMEDIATION CONSULTANTS

LEGEND:

Site boundary

Approximate Lease Boundaries

Above Ground Storage Tanks

Area of oily sludge noted

Test Pit Location

Surface Sample SS01

N

0 10 20 30 40 50

Scale in Metres

TITLE:

TEST PIT LOCATION PLAN

PROJECT:

DETAILED SITE INVESTIGATION 65-73 DUNHEVED CIRCUIT, ST MARYS, NSW

CLIENT:

BORG MANUFACTURING

DATE:	April 2017
DESIGNED:	RP
DRAWN:	LB

SOURCE: © 2017 Google Maps

FIGURE: 6

TABLES

DRC ENVIRONMENTAL
DEVELOPMENT REMEDIATION CONSULTANTS

Table 1: Soil Analytical Results

			Benzo(a)pyrene TEQ (LOR)	Tokuthion	Benzo(a)pyrene TEQ calc (Half)	Benzo(a)pyrene TEQ calc (Zero)	Benzene	Ethylbenzene	Toluene	Total BTEX	Xylene (m & p)	Xylene (o)	Xylene Total	C6-C10 less BTEX (F1)
			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	0.2	0.5	0.5	0.1	0.1	0.1		0.2	0.1	0.3	20
NEPM 2013 EIL														
NSW 2008 General Solid Waste (No Leaching)							**10**	**600**	**288**				**1000**	
NSW 2008 Restricted Solid Waste (No Leaching)							40	2400	1152				4000	
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil			*40*											
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand														
0-1m							3	NL[#5]	NL[#5]				230	260[#6]
1-2m							3	NL[#5]	NL[#5]				NL[#5]	370[#6]
2-4m							3	NL[#5]	NL[#5]				NL[#5]	630[#6]
>4m							3	NL[#5]	NL[#5]				NL[#5]	NL[#5]
NEPM 2013 Table 1B(6) ESLs for Comm/Ind														
0-2m							75|95	165|185	135				95|180	215[#7]
NEPM 2013 Table 1B(7) Management Limits Comm / Ind														
Field ID	**Sampled Date**	**Lab Report Number**												
SS01	24/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP01_0.1	24/03/2017	539755	1.6	-	1.4	1.1	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP01_0.7	24/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP02_0.05	24/03/2017	539755	3.4	<0.2	3.1	2.9	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP02_1.2	24/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP03_0.1	24/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP03_1.2	24/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP04_0.6	24/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP05_0.1	24/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP05_0.6	24/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP06_0.1	24/03/2017	539755	1.2	<0.2	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP06_0.6	24/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP07_0.1	24/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP07_0.6	24/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP08_0.1	24/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP08_1.5	24/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP08_3.9	24/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP09_0.1	24/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP09_2.5	24/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP10_0.1	24/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP11_0.2	24/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP11_0.7	24/03/2017	539755	2	-	1.7	1.5	0.6	0.1	0.5	-	<0.2	0.1	<0.3	<20
TP12_0.1	24/03/2017	539755	1.2	<0.2	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP12_2.2	24/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP13_0.1	24/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP13_1.2	24/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP14_0.2	24/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP14_1.4	24/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP15_0.1	25/03/2017	539755	1.2	<0.2	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP15_2.0	25/03/2017	539755	2.4	-	2.2	1.9	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP15_3.5	25/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP16_0.2	25/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP16_1.0	25/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP17_0.2	25/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP17_3.5	25/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
QC03_250317	25/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
QC04_250317	25/03/2017	ES1707373	1.2	-	0.6	<0.5	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	-
TP18_0.2	25/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
QC01_250317	25/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
QC02_250317	25/03/2017	ES1707373	1.2	-	0.6	<0.5	<0.2	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	-
TP18_2.5	25/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP19_0.2	25/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20
TP19_3.5	25/03/2017	539755	1.2	-	0.6	<0.5	<0.1	<0.1	<0.1	-	<0.2	<0.1	<0.3	<20

	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,1-dichloroethene	1,2,3-trichloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	Bromochloromethane	Bromodichloromethane	Bromoform	Carbon tetrachloride	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Dibromomethane	Dichloromethane	Trichloroethene	Tetrachloroethene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Vinyl chloride	2,4-Dinitrotoluene	Nitrobenzene
	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	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	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	0.5	1	0.5
NEPM 2013 EIL																													
NSW 2008 General Solid Waste (No Leaching)	**200**	**600**	**26**	**24**		**14**		**10**						**10**			**120**					**172**	**10**	**14**			**4**	**2.6**	**40**
NSW 2008 Restricted Solid Waste (No Leaching)	800	2400	104	96		56		40						40			480					688	40	56			16	10.4	160
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil																													
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand																													
0-1m																													
1-2m																													
2-4m																													
>4m																													
NEPM 2013 Table 1B(6) ESLs for Comm/Ind																													
0-2m																													
NEPM 2013 Table 1B(7) Management Limits Comm / Ind																													
Field ID																													
SS01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP01_0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP01_0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP02_0.05	<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	<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	<0.5	<2.5	<0.5
TP02_1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP03_0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP03_1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP04_0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP05_0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP05_0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP06_0.1	<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	<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	<0.5	<2.5	<0.5
TP06_0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP07_0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP07_0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP08_0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP08_1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP08_3.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP09_0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP09_2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP10_0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP11_0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP11_0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP12_0.1	<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	<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	<0.5	<2.5	<0.5
TP12_2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP13_0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP13_1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP14_0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP14_1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP15_0.1	<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	<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	<0.5	<2.5	<0.5
TP15_2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP15_3.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP16_0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP16_1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP17_0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP17_3.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC03_250317	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC04_250317	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18_0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC01_250317	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC02_250317	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18_2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19_0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19_3.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

[Filter]

DRC ENVIRONMENTAL
DEVELOPMENT REMEDIATION CONSULTANTS

Table 1: Soil Analytical Results

Field ID	Sampled Date	Lab Report Number	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	4-chlorotoluene	Bromobenzene	Chlorobenzene	Hexachlorobenzene	1,2-dibromoethane	Bromomethane	Dichlorodifluoromethane	Iodomethane	Trichlorofluoromethane	2,4,5-trichlorophenol	2,4,6-trichlorophenol	2,4-dichlorophenol	2,6-dichlorophenol	2-chlorophenol	Pentachlorophenol	tetrachlorophenols
			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	0.5	0.5	0.05	0.5	0.5	0.5	0.5	0.5	1	1	0.5	0.5	0.5	1	1
NEPM 2013 EIL																					
NSW 2008 General Solid Waste (No Leaching)			**86**		**150**			**2000**							**8000**	**40**					
NSW 2008 Restricted Solid Waste (No Leaching)			344		600			8000							32000	160					
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil									*80*											*660*	
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand																					
0-1m																					
1-2m																					
2-4m																					
>4m																					
NEPM 2013 Table 1B(6) ESLs for Comm/Ind																					
0-2m																					
NEPM 2013 Table 1B(7) Management Limits Comm / Ind																					
SS01	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP01_0.1	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP01_0.7	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP02_0.05	24/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5	<0.5	<0.5	<1	<1
TP02_1.2	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP03_0.1	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP03_1.2	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP04_0.6	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP05_0.1	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP05_0.6	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP06_0.1	24/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5	<0.5	<0.5	<1	<1
TP06_0.6	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP07_0.1	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP07_0.6	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP08_0.1	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP08_1.5	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP08_3.9	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP09_0.1	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP09_2.5	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP10_0.1	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP11_0.2	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP11_0.7	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP12_0.1	24/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5	<0.5	<0.5	<1	<1
TP12_2.2	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP13_0.1	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP13_1.2	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP14_0.2	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP14_1.4	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP15_0.1	25/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5	<0.5	<0.5	<1	<1
TP15_2.0	25/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP15_3.5	25/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP16_0.2	25/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP16_1.0	25/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP17_0.2	25/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP17_3.5	25/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC03_250317	25/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC04_250317	25/03/2017	ES1707373	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18_0.2	25/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC01_250317	25/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC02_250317	25/03/2017	ES1707373	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18_2.5	25/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19_0.2	25/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19_3.5	25/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Field ID	2,4,5-Trichlorophenoxy Acetic Acid	2,4,5-TP (Silvex)	Hedonal	2,4-Dichlorprop	4-(2,4-Dichlorophenoxy)butyric Acid (2,4-DB)	Dicamba	Dinoseb	2-Methyl-4-chlorophenoxyacetic acid	2-Methyl-4-Chlorophenoxy Butanoic Acid	Mecoprop	Conductivity (1:5 aqueous extract)	Cyanide (Free)	Cyanide Total	Fluoride	Moisture	Moisture Content (dried @ 103°C)	pH (aqueous extract)	pH (Lab)	Lead	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Isopropylbenzene	Styrene
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	uS/cm	mg/kg	mg/kg	mg/kg	%	%	pH_Units	pH_Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	5	5	5	100		1	0.1		5	0.5	0.5	0.5	0.5
NEPM 2013 EIL																			1800				
NSW 2008 General Solid Waste (No Leaching)			**200**										**320**	**3000**					**100**				**60**
NSW 2008 Restricted Solid Waste (No Leaching)			800										1280	12000					400				240
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil	*5000*		*9000*					*5000*	*5000*	*5000*		*1500*							*1500 #1*				
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand																							
0-1m																							
1-2m																							
2-4m																							
>4m																							
NEPM 2013 Table 1B(6) ESLs for Comm/Ind																							
0-2m																							
NEPM 2013 Table 1B(7) Management Limits Comm / Ind																							
SS01	-	-	-	-	-	-	-	-	-	-	120	-	-	-	-	18	8.5	-	16	-	-	-	-
TP01_0.1	-	-	-	-	-	-	-	-	-	-	65	-	-	-	-	11	7.8	-	39	-	-	-	-
TP01_0.7	-	-	-	-	-	-	-	-	-	-	220	-	-	-	-	18	5.3	-	7.9	-	-	-	-
TP02_0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<5	<5	130	-	15	-	-	27	<0.5	<0.5	<0.5	<0.5
TP02_1.2	-	-	-	-	-	-	-	-	-	-	290	-	-	-	-	21	5.1	-	<5	-	-	-	-
TP03_0.1	-	-	-	-	-	-	-	-	-	-	110	-	-	-	-	9.8	9.1	-	65	-	-	-	-
TP03_1.2	-	-	-	-	-	-	-	-	-	-	27	-	-	-	-	16	6	-	5.6	-	-	-	-
TP04_0.6	-	-	-	-	-	-	-	-	-	-	320	-	-	-	-	19	4.9	-	<5	-	-	-	-
TP05_0.1	-	-	-	-	-	-	-	-	-	-	200	-	-	-	-	11	8.2	-	17	-	-	-	-
TP05_0.6	-	-	-	-	-	-	-	-	-	-	310	-	-	-	-	23	4.6	-	5.6	-	-	-	-
TP06_0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<5	<5	100	-	5.8	-	-	16	<0.5	<0.5	<0.5	<0.5
TP06_0.6	-	-	-	-	-	-	-	-	-	-	360	-	-	-	-	23	4.5	-	6.4	-	-	-	-
TP07_0.1	-	-	-	-	-	-	-	-	-	-	150	-	-	-	-	24	9.8	-	14	-	-	-	-
TP07_0.6	-	-	-	-	-	-	-	-	-	-	65	-	-	-	-	24	5.3	-	8.7	-	-	-	-
TP08_0.1	-	-	-	-	-	-	-	-	-	-	78	-	-	-	-	15	8.7	-	5.9	-	-	-	-
TP08_1.5	-	-	-	-	-	-	-	-	-	-	340	-	-	-	-	22	5.6	-	22	-	-	-	-
TP08_3.9	-	-	-	-	-	-	-	-	-	-	140	-	-	-	-	21	6.6	-	25	-	-	-	-
TP09_0.1	-	-	-	-	-	-	-	-	-	-	94	-	-	-	-	12	9	-	<5	-	-	-	-
TP09_2.5	-	-	-	-	-	-	-	-	-	-	200	-	-	-	-	22	7.1	-	71	-	-	-	-
TP10_0.1	-	-	-	-	-	-	-	-	-	-	210	-	-	-	-	18	7.5	-	41	-	-	-	-
TP11_0.2	-	-	-	-	-	-	-	-	-	-	23	-	-	-	-	16	7.8	-	9.1	-	-	-	-
TP11_0.7	-	-	-	-	-	-	-	-	-	-	270	-	-	-	-	15	7.4	-	**120**	-	-	-	-
TP12_0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<5	<5	210	-	18	-	-	19	<0.5	<0.5	<0.5	<0.5
TP12_2.2	-	-	-	-	-	-	-	-	-	-	220	-	-	-	-	19	7	-	13	-	-	-	-
TP13_0.1	-	-	-	-	-	-	-	-	-	-	160	-	-	-	-	18	7.8	-	17	-	-	-	-
TP13_1.2	-	-	-	-	-	-	-	-	-	-	210	-	-	-	-	17	6.5	-	28	-	-	-	-
TP14_0.2	-	-	-	-	-	-	-	-	-	-	190	-	-	-	-	14	8.7	-	12	-	-	-	-
TP14_1.4	-	-	-	-	-	-	-	-	-	-	190	-	-	-	-	15	6.9	-	11	-	-	-	-
TP15_0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<5	<5	140	-	18	-	-	20	<0.5	<0.5	<0.5	<0.5
TP15_2.0	-	-	-	-	-	-	-	-	-	-	74	-	-	-	-	15	6.7	-	**270**	-	-	-	-
TP15_3.5	-	-	-	-	-	-	-	-	-	-	110	-	-	-	-	17	7.1	-	16	-	-	-	-
TP16_0.2	-	-	-	-	-	-	-	-	-	-	230	-	-	-	-	22	8	-	21	-	-	-	-
TP16_1.0	-	-	-	-	-	-	-	-	-	-	160	-	-	-	-	23	4.9	-	9.6	-	-	-	-
TP17_0.2	-	-	-	-	-	-	-	-	-	-	330	-	-	-	-	19	8.1	-	20	-	-	-	-
TP17_3.5	-	-	-	-	-	-	-	-	-	-	83	-	-	-	-	18	6.6	-	35	-	-	-	-
QC03_250317	-	-	-	-	-	-	-	-	-	-	170	-	-	-	-	21	6.9	-	60	-	-	-	-
QC04_250317	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17	-	-	7.5	15	-	-	-	-
TP18_0.2	-	-	-	-	-	-	-	-	-	-	130	-	-	-	-	8.9	8.4	-	17	-	-	-	-
QC01_250317	-	-	-	-	-	-	-	-	-	-	160	-	-	-	-	8.3	8.6	-	25	-	-	-	-
QC02_250317	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.2	-	-	8.7	23	-	-	-	-
TP18_2.5	-	-	-	-	-	-	-	-	-	-	320	-	-	-	-	17	7.7	-	22	-	-	-	-
TP19_0.2	-	-	-	-	-	-	-	-	-	-	300	-	-	-	-	16	8.3	-	21	-	-	-	-
TP19_3.5	-	-	-	-	-	-	-	-	-	-	95	-	-	-	-	19	7.1	-	20	-	-	-	-

Env Stds Description

NEPM 2013 Table 1B(7) Management Limits Comm / Ind:Management limits are applied after consideration of relevant ESLs and HSLs

Env Stds Comments

#1:Lead: HILs A,B,C based on blood lead models (IEUBK & HIL D on adult lead model for where 50% bioavailability considered. Site-specific bioavailability should be considered where appropriate.
#2:Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where appropriate (refer Shedule B7).
#3:Elemental mercury: HIL does not address elemental mercury. a site specific assessment should be considered if elemental mercury is present, or suspected to be present.
#4:Total PAHs: Based on sum of 16 most common reported (WHO 98). HIL application should consider presence of carcinogenic PAHs (should meet BaP TEQ HIL) & napthalene (should meet relevant HSL)
#5:Derived soil HSL exceeds soil saturation concentraiton
#6:To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#7:Moderate reliability. To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#8:To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#9:Moderate reliability. To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#10:Separate management limits for BTEX & napthalene are not available hence should not be subtracted from the relevant fractions to obtain F1 & F2

[Filter]

DRC Environmental
Development Remediation Consultants

Table 1: Soil Analytical Results

			Arsenic	Beryllium	Cadmium	Chromium (hexavalent)	Chromium (III+VI)	Copper	Mercury	Molybdenum	Nickel	Selenium	Silver	Zinc
			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	2	0.4	1	2	5	0.1	5	2	2	0.2	5
NEPM 2013 EIL			160		3	1		400	1		55			360
NSW 2008 General Solid Waste (No Leaching)			**100**	**20**	**20**	**100**			**4**	**100**	**40**	**20**	**100**	
NSW 2008 Restricted Solid Waste (No Leaching)			400	80	80	400			16	400	160	80	400	
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil			*3000* #2	*500*	*900*	*3600*		*240000*	*730* #3		*6000*	*10000*		*400000*
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand														
0-1m														
1-2m														
2-4m														
>4m														
NEPM 2013 Table 1B(6) ESLs for Comm/Ind														
0-2m														
NEPM 2013 Table 1B(7) Management Limits Comm / Ind														
Field ID	**Sampled Date**	**Lab Report Number**												
SS01	24/03/2017	539755	5.2	-	<0.4	-	6.7	32	<0.1	-	14	-	-	110
TP01_0.1	24/03/2017	539755	4.4	-	<0.4	-	13	100	<0.1	-	9.6	-	-	190
TP01_0.7	24/03/2017	539755	7.4	-	<0.4	-	12	8.3	<0.1	-	<5	-	-	<5
TP02_0.05	24/03/2017	539755	3.7	<2	<0.4	<1	-	-	<0.1	<5	27	<2	<0.2	-
TP02_1.2	24/03/2017	539755	<2	-	<0.4	-	<5	<5	<0.1	-	<5	-	-	<5
TP03_0.1	24/03/2017	539755	2.9	-	<0.4	-	24	70	<0.1	-	19	-	-	120
TP03_1.2	24/03/2017	539755	<2	-	<0.4	-	6.2	6	<0.1	-	<5	-	-	<5
TP04_0.6	24/03/2017	539755	<2	-	<0.4	-	<5	<5	<0.1	-	<5	-	-	<5
TP05_0.1	24/03/2017	539755	4.8	-	<0.4	-	12	32	<0.1	-	15	-	-	51
TP05_0.6	24/03/2017	539755	4.2	-	<0.4	-	8.7	<5	<0.1	-	<5	-	-	<5
TP06_0.1	24/03/2017	539755	2.4	<2	<0.4	<1	-	-	<0.1	<5	17	2.3	<0.2	-
TP06_0.6	24/03/2017	539755	4.5	-	<0.4	-	15	<5	<0.1	-	<5	-	-	<5
TP07_0.1	24/03/2017	539755	<2	-	<0.4	-	6.5	29	<0.1	-	5.2	-	-	87
TP07_0.6	24/03/2017	539755	6.6	-	<0.4	-	20	<5	<0.1	-	<5	-	-	<5
TP08_0.1	24/03/2017	539755	2.5	-	<0.4	-	34	20	<0.1	-	40	-	-	37
TP08_1.5	24/03/2017	539755	9.2	-	<0.4	-	12	21	<0.1	-	8.3	-	-	52
TP08_3.9	24/03/2017	539755	3.5	-	<0.4	-	11	20	<0.1	-	7.9	-	-	30
TP09_0.1	24/03/2017	539755	<2	-	<0.4	-	30	38	<0.1	-	40	-	-	37
TP09_2.5	24/03/2017	539755	8	-	<0.4	-	14	28	<0.1	-	8.6	-	-	67
TP10_0.1	24/03/2017	539755	9.2	-	<0.4	-	28	11	<0.1	-	<5	-	-	86
TP11_0.2	24/03/2017	539755	2.3	-	<0.4	-	6.6	<5	<0.1	-	<5	-	-	19
TP11_0.7	24/03/2017	539755	2.7	-	<0.4	-	7.7	28	<0.1	-	<5	-	-	240
TP12_0.1	24/03/2017	539755	6.7	<2	<0.4	<1	-	-	<0.1	<5	9.5	4	<0.2	-
TP12_2.2	24/03/2017	539755	<2	-	<0.4	-	<5	14	<0.1	-	9.1	-	-	40
TP13_0.1	24/03/2017	539755	8.1	-	<0.4	-	13	26	<0.1	-	17	-	-	55
TP13_1.2	24/03/2017	539755	3.8	-	<0.4	-	6.6	11	<0.1	-	<5	-	-	93
TP14_0.2	24/03/2017	539755	4	-	<0.4	-	8	53	<0.1	-	12	-	-	37
TP14_1.4	24/03/2017	539755	2.3	-	<0.4	-	<5	7	<0.1	-	<5	-	-	<5
TP15_0.1	25/03/2017	539755	7.7	<2	<0.4	<1	-	-	<0.1	<5	9.7	<2	<0.2	-
TP15_2.0	25/03/2017	539755	13	-	<0.4	-	10	30	<0.1	-	<5	-	-	280
TP15_3.5	25/03/2017	539755	5.8	-	<0.4	-	9.8	15	<0.1	-	5.4	-	-	17
TP16_0.2	25/03/2017	539755	5.4	-	<0.4	-	18	25	<0.1	-	21	-	-	70
TP16_1.0	25/03/2017	539755	5.1	-	<0.4	-	8.9	10	<0.1	-	<5	-	-	15
TP17_0.2	25/03/2017	539755	4.6	-	<0.4	-	15	19	<0.1	-	16	-	-	52
TP17_3.5	25/03/2017	539755	4.8	-	<0.4	-	10	26	<0.1	-	10	-	-	65
QC03_250317	25/03/2017	539755	7.4	-	0.6	-	20	37	<0.1	-	12	-	-	87
QC04_250317	25/03/2017	ES1707373	6	-	<0.4	-	22	14	<0.1	-	7	-	-	46
TP18_0.2	25/03/2017	539755	2.3	-	<0.4	-	7.1	6.4	<0.1	-	<5	-	-	22
QC01_250317	25/03/2017	539755	2.8	-	<0.4	-	9.2	11	<0.1	-	5.9	-	-	35
QC02_250317	25/03/2017	ES1707373	<5	-	<0.4	-	9	10	<0.1	-	5	-	-	39
TP18_2.5	25/03/2017	539755	5.3	-	<0.4	-	19	13	<0.1	-	7.1	-	-	26
TP19_0.2	25/03/2017	539755	9.3	-	<0.4	-	16	16	<0.1	-	11	-	-	35
TP19_3.5	25/03/2017	539755	3.9	-	<0.4	-	22	38	<0.1	-	**46**	-	-	51

	4,4-DDE	a-BHC	Aldrin	b-BHC	chlordane	d-BHC	DDD	DDT	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Toxaphene
	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	0.1	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	0.2	1
NEPM 2013 EIL																				
NSW 2008 General Solid Waste (No Leaching)																				
NSW 2008 Restricted Solid Waste (No Leaching)																				
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil					*530*								*100*				*50*		*2500*	*160*
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand																				
0-1m																				
1-2m																				
2-4m																				
>4m																				
NEPM 2013 Table 1B(6) ESLs for Comm/Ind																				
0-2m																				
NEPM 2013 Table 1B(7) Management Limits Comm / Ind																				
Field ID																				
SS01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP01_0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP01_0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP02_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	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<1
TP02_1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP03_0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP03_1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP04_0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP05_0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP05_0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP06_0.1	<0.05	<0.05	<0.05	<0.05	<0.1	<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	<0.2	<1
TP06_0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP07_0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP07_0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP08_0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP08_1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP08_3.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP09_0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP09_2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP10_0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP11_0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP11_0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP12_0.1	<0.05	<0.05	<0.05	<0.05	<0.1	<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	<0.2	<1
TP12_2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP13_0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP13_1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP14_0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP14_1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP15_0.1	<0.05	<0.05	<0.05	<0.05	<0.1	<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	<0.2	<1
TP15_2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP15_3.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP16_0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP16_1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP17_0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP17_3.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC03_250317	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC04_250317	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18_0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC01_250317	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC02_250317	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18_2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19_0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19_3.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	Azinophos methyl	Bolstar (Sulprofos)	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
EQL	0.2	0.2	0.2	0.2	0.2	2	0.2	0.2	0.2
NEPM 2013 EIL									
NSW 2008 General Solid Waste (No Leaching)				**4**					
NSW 2008 Restricted Solid Waste (No Leaching)				16					
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil				*2000*					
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand									
0-1m									
1-2m									
2-4m									
>4m									
NEPM 2013 Table 1B(6) ESLs for Comm/Ind									
0-2m									
NEPM 2013 Table 1B(7) Management Limits Comm / Ind									
Field ID									
SS01	-	-	-	-	-	-	-	-	-
TP01_0.1	-	-	-	-	-	-	-	-	-
TP01_0.7	-	-	-	-	-	-	-	-	-
TP02_0.05	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2
TP02_1.2	-	-	-	-	-	-	-	-	-
TP03_0.1	-	-	-	-	-	-	-	-	-
TP03_1.2	-	-	-	-	-	-	-	-	-
TP04_0.6	-	-	-	-	-	-	-	-	-
TP05_0.1	-	-	-	-	-	-	-	-	-
TP05_0.6	-	-	-	-	-	-	-	-	-
TP06_0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2
TP06_0.6	-	-	-	-	-	-	-	-	-
TP07_0.1	-	-	-	-	-	-	-	-	-
TP07_0.6	-	-	-	-	-	-	-	-	-
TP08_0.1	-	-	-	-	-	-	-	-	-
TP08_1.5	-	-	-	-	-	-	-	-	-
TP08_3.9	-	-	-	-	-	-	-	-	-
TP09_0.1	-	-	-	-	-	-	-	-	-
TP09_2.5	-	-	-	-	-	-	-	-	-
TP10_0.1	-	-	-	-	-	-	-	-	-
TP11_0.2	-	-	-	-	-	-	-	-	-
TP11_0.7	-	-	-	-	-	-	-	-	-
TP12_0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2
TP12_2.2	-	-	-	-	-	-	-	-	-
TP13_0.1	-	-	-	-	-	-	-	-	-
TP13_1.2	-	-	-	-	-	-	-	-	-
TP14_0.2	-	-	-	-	-	-	-	-	-
TP14_1.4	-	-	-	-	-	-	-	-	-
TP15_0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2
TP15_2.0	-	-	-	-	-	-	-	-	-
TP15_3.5	-	-	-	-	-	-	-	-	-
TP16_0.2	-	-	-	-	-	-	-	-	-
TP16_1.0	-	-	-	-	-	-	-	-	-
TP17_0.2	-	-	-	-	-	-	-	-	-
TP17_3.5	-	-	-	-	-	-	-	-	-
QC03_250317	-	-	-	-	-	-	-	-	-
QC04_250317	-	-	-	-	-	-	-	-	-
TP18_0.2	-	-	-	-	-	-	-	-	-
QC01_250317	-	-	-	-	-	-	-	-	-
QC02_250317	-	-	-	-	-	-	-	-	-
TP18_2.5	-	-	-	-	-	-	-	-	-
TP19_0.2	-	-	-	-	-	-	-	-	-
TP19_3.5	-	-	-	-	-	-	-	-	-

Env Stds Description

NEPM 2013 Table 1B(7) Management Limits Comm / Ind:Management limits are applied after consideration of relevant ESLs and HSLs

Env Stds Comments

#1:Lead: HILs A,B,C based on blood lead models (IEUBK & HIL D on adult lead model for where 50% bioavailability considered. Site-specific bioavailability should be considered where appropriate.
#2:Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where appropriate (refer Shedule B7).
#3:Elemental mercury: HIL does not address elemental mercury. a site specific assessment should be considered if elemental mercury is present, or suspected to be present.
#4:Total PAHs: Based on sum of 16 most common reported (WHO 98). HIL application should consider presence of carcinogenic PAHs (should meet BaP TEQ HIL) & napthalene (should meet relevant HSL)
#5:Derived soil HSL exceeds soil saturation concentraiton
#6:To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#7:Moderate reliability. To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#8:To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#9:Moderate reliability. To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#10:Separate management limits for BTEX & napthalene are not available hence should not be subtracted from the relevant fractions to obtain F1 & F2

DRC ENVIRONMENTAL
DEVELOPMENT REMEDIATION CONSULTANTS

Table 1: Soil Analytical Results

			Dichlorvos	Dimethoate	Disulfoton	Ethion	Ethoprop	Fenitrothion	Fensulfothion	Fenthion	Malathion	Merphos	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Omethoate	Phorate	Pyrazophos	Ronnel	Terbufos	Trichloronate	Tetrachlorvinphos	Actril (Ioxynil)	Benzo(b+j)fluoranthene	2,4-dimethylphenol	2,4-dinitrophenol	2-methylphenol	2-nitrophenol	3-&4-methylphenol	4,6-Dinitro-2-methylphenol	4-chloro-3-methylphenol	4-nitrophenol	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene
			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	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2	2	0.2	0.2	0.2	0.2	0.2	0.2	0.5	0.5	0.5	5	0.2	1	0.4	0.5	1	5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
NEPM 2013 EIL																																										
NSW 2008 General Solid Waste (No Leaching)																											**4000**										**0.8**					
NSW 2008 Restricted Solid Waste (No Leaching)																											16000										3.2					
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil																																										
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand																																										
0-1m																																										
1-2m																																										
2-4m																																										
>4m																																										
NEPM 2013 Table 1B(6) ESLs for Comm/Ind																																										
0-2m																																					0.7					
NEPM 2013 Table 1B(7) Management Limits Comm / Ind																																										
Field ID	**Sampled Date**	**Lab Report Number**																																								
SS01	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP01_0.1	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	0.7	0.8	0.9	0.7	0.9	<0.5	1.9
TP01_0.7	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP02_0.05	24/03/2017	539755	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	4.9	<0.5	<5	<0.2	<1	<0.4	<0.5	<1	<5	<0.5	<0.5	1.5	3.8	**3.7**	4.1	2.3	3.1	0.6	10
TP02_1.2	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP03_0.1	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP03_1.2	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP04_0.6	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP05_0.1	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP05_0.6	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP06_0.1	24/03/2017	539755	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<5	<0.2	<1	<0.4	<0.5	<1	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP06_0.6	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP07_0.1	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP07_0.6	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP08_0.1	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP08_1.5	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP08_3.9	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP09_0.1	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP09_2.5	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP10_0.1	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5
TP11_0.2	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP11_0.7	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1	-	-	-	-	-	-	-	-	2	<0.5	0.5	1.1	**1.1**	0.8	0.7	0.9	<0.5	2.5
TP12_0.1	24/03/2017	539755	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<5	<0.2	<1	<0.4	<0.5	<1	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP12_2.2	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP13_0.1	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP13_1.2	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP14_0.2	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP14_1.4	24/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP15_0.1	25/03/2017	539755	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<5	<0.2	<1	<0.4	<0.5	<1	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP15_2.0	25/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	1.3	**1.4**	1.2	0.8	1.1	<0.5	2.3
TP15_3.5	25/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP16_0.2	25/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP16_1.0	25/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP17_0.2	25/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1
TP17_3.5	25/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
QC03_250317	25/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
QC04_250317	25/03/2017	ES1707373	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP18_0.2	25/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
QC01_250317	25/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
QC02_250317	25/03/2017	ES1707373	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP18_2.5	25/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP19_0.2	25/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP19_3.5	25/03/2017	539755	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Env Stds Description

NEPM 2013 Table 1B(7) Management Limits Comm / Ind:Management limits are applied after consideration of relevant ESLs and HSLs

Env Stds Comments

#1:Lead: HILs A,B,C based on blood lead models (IEUBK & HIL D on adult lead model for where 50% bioavailability considered. Site-specific bioavailability should be considered where appropriate.
#2:Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where appropriate (refer Shedule B7).
#3:Elemental mercury: HIL does not address elemental mercury. a site specific assessment should be considered if elemental mercury is present, or suspected to be present.
#4:Total PAHs: Based on sum of 16 most common reported (WHO 98). HIL application should consider presence of carcinogenic PAHs (should meet BaP TEQ HIL) & napthalene (should meet relevant HSL)
#5:Derived soil HSL exceeds soil saturation concentraiton
#6:To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#7:Moderate reliability. To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#8:To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#9:Moderate reliability. To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#10:Separate management limits for BTEX & napthalene are not available hence should not be subtracted from the relevant fractions to obtain F1 & F2

[Filter]

Table 1: Soil Analytical Results

Field ID	Sampled Date	Lab Report Number	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	PAHs (Sum of total)	Phenanthrene	Phenol	Pyrene	Parathion	Pirimiphos-methyl	4,6-Dinitro-o-cyclohexyl phenol	Phenols (Total Halogenated)	Phenols (Total Non Halogenated)	Bis(2-ethylhexyl) phthalate	Butyl benzyl phthalate	Diethylphthalate	Dimethyl phthalate	Di-n-butyl phthalate	Di-n-octyl phthalate	Methyl Ethyl Ketone	4-Methyl-2-pentanone	Acetone	Allyl chloride	Carbon disulfide	EPN	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	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			0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.2	0.2	20	1	20	5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.2	50	100	100	50	20	20	50	50	50		20
NEPM 2013 EIL																																					
NSW 2008 General Solid Waste (No Leaching)																					**4000**										**650**				**10,000**		
NSW 2008 Restricted Solid Waste (No Leaching)																					16000										2600				40,000		
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil						*4000 [#4]*		*240000*																													
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand																																					
0-1m					NL [#5]																									NL [#5]							
1-2m					NL [#5]																									NL [#5]							
2-4m					NL [#5]																									NL [#5]							
>4m					NL [#5]																									NL [#5]							
NEPM 2013 Table 1B(6) ESLs for Comm/Ind																																					
0-2m																												1700|2500	3300|6600	170							
NEPM 2013 Table 1B(7) Management Limits Comm / Ind																											1000 [#10]	3500|5000	10000								700 [#10|800#10]
SS01	24/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	800	6300	1200	800	<20	300	5200	2900	8400	-	<20
TP01_0.1	24/03/2017	539755	<0.5	0.7	<0.5	10.3	0.7	-	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	190	100	<50	<20	<20	120	120	240	-	<20
TP01_0.7	24/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<100	<100	<50	<20	24	<50	<50	<50	-	<20
TP02_0.05	24/03/2017	539755	<0.5	3.1	<0.5	27.4	5.2	<0.5	9.2	<0.2	<0.2	<20	<1	<20	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<50	160	100	<50	<20	<20	110	110	220	-	<20
TP02_1.2	24/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<100	<100	<50	<20	23	<50	<50	<50	-	<20
TP03_0.1	24/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	120	<100	<50	<20	<20	68	97	165	-	<20
TP03_1.2	24/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<100	<100	<50	<20	26	<50	<50	<50	-	<20
TP04_0.6	24/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<100	<100	<50	<20	<20	<50	<50	<50	-	<20
TP05_0.1	24/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	570	260	<50	<20	31	330	370	731	-	<20
TP05_0.6	24/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<100	<100	<50	<20	<20	<50	<50	<50	-	<20
TP06_0.1	24/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<20	<1	<20	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	64	22,000	5500	64	<20	63	13,000	13,000	**26,060**	-	<20
TP06_0.6	24/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<100	<100	<50	<20	<20	<50	<50	<50	-	<20
TP07_0.1	24/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	130	160	<50	<20	30	69	110	209	-	<20
TP07_0.6	24/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<100	<100	<50	<20	26	<50	<50	<50	-	<20
TP08_0.1	24/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	330	300	<50	<20	<20	170	310	480	-	<20
TP08_1.5	24/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<100	<100	<50	<20	<20	<50	<50	<50	-	<20
TP08_3.9	24/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<100	<100	<50	<20	<20	<50	<50	<50	-	<20
TP09_0.1	24/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	500	650	<50	<20	33	210	500	743	-	<20
TP09_2.5	24/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<100	<100	<50	<20	<20	<50	<50	<50	-	<20
TP10_0.1	24/03/2017	539755	<0.5	<0.5	<0.5	1.1	<0.5	-	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	110	110	<50	<20	23	56	88	167	-	<20
TP11_0.2	24/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	360	170	<50	<20	30	240	200	470	-	<20
TP11_0.7	24/03/2017	539755	<0.5	0.6	<0.5 - 0.9	14.6	1.2	-	2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	210	<100	<50	<20	27	170	94	291	-	<20
TP12_0.1	24/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<20	<1	<20	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<50	<100	<100	<50	<20	24	<50	52	76	-	<20
TP12_2.2	24/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	54	160	<100	54	<20	30	160	66	256	-	<20
TP13_0.1	24/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<100	<100	<50	<20	24	<50	<50	<50	-	<20
TP13_1.2	24/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<100	<100	<50	<20	<20	73	61	134	-	<20
TP14_0.2	24/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<100	<100	<50	<20	27	<50	62	89	-	<20
TP14_1.4	24/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<100	<100	<50	<20	<20	<50	<50	<50	-	<20
TP15_0.1	25/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<20	<1	<20	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<50	<100	<100	<50	<20	35	66	<50	101	-	<20
TP15_2.0	25/03/2017	539755	<0.5	1	<0.5	13.7	0.6	-	2.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	170	<100	<50	<20	<20	100	120	220	-	<20
TP15_3.5	25/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<100	<100	<50	<20	<20	<50	<50	<50	-	<20
TP16_0.2	25/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<100	<100	<50	<20	<20	<50	<50	<50	-	<20
TP16_1.0	25/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<100	<100	<50	<20	24	<50	<50	<50	-	<20
TP17_0.2	25/03/2017	539755	<0.5	<0.5	<0.5	2	<0.5	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<100	<100	<50	<20	<20	<50	<50	<50	-	<20
TP17_3.5	25/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<100	<100	<50	<20	26	<50	54	80	-	<20
QC03_250317	25/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<100	<100	<50	<20	23	<50	<50	<50	-	<20
QC04_250317	25/03/2017	ES1707373	<0.5	<0.5	<0.5	-	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<100	<100	-	-	<50	<100	<100	<50	<50	-
TP18_0.2	25/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<100	<100	<50	<20	<20	<50	<50	<50	-	<20
QC01_250317	25/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<100	<100	<50	<20	<20	<50	<50	<50	-	<20
QC02_250317	25/03/2017	ES1707373	<0.5	<0.5	<0.5	-	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<100	<100	-	-	<50	<100	<100	<50	<50	-
TP18_2.5	25/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<100	<100	<50	<20	<20	<50	<50	<50	-	<20
TP19_0.2	25/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<100	<100	<50	<20	<20	<50	<50	<50	-	<20
TP19_3.5	25/03/2017	539755	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<100	<100	<50	<20	28	<50	<50	<50	-	<20

Env Stds Description

NEPM 2013 Table 1B(7) Management Limits Comm / Ind:Management limits are applied after consideration of relevant ESLs and HSLs

Env Stds Comments

#1:Lead: HILs A,B,C based on blood lead models (IEUBK & HIL D on adult lead model for where 50% bioavailability considered. Site-specific bioavailability should be considered where appropriate.
#2:Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where appropriate (refer Shedule B7).
#3:Elemental mercury: HIL does not address elemental mercury. a site specific assessment should be considered if elemental mercury is present, or suspected to be present.
#4:Total PAHs: Based on sum of 16 most common reported (WHO 98). HIL application should consider presence of carcinogenic PAHs (should meet BaP TEQ HIL) & napthalene (should meet relevant HSL)
#5:Derived soil HSL exceeds soil saturation concentraiton
#6:To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#7:Moderate reliability. To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#8:To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#9:Moderate reliability. To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#10:Separate management limits for BTEX & napthalene are not available hence should not be subtracted from the relevant fractions to obtain F1 & F2

[Filter]

Table 2: Blank Analytical Results

DRC ENVIRONMENTAL
DEVELOPMENT REMEDIATION CONSULTANTS

Field Blanks (WATER)
Filter: SDG in('27 Mar 2017')

			SDG	27-Mar-17	27-Mar-17	27-Mar-17
			Field ID	TB01	TB03_250317	TB04_250317
			Sampled_Date/Time	24/03/2017	25/03/2017	25/03/2017
			Sample Type	Trip_B	Trip_B	Trip_B
Chem_Group	**ChemName**	**Units**	**EQL**			
BTEX	Benzene	µg/l	1	<1	<1	<1
	Ethylbenzene	µg/l	1	<1	<1	<1
	Toluene	µg/l	1	<1	<1	<1
	Xylene (m & p)	µg/l	2	<2	<2	<2
	Xylene (o)	µg/l	1	<1	<1	<1
	Xylene Total	µg/l	3	<3	<3	<3
	C6-C10 less BTEX (F1)	mg/l	0.02	<0.02	<0.02	<0.02
PAH/Phenols	Naphthalene	µg/l	10	<10	<10	<10
TPH	C6 - C9	µg/l	20	<20	<20	<20
	C6-C10	mg/l	0.02	<0.02	<0.02	<0.02

Filter: SDG in('27 Mar 2017')

DRC ENVIRONMENTAL

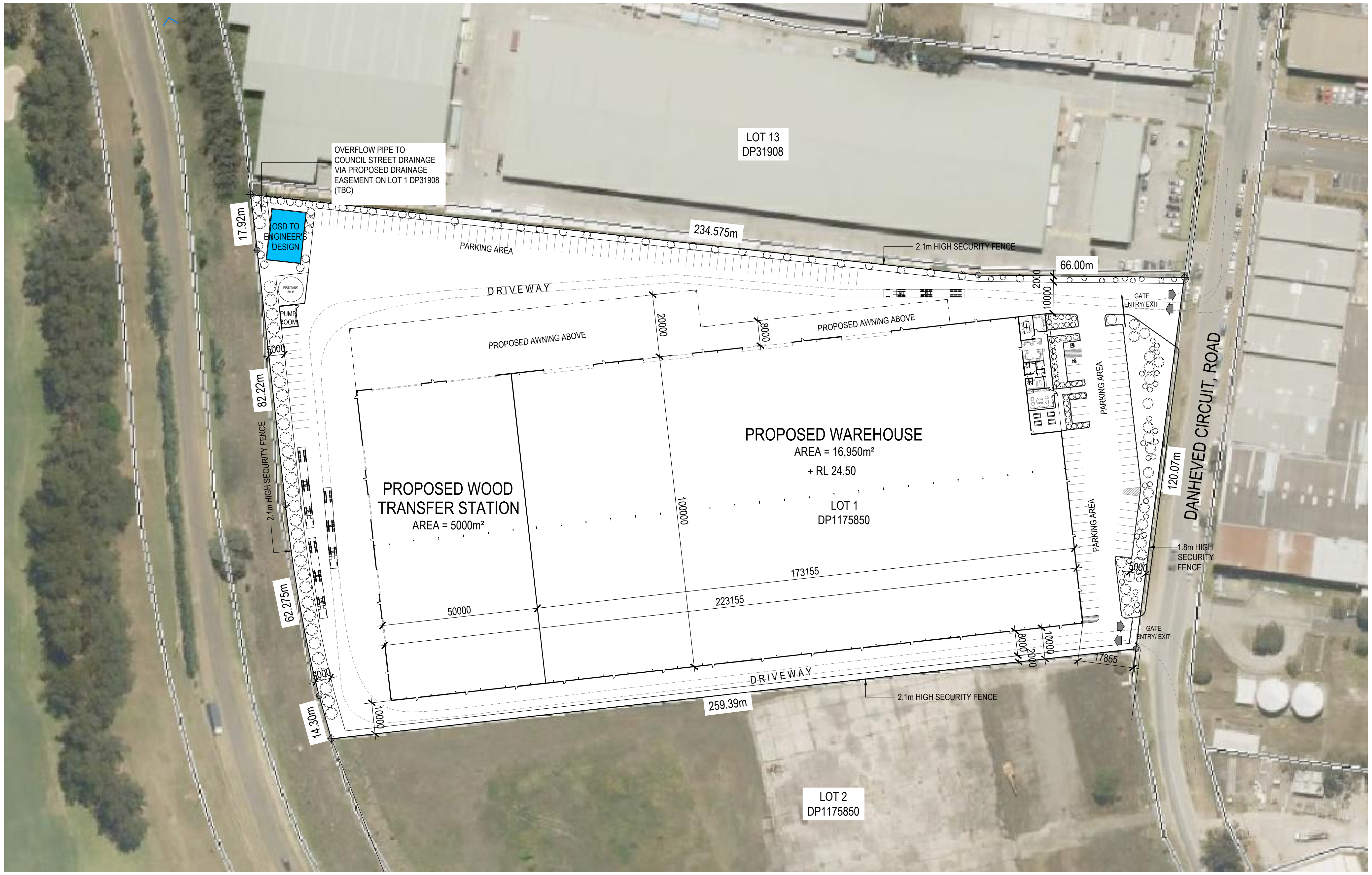
Table 3: Soil RPDs

Field Duplicates (SOIL)
Filter: SDG in('27 Mar 2017')

			SDG	27-Mar-17	27-Mar-17		27-Mar-17	ALS 28-Mar-17		27-Mar-17	27-Mar-17		27-Mar-17	ALS 28-Mar-17	
			Field ID	TP18_0.2	QC01_250317	**RPD**	TP18_0.2	QC02_250317	**RPD**	TP17_3.5	QC03_250317	**RPD**	TP17_3.5	QC04_250317	**RPD**
			Sampled Date/Time	25/03/2017	25/03/2017		25/03/2017	25/03/2017		25/03/2017	25/03/2017		25/03/2017	25/03/2017	
Chem_Group	**ChemName**	**Units**	**EQL**												
	Benzo(a)pyrene TEQ (LOR)	mg/kg	0.5	1.2	1.2	0	1.2	1.2	0	1.2	1.2	0	1.2	1.2	0
	Benzo(a)pyrene TEQ calc (Half)	mg/kg	0.5	0.6	0.6	0	0.6	0.6	0	0.6	0.6	0	0.6	0.6	0
	Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
BTEX	Benzene	mg/kg	0.1 (Primary): 0.2 (Interlab)	<0.1	<0.1	0	<0.1	<0.2	0	<0.1	<0.1	0	<0.1	<0.2	0
	Ethylbenzene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.1	0	<0.1	<0.5	0
	Toluene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.1	0	<0.1	<0.5	0
	Xylene (m & p)	mg/kg	0.2 (Primary): 0.5 (Interlab)	<0.2	<0.2	0	<0.2	<0.5	0	<0.2	<0.2	0	<0.2	<0.5	0
	Xylene (o)	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.1	0	<0.1	<0.5	0
	Xylene Total	mg/kg	0.3 (Primary): 0.5 (Interlab)	<0.3	<0.3	0	<0.3	<0.5	0	<0.3	<0.3	0	<0.3	<0.5	0
	C6-C10 less BTEX (F1)	mg/kg	20	<20.0	<20.0	0	<20.0			<20.0	<20.0	0	<20.0		
Inorganics	Conductivity (1:5 aqueous extract)	uS/cm	5	130.0	160.0	21	130.0			**83.0**	**170.0**	**69**	83.0		
	Moisture Content (dried @ 103°C)	%	1	8.9	8.3	7	8.9			18.0	21.0	15	18.0		
	pH (aqueous extract)	pH_Units	0.1	8.4	8.6	2	8.4			6.6	6.9	4	6.6		
Lead	Lead	mg/kg	5	17.0	25.0	38	17.0	23.0	30	**35.0**	**60.0**	**53**	**35.0**	**15.0**	**80**
Metals	Arsenic	mg/kg	2 (Primary): 5 (Interlab)	2.3	2.8	20	2.3	<5.0	0	4.8	7.4	43	4.8	6.0	22
	Cadmium	mg/kg	0.4	<0.4	<0.4	0	<0.4	<0.4	0	<0.4	0.6	40	<0.4	<0.4	0
	Chromium (III+VI)	mg/kg	5 (Primary): 2 (Interlab)	7.1	9.2	26	7.1	9.0	24	**10.0**	**20.0**	**67**	**10.0**	**22.0**	**75**
	Copper	mg/kg	5	**6.4**	**11.0**	**53**	6.4	10.0	44	26.0	37.0	35	**26.0**	**14.0**	**60**
	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	5 (Primary): 2 (Interlab)	<5.0	5.9	17	<5.0	5.0	0	10.0	12.0	18	10.0	7.0	35
	Zinc	mg/kg	5	22.0	35.0	46	**22.0**	**39.0**	**56**	65.0	87.0	29	65.0	46.0	34
PAH	Benzo(b+j)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
PAH/Phenols	Acenaphthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Acenaphthylene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Benz(a)anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Benzo(a) pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Benzo(g,h,i)perylene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Chrysene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Dibenz(a,h)anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Fluorene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Naphthalene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Naphthalene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	PAHs (Sum of total)	mg/kg	0.5	<0.5	<0.5	0	<0.5			<0.5	<0.5	0	<0.5		
	Phenanthrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
TPH	C10-C16	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0	<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	<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	<100.0	<100.0	0	<100.0	<100.0	0
	F2-NAPHTHALENE	mg/kg	50	<50.0	<50.0	0	<50.0			<50.0	<50.0	0	<50.0		
	C6 - C9	mg/kg	20	<20.0	<20.0	0	<20.0			<20.0	<20.0	0	<20.0		
	C10 - C14	mg/kg	20 (Primary): 50 (Interlab)	<20.0	<20.0	0	<20.0	<50.0	0	26.0	23.0	12	26.0	<50.0	0
	C15 - C28	mg/kg	50 (Primary): 100 (Interlab)	<50.0	<50.0	0	<50.0	<100.0	0	<50.0	<50.0	0	<50.0	<100.0	0
	C29-C36	mg/kg	50 (Primary): 100 (Interlab)	<50.0	<50.0	0	<50.0	<100.0	0	54.0	<50.0	8	54.0	<100.0	0
	+C10 - C36 (Sum of total)	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0	80.0	<50.0	46	80.0	<50.0	46
	C6-C10	mg/kg	20	<20.0	<20.0	0	<20.0			<20.0	<20.0	0	<20.0		

*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: 50 (1-10 x EQL); 50 (10-30 x EQL); 50 (> 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

APPENDIX A – SITE DETAILS



SITE STATISTICS

LOT 1 DP 1175850

TOTAL SITE AREA: 40,052m²

BUILDING FOOTPRINT AREAS

TOTAL FOOTPRINT AREA: 22,211m²

SITE COVERAGE: 55.45%

BUILDING BREAK UP AREAS

PROPOSED WAREHOUSE	16,950m²
PROPOSED WOOD TRANSFER STATION	5000m²
PROPOSED OFFICE	261m²

PARKING REQUIREMENTS

DESCRIPTION	AREA	SPACES
WAREHOUSE AND WOOD TRANSFER STATION	21,950m²	220
OFFICE:	261m²	3

TOTAL CAR PARKING SPACES REQUIRED	223
TOTAL CAR PARKING SPACES PROVIDED	145
TOTAL CAR PARKING FOR DISABLED	2

Issue	Description	Date	Drawn	Auth
A	FOR REVIEW	09-10-18	JIGS	MD

BORG CONSTRUCTION

OFFICE:
2 Wella Way Somersby, NSW 2250 Australia
Tel: 02 4340 9800 Fax: 02 4340 8293

Project
PROPOSED NEW BUILDING

Location
65-75 DUNHEVED CIRCUIT, ST MARYS

Drawing
SITE PLAN

Scale	Drawing Number	Issue
1 : 800@ A1 1 : 1600@ A3	DA01	A

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 1/1175850

SEARCH DATE	TIME	EDITION NO	DATE
27/4/2017	12:29 PM	3	17/12/2014

LAND

LOT 1 IN DEPOSITED PLAN 1175850
AT ST MARYS
LOCAL GOVERNMENT AREA PENRITH
PARISH OF ROOTY HILL COUNTY OF CUMBERLAND
TITLE DIAGRAM DP1175850

FIRST SCHEDULE

MAGANIC BROTHERS & SISTER PTY LIMITED (TZ AJ49889)

SECOND SCHEDULE (5 NOTIFICATIONS)

	1	D431274	EASEMENT FOR DRAINAGE 10.06 METRE(S) WIDE APPURTENANT TO THE LAND ABOVE DESCRIBED AFFECTING THE SITE OF PROPOSED DRAINAGE EASEMENT 33 FEET WIDE SHOWN IN DP431900
	2	K561654	COVENANT AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM.
	3	K561654	EASEMENT FOR WATER PIPELINE 3.05 METRE(S) WIDE AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM
	4	DP1175850	EASEMENT FOR SERVICES VARIABLE WIDTH APPURTENANT TO THE LAND ABOVE DESCRIBED
*	5	AM98385	CAVEAT BY DDDS ST MARY'S PTY LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

PRINTED ON 27/4/2017

REGISTER OF DEPOSITED PLANS

4559 5.60 V. C. N

Date of Lodgmt.	Lodging Party	Surveyor	Registered Propr. or Owner	Reference to Title	Previous Plan
12.60	Marsh, Harvey & Cropper	G. J. Hunter	Preview Subdivisions Pty Ltd.	Vol. 8087 Fol. 142	DP 1905
10.59	The Housing Commission of NSW	W.H. Cooper	The Housing Commission of NSW.	Vol. 7820 Fol 90	Central Illawarra Sh. B
1.59	Ritchie & Arnold.	R. B. Forsyth	Realty Development Consultants Pty Ltd.	Vol 5844 Fol 231	PA 36198 & DP 29648
1.61	Wall, Abbott & White	K G Jones	South Pacific Developments Pty Ltd.	Vol. 8264 Fol. 228	MPS(RP)120306 & ors.
11.60	The Housing Commission of NSW	W J Plummer	The Housing Commission of NSW	Vol 6275 Fol. 48	HCP1684
12.60	Keith Thomas & Co,	J W Menzies	Francis Benjamin Camilleri & ors.	Vol 3276 Fol 157	DP 8746 & 18111
3. 1960.	Morris Hayes & Edgar	W. L. S. Hudson	P. E Waugh & ors.	Vol 3308 Fol. 10	DP 10566
6.59	Commonwealth Crown Solicitor	J P Dynes	The Commonwealth of Australia	Vol 8237 Fol. 70	Appn 26115 61747(L)
6.59	Commonwealth Crown Solicitor	J P. Dynes	The Commonwealth of Australia	Vol 8237 Fol. 69 & 70	Appn 26115 & ors.
12.59	Commonwealth Crown Solicitor	V Ingham	The Commonwealth of Australia	Vol 8237 Fol. 70	Appn 26115 & ors
8.60	Commonwealth Crown Solicitor	T. M. Austin	The Commonwealth of Australia	Vol 8237 Fol. 70	Appn 26115 & ors.
8.60	Commonwealth Crown Solicitor	T. M. Austin	The Commonwealth of Australia	Vol 8237 Fol. 70.	Appn 26115 & ors
12.60	Commonweath Crown Solicitor	J P. Dynes	The Commonwealth of Australia	Vol. 8237 Fol 70	Appn 26115 & ors.
8.61	—	J. Fitzgerald	—	Formerly Regd. Plan 102	Town Queanbeyan
—	—	A. B. Cochran	—	Formerly MPS (O.S) 3313	Town Queanbeyan
12.54	W. J. Holland	E. G. Lindsay	Thos. Pidcock & Sons Pty Ltd	No. 893 Bk 2270 & No 571 Bk 2275	Grafton Sh 1

Property Report for 65 Dunheved Circuit, St Marys, 2760

Property Details

Address:	65 Dunheved Circuit, St Marys, 2760
Lot/Section/Plan no:	1/-/DP1175850
Council:	PENRITH

Council Details

PENRITH CITY COUNCIL

Website	http://www.penrithcity.nsw.gov.au
Phone Number	02 4732 7777
Email Address	council@penrithcity.nsw.gov.au
Council Address	Civic Centre
	Penrith 2750

Planning Controls associated with this property

Land Zoning

- IN1 - General Industrial : (pub. 2010-09-22)

Contribution Plans (LGA-Based)

- Penrith CP 1993 - St Marys Town Centre
- Penrith CP 2003 - Cultural Facilities
- Penrith CP 2004 - Claremont Meadows
- Penrith CP 2004 - Lambridge Industrial Estate North Penrith
- Penrith CP 2005 - Lakes Environs (WatersideGreen)
- Penrith CP 2007 - District Open Space Facilities
- Penrith CP 2007 - Glenmore Park Stage 2
- Penrith CP 2007 - Local Open Space
- Penrith CP 2008 - Erskine Business Park
- Penrith CP 2008 - Penrith City Centre Civic Improvement - as amended 7 Aug 2015
- Penrith CP 2008 - Werrington Enterprise Living and Learning (WELL) Precinct Contributions Plan PDF

Development Control Plans (LGA-Based)

- Penrith DCP 2014 - Volume 1 - as amended 7 Jul 2016
- Penrith DCP 2014 - Volume 2 - as amended 19 Feb 2016

Height of Building

- M - 12.0 m : Range [12.0 - 12.9 m] (pub. 2010-09-22)

Land Application LEP

- Included : Penrith Local Environmental Plan 2010 (pub. 2017-08-11)

Minimum Lot Size

- U - 1000.00 m² : Range [1000 - 1999 sqm] (pub. 2010-09-22)

Scenic Protection Land

- Scenic & Landscape Values (pub. 2010-09-22)

Other spatial data associated with this property

Local Government Area

- Penrith

Suburbs

- St Marys

State Environmental Planning Policies which apply at 65 Dunheved Circuit, St Marys, 2760

State Environmental Planning Policy (Affordable Rental Housing) 2009 : (pub. 2009-07-31)
State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004 : (pub. 2004-06-25)
State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 : (pub. 2008-12-12)
State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 : (pub. 2004-03-31)
State Environmental Planning Policy (Infrastructure) 2007 : (pub. 2007-12-21)
State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 : (pub. 2007-02-16)
State Environmental Planning Policy (Miscellaneous Consent Provisions) 2007 : (pub. 2007-09-28)
State Environmental Planning Policy No 19-Bushland in Urban Areas : (pub. 1986-10-24)
State Environmental Planning Policy No 1-Development Standards : (pub. 1980-10-17)
State Environmental Planning Policy No 21-Caravan Parks : (pub. 1992-04-24)
State Environmental Planning Policy No 30-Intensive Agriculture : (pub. 1989-12-08)
State Environmental Planning Policy No 33-Hazardous and Offensive Development : (pub. 1992-03-13)
State Environmental Planning Policy No 36-Manufactured Home Estates : (pub. 1993-07-16)
State Environmental Planning Policy No 50-Canal Estate Development : (pub. 1997-11-10)
State Environmental Planning Policy No 55-Remediation of Land : (pub. 1998-08-28)
State Environmental Planning Policy No 62-Sustainable Aquaculture : (pub. 2000-08-25)
State Environmental Planning Policy No 64-Advertising and Signage : (pub. 2001-03-16)
State Environmental Planning Policy No 65-Design Quality of Residential Apartment Development : (pub. 2002-07-26)
State Environmental Planning Policy No 70-Affordable Housing (Revised Schemes) : (pub. 2002-05-01)
State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017 : Subject Land (pub. 2017-08-25)
Sydney Regional Environmental Plan No 20-Hawkesbury-Nepean River (No 2-1997) : Sub Catchment Boundaries (pub. 1997-11-07)
Sydney Regional Environmental Plan No 20-Hawkesbury-Nepean River (No 2-1997) : (pub. 1997-11-07)

Planning Controls contained in the Penrith Local Environmental Plan 2010

Height of Building

(1) The objectives of this clause are as follows:

- (a) to ensure that buildings are compatible with the height, bulk and scale of the existing and desired future character of the locality,
- (b) to minimise visual impact, disruption of views, loss of privacy and loss of solar access to existing development and to public areas, including parks, streets and lanes,
- (c) to minimise the adverse impact of development on heritage items, heritage conservation areas and areas of scenic or visual importance,
- (d) to nominate heights that will provide a high quality urban form for all buildings and a transition in built form and land use intensity.

(2) The height of a building on any land is not to exceed the maximum height shown for the land on the Height of Buildings Map.

Planning Controls contained in the Penrith Local Environmental Plan 2010

Land Zoning

Zone IN1 General Industrial

1 Objectives of zone

- To provide a wide range of industrial and warehouse land uses.
- To encourage employment opportunities.
- To minimise any adverse effect of industry on other land uses.
- To support and protect industrial land for industrial uses.
- To promote development that makes efficient use of industrial land.
- To permit facilities that serve the daily recreation and convenience needs of the people who work in the surrounding industrial area.

2 Permitted without consent

Nil

3 Permitted with consent

Animal boarding or training establishments; Boat building and repair facilities; Car parks; Depots; Environmental facilities; Environmental protection works; Flood mitigation works; Freight transport facilities; Garden centres; General industries; Hardware and building supplies; Industrial retail outlets; Industrial training facilities; Industries; Kiosks; Landscaping material supplies; Light industries; Neighbourhood shops; Places of public worship; Plant nurseries; Recreation areas; Roads; Rural industries; Self-storage units; Signage; Storage premises; Take away food and drink premises; Timber yards; Transport depots; Truck depots; Vehicle body repair workshops; Vehicle repair stations; Warehouse or distribution centres

4 Prohibited

Hazardous industries; Offensive industries; Any other development not specified in item 2 or 3

Planning Controls contained in the Penrith Local Environmental Plan 2010

Minimum Lot Size

(1) The objectives of this clause are as follows:

- (a) to ensure that lot sizes are compatible with the environmental capabilities of the land being subdivided,
- (b) to minimise any likely impact of subdivision and development on the amenity of neighbouring properties,
- (c) to ensure that lot sizes and dimensions allow developments to be sited to protect natural or cultural features including heritage items and retain special features such as trees and views,
- (d) to regulate the density of development and ensure that there is not an unreasonable increase in the demand for public services or public facilities,
- (e) to ensure that lot sizes and dimensions are able to accommodate development consistent with relevant development controls.

(2) This clause applies to a subdivision of any land shown on the Lot Size Map that requires development consent and that is carried out after the commencement of this Plan.

(3) The size of any lot resulting from a subdivision of land to which this clause applies is not to be less than the minimum size shown on the Lot Size Map in relation to that land.

(4) This clause does not apply in relation to the subdivision of any land:

- (a)

by the registration of a strata plan or strata plan of subdivision under the Strata Schemes Development Act 2015,

or

- (b) by any kind of subdivision under the Community Land Development Act 1989.

(4A) Despite subclause (3), development consent must not be granted for the subdivision of land in Zone R2 Low Density Residential unless each lot to be created by the subdivision would have:

- (a) if it is a standard lot—a minimum width of 15 metres, or
- (b) if it is a battle-axe lot—a minimum width of 15 metres and a minimum area of 650 square metres.

(4B) Despite subclause (3), development consent must not be granted for the subdivision of land in Zone R3 Medium Density Residential unless each lot to be created by the subdivision would have:

- (a) if it is a standard lot—a minimum width of 12 metres, or
- (b) if it is a battle-axe lot—a minimum width of 15 metres and a minimum area of 450 square metres.

(4C) For the purposes of this clause, if a lot is a battle-axe lot or other lot with an access handle, the area of the access handle is not to be included in calculating the lot size.

APPENDIX B – AERIAL PHOTOGRAPHS AND PREVIOUS INVESTIGATION REPORTS

DRC ENVIRONMENTAL
DEVELOPMENT REMEDIATION CONSULTANTS

LEGEND:

Approximate site boundary

N

0 10 20 30 40 50
Scale in Metres

TITLE:
GOOGLE EARTH - 2002

PROJECT:
DETAILED SITE INVESTIGATION 65-73 DUNHEVED CIRCUIT, ST MARYS, NSW

CLIENT:
BORG MANUFACTURING

DATE: **April 2017**
DESIGNED: **RP**
DRAWN: **LB**

SOURCE: **Google Earth Pro 21.07.2002**

APPENDIX: **B**

A4 size

DRC ENVIRONMENTAL
DEVELOPMENT REMEDIATION CONSULTANTS

LEGEND:
Approximate site boundary

N

0 10 20 30 40 50
Scale in Metres

TITLE:
GOOGLE EARTH - 2004

PROJECT:
DETAILED SITE INVESTIGATION
65-73 DUNHEVED CIRCUIT,
ST MARYS, NSW

CLIENT:
BORG MANUFACTURING

DATE: **April 2017**
DESIGNED: **RP**
DRAWN: **LB**

SOURCE:
Google Earth Pro
22.12.2004

APPENDIX: **B**

A4 size

DRC ENVIRONMENTAL
DEVELOPMENT REMEDIATION CONSULTANTS

LEGEND:

Approximate site boundary

N

0 10 20 30 40 50
Scale in Metres

TITLE:
GOOGLE EARTH - 2011

PROJECT:
DETAILED SITE INVESTIGATION 65-73 DUNHEVED CIRCUIT, ST MARYS, NSW

CLIENT:
BORG MANUFACTURING

DATE: **April 2017**

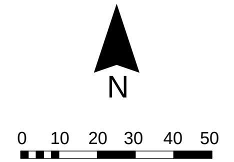
DESIGNED: **RP**

DRAWN: **LB**

SOURCE: **Google Earth Pro 14.11.2011**

APPENDIX: **B**

A4 size



DRC ENVIRONMENTAL
DEVELOPMENT REMEDIATION CONSULTANTS

LEGEND:

Approximate site boundary

N

0 10 20 30 40 50

Scale in Metres

TITLE:

GOOGLE EARTH - 2012

PROJECT:

DETAILED SITE INVESTIGATION 65-73 DUNHEVED CIRCUIT, ST MARYS, NSW

CLIENT:

BORG MANUFACTURING

DATE:	**April 2017**
DESIGNED:	**RP**
DRAWN:	**LB**

SOURCE: **Google Earth Pro 10.11.2012**

APPENDIX: **B**

A4 size

DRC ENVIRONMENTAL
DEVELOPMENT REMEDIATION CONSULTANTS

LEGEND:
Approximate site boundary

N

0 10 20 30 40 50
Scale in Metres

TITLE:
GOOGLE EARTH - 2014

PROJECT:
DETAILED SITE INVESTIGATION
65-73 DUNHEVED CIRCUIT,
ST MARYS, NSW

CLIENT:
BORG MANUFACTURING

DATE: **April 2017**
DESIGNED: **RP**
DRAWN: **LB**

SOURCE:
Google Earth Pro
01.10.2014

APPENDIX: **B**

A4 size

DRC ENVIRONMENTAL
DEVELOPMENT REMEDIATION CONSULTANTS

LEGEND:
Approximate site boundary

N

0 10 20 30 40 50
Scale in Metres

TITLE:
GOOGLE EARTH - 2016

PROJECT:
DETAILED SITE INVESTIGATION 65-73 DUNHEVED CIRCUIT, ST MARYS, NSW

CLIENT:
BORG MANUFACTURING

DATE: **April 2017**
DESIGNED: **RP**
DRAWN: **LB**

SOURCE:
Google Earth Pro 30.11.2016

APPENDIX: **B**

A4 size

PENRITH

Our Ref: 7067611
Contact: Jackie Shephard
Telephone: 02 47 32 7732

Maganic Brothers and Sister Pty Ltd
135 Selkirk Avenue
CECIL PARK NSW 2178

12 November 2015

Dear Sir

Penrith City Council is in receipt of an Access Application pursuant to the Government Information (Public Access) Act 2009 *(GIPA)* dated 13 October 2015.

In accordance with sections 54(2) and (3) of the GIPA Act, you are notified that the sought-after information: includes your business affairs.

The sought-after information that relates to you is enclosed for your consideration. The purpose of this notification is to ascertain whether you have an objection to the disclosure of the sought-after information and if so, what reasons you have to object to its release. If you object to the release of the information, please advise us of your reasons (*attached Consultation Process & Documents Affecting Business Affairs sheet).*

Penrith City Council will take any objection from you into consideration when deciding whether there is an overriding public interest against disclosure of this information.

If Penrith City Council decides to release the information and you have made an objection in regards to the release of the information, you will be notified of your right of review of that decision (section 54(6)).

If you choose to object to the release of the information, please forward your objection to Penrith City Council within 5 working days. Accordingly, Penrith City Council should receive any objection from you by 20 November 2015.

If I do not hear from you within five days of you receiving this letter I shall assume you do not object to the document/s being released. Please contact me on 02 4732 7732 or email jshephard@penrithcity.nsw.gov.au if you would like further information.

Yours faithfully

Jackie Shephard
Right to Information Officer

Encl

Penrith City Council
PO Box 60, Penrith
NSW 2751 Australia
T 4732 7777
F 4732 7958
penrithcity.nsw.gov.au

PENRITH
CITY COUNCIL

Golder Associates Pty Ltd A.C.N. 006 107 857
WESTERN SYDNEY OFFICE

Unit 1, 20 Garling Road, Kings Park, NSW 2148 Australia
(PO Box 6027, Blacktown, NSW 2148 Australia)
Telephone (02) 9831 7194
Fax (02) 9831 7224

Golder Associates

REPORT ON

REMEDIATION AND VALIDATION
AREAS 1 & 2
65 – 87 DUNHEVED CIRCUIT
ST MARYS NSW

Submitted to

Maganic Brothers & Sister Pty Ltd
30 Glendenning Road
GLENDENNING NSW

DISTRIBUTION:

1 Copy	Maganic Brothers & Sister Pty Ltd
2 Copies	Golder Associates Pty Ltd

December 1998 97623169/A

If a Minister or the principal officer of an agency made the decision, you cannot ask for an internal review, but you can ask for an external review (see below).

There is a $40 fee for an internal review application.

This fee is not payable (by the person who applied for a review with the Information Commissioner) where an internal review is recommended by the Information Commissioner under section 93(6).

The agency must acknowledge your application within five working days of receiving it. The agency must decide the internal review within 15 working days (this can be extended by 10 working days if the agency has to consult further, or by agreement with you).

2. External review by the Information Commissioner

If you disagree with the outcome of the internal review, you can ask for a review by the Information Commissioner.

You must seek an internal review before applying for review by the Information Commissioner, unless an internal review is otherwise unavailable (for instance, if the principal officer of the agency decided the application or if the agency is a Minister).

You have **40 working days** from the date of the decision of an internal review to ask for a review by the Information Commissioner.

On reviewing the decision, the Information Commissioner can make recommendations about the decision to the agency.

Note: You cannot ask the Information Commissioner to review a decision that has already been reviewed by the NSW Civil and Administrative Tribunal.

3. External review by the NSW Civil and Administrative Tribunal

If you disagree with either of the decisions listed above, you can ask for a review by the NSW Civil and Administrative Tribunal (NCAT). You do not have to have the decision reviewed internally, or by the Information Commissioner, before applying for review by the NCAT.

You have **40 working days** from the date of the decision to apply to the NCAT for review. However, if you have applied for review by the Information Commissioner, you have **20 working days** from the date you are notified that the Information Commissioner's review is completed, to apply to the NCAT.

The agency cannot from release the information until you have exhausted all your review rights.

You should also be aware that if the agency agrees with you and denies access to the information, then the GIPA Applicant has similar review rights. Fees and charges apply to these review processes.

If the agency discloses the information, can they publish the information on their disclosure log?

An agency may decide to publish information released in their disclosure log because it may of interest to other members of the public.

If the agency is considering publishing the information you've been consulted about, the agency must notify you in writing:

- that the information will be included in the agency's disclosure log and that you can object to this,
- that you have a right to request a review of the decision to include information in its disclosure log despite your objection.

You would then have the same review rights as discussed above, and the agency cannot publish the information until the period for seeking a review has expired or any review itself is finalised.

For more information

Contact the Information and Privacy Commission:

freecall: 1800 472 679
email: ipcinfo@ipc.nsw.gov.au
website: www.ipc.nsw.gov.au

EXECUTIVE SUMMARY

The remediation of two areas (Area 1 and Area 2) was carried out at an industrial site located at 65-87 Dunheved Circuit, St Marys, NSW. These areas were identified following two stages of a contamination investigation of the site The remediation and validation carried out is summarised below. The remediation was considered to be 'Category 2 remediation work' under the DUAP Planning Guidelines (SEPP 55 – Remediation of Land), however, as the work was carried out before the introduction of the guidelines, no Council approval was required

- Area 1 was found to contain heavy metals and hydrocarbons at concentrations that exceeded the criteria for industrial use of the site. The remediation of this area consisted of excavation and segregation of the contaminated soil, followed by treatment and subsequent disposal to an approved landfill. The area excavated was about 150 m^2 laterally and about 0.25 m deep The contaminated soil was disposed of to a licensed landfill in accordance with a Consent for disposal issued by the NSW EPA. The residual soils in the excavation and those retained on site after segregation were sampled and analysed. The results were below the adopted criteria for industrial use of the site.

- Area 2 was located south east of a former building and contained three 5000 litre underground storage tanks (USTs). After removal of the USTs by the owner of the site, the residual soil in the excavation (walls and base) and a stockpile of soil which was excavated from around the USTs was sampled. Selected samples were analysed for the contaminants of concern consisting of total petroleum hydrocarbons (TPH), monocyclic aromatic hydrocarbons (BTEX) and lead. The results were below the NSW EPA criteria for industrial use of the site.

- The excavations were backfilled by the owner of the site with soils retained on the site and natural material excavated from other parts of the site.

The overall results of the remediation and validation indicate that the likelihood of hydrocarbon and heavy metal contamination in the residual soils in the areas remediated are considered to be low and based on the results, these areas are considered acceptable for ongoing industrial use

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1. INTRODUCTION

This report presents the results of the remediation and validation carried at a site located at 65 - 87 Dunheved Circuit, St Marys NSW. Golder Associates was commissioned to carry out this work by Mr Edmond Kelly of Maganic Brothers and Sister Pty Ltd following our proposals P972207.A dated 23 June 1997 and P972302.A dated 25 August 1997.

The site is located in a predominantly industrial area of St Marys, NSW and has an area of about 8 hectares. The site has been used for industrial purposes in the past and is proposed to be redeveloped for continued industrial use.

The site is bounded by industrial properties to the north and south, Dunheved Circuit to the east and a disused railway line and a golf course to the west. The site location is presented in Drawing 7623169/1 and a site plan is shown on Drawing 7623169/2. More information on the site is contained in previous reports (Reference 1, 2).

A preliminary environmental assessment of the site was carried out by Otek Australia Pty Ltd in November 1996 (Reference 1). The Otek report identified some areas of potential ground contamination based on the site history and a site inspection. Subsequently, Golder Associates carried out a more extensive investigation (Reference 2) primarily involving a soil sampling and analysis program across the site.

Based on the results of the previous investigations, two areas of the site were identified for remediation. These areas have been designated Area 1 and Area 2 for the purpose of this report.

- *Area 1:* This area was west of a former building (Drawing 723169/2) and was found to contain concentrations of heavy metals and hydrocarbons in the near surface soils, which exceeded the criteria for industrial use of the site. Based on the field observations and results of laboratory analysis, the area was assessed as being about 150 m^2 laterally and 0.3m to 0.5 m deep.

- *Area 2:* This area was located south east of a former building and contained three 5000 litre underground storage tanks (USTs). The tanks are believed to have been used for fuel storage during the former use of the site by APS Plastics Pty Ltd. Although the results of a sampling and analysis carried out in this area during the investigation stage were below the adopted NSW EPA criteria, with the hydrocarbon concentrations below laboratory detection limits, the tanks were recommended to be removed and the residual soils validated prior to development of the site.

2. SCOPE OF WORK

The scope of work for the remediation consisted of project management of the following tasks:

Area 1

- Excavation of the contaminated soil;
- Validation sampling and analysis of the residual soil in the excavation;
- Characterisation of the excavated soil for the purposes of off-site disposal;
- Treatment of the contaminated soil prior to disposal;
- Obtaining a NSW EPA consent for the disposal of the soil to a licensed landfill; and
- Preparing this report on the remediation and validation.

Area 2

- Validation sampling and analysis of the walls and base of the excavation after removal of the USTs;
- Validation sampling and analysis of a stockpile of soil excavated from around the USTs;
- Interpretation of the results of the sampling and analysis by comparison with NSW EPA criteria; and
- Preparation of this remediation and validation report.

The owner of the site carried out all earthworks. Golder Associates was responsible for the project management aspects of the remediation including assessment of the extent of excavation, classification of the soil prior to disposal and liaison with the NSW EPA.

The backfilling of the excavations in Areas 1 and 2 was not within the scope of work and was carried out by the owner. This aspect has been briefly discussed in Sections 4.1.5 and 4.2.3 of this report.

3. GENERAL METHODOLOGY

The remediation work was carried out in accordance with standard procedures adopted by Golder Associates. This included field screening of samples using a photoionisation detector (PID), laboratory analysis by NATA registered laboratories and use of appropriate health and safety requirements.

Where applicable, the extent of the excavation of contaminated soil was assessed based on:

- The results of laboratory analysis of the delineation samples,
- visual and odour observations, and
- field screening of samples using a photoionisation detector

Some of these issues are discussed in more detail in the following sections

3.1 PHOTOIONISATION DETECTOR (PID) SCREENING

Screening of samples was carried out using a photoionisation detector (PID). The PID is a useful instrument for the detection of ionisable compounds such as volatile hydrocarbons. The technique is used in conjunction with visual observations and odour to identify the presence of hydrocarbon contamination and to select samples for laboratory analysis. In the present case, the PID was extensively used to screen samples of the excavated material and collection of validation samples from the faces of the pit after excavation

The screening procedure involved collection of samples in duplicate The primary sample was screened using the PID and the duplicate was preserved for selection of samples for laboratory analysis More information on the PID is presented in Appendix A

3.2 LABORATORY ANALYSIS

Analysis was performed by Australian Environmental Laboratories (AEL) and Sydney Analytical Laboratories (SAL). Both laboratories are registered by the National Association of Testing Authorities (NATA) for the tests performed.

Laboratory certificates which include the analytical methods employed are presented in Appendix B A summary table of analysis carried out is presented in Table 1

3.3 Health and Safety

All field work was carried out in accordance with Golder Associates standards health and safety procedures. This included the use of appropriate personal protective equipment (PPE). covering stockpiles prior to disposal to prevent the formation of leachate and sediment control during excavation.

3.4 Remediation Criteria

Soils Retained on Site

The results of laboratory analysis were interpreted by comparison with criteria recommended by the NSW EPA. The results for hydrocarbons were compared with NSW EPA criteria for assessing service station sites (Reference 3). In the case of heavy metals, the NEHF (F) criteria recommended by the NSW EPA's Site Auditor Scheme (Reference 4) for industrial sites were used. The relevant criteria are presented in the summary tables of analytical results (Tables 2,3,4).

Soils Disposed of Site

The results of laboratory analysis for the purpose of off-site disposal of soil were interpreted by comparison with the criteria published by the NSW EPA for the Assessment Classification and Management of Non Liquid Waste (Reference 5). The criteria are presented in the summary table of analytical results (Tables 5,6).

Based on the guidelines, once soil is excavated, it is considered waste and is required to be classified into one of four categories by comparison with threshold values established for the contaminants of concern. These classifications are Inert, Solid, Industrial and Hazardous waste. In the case of Inert waste, a generator does not need to notify the NSW EPA of transport or disposal location. For Solid or Industrial waste, a generator is required to obtain NSW EPA approval to transport and dispose of the waste. In the case of Hazardous waste, the generator must notify the NSW EPA and either store the waste or treat it using appropriate immobilisation techniques prior to disposal. Currently, it is possible to dispose of waste, which is classified as Inert or Solid to a licensed landfill in the Sydney Metropolitan region.

To aid with the classification of waste, leachate testing (Toxicity Characteristic Leaching Test. TCLP) is normally carried out to assess the leachable concentrations of the contaminants of concern. If the results of the leachate testing are below specified criteria, higher threshold values of contaminants in the soil are then used which may result in waste classified as Industrial or Hazardous being re-classified as either Inert or Solid waste for the purpose of disposal.

If the concentrations of the contaminant in the soil and in the leachate are above the specified value for classification of the waste to enable disposal to a licensed landfill, immobilisation of the contaminant is required in accordance with a procedure approved by the NSW EPA. The waste is then reclassified based on the results of leachate tests, after the immobilisation is completed, and may be disposed of to a landfill in accordance with NSW EPA approval.

In the present case a section of the soil excavated from Area 1 was classified as hazardous with respect to lead. The soil was treated for immobilisation in accordance with approval of the NSW EPA prior to disposal. These aspects are discussed in Section 4.1.4 of this report.

4. REMEDIATON AND VALIDATION

4.1 AREA 1 – SOILS CONTAMINATED WITH HEAVY METALS AND HYDROCARBONS.

Area 1 was located west of the former APS Plastics building (Drawing 723169/2). Two samples TP34 (0.0-0.2m) and TP7 (0.0-0.2) from this area were found to contain concentrations (Table 5) of copper, lead, zinc, and cadmium above the NEHF (F) criteria (Reference 4) for industrial use of the site. The results of samples analysed at depth indicated that the elevated concentrations were restricted to the near surface.

In addition, a sample from TP34 (0.0-0.2m) in this area was found to contain total petroleum hydrocarbons (TPH) at concentrations of 22,800 mg/kg in the C_{10}-C_{36} fraction (Table 6). The area from which this sample was collected was observed to have oil staining and was about 3 m x 4 m.

4.1.1 Excavation

The area was excavated and the soil stockpiled in a designated area of the site. The extent of the excavation was assessed based on vidual and odour observations and PID screening as discussed in Section 3.0.

The area excavated was about 150 m² (Drawing 723169/3) with an average depth of 0.25 m. The soil excavated generally consisted of a layer (0.1m) of topsoil overlying fill, which was predominantly shaley clay.

4.1.2 Validation of Excavation

Samples were collected in duplicate from the walls and the base of the excavation. The primary sample was inspected and screened using a PID, and the duplicate sample preserved for selection of samples for laboratory analysis. The duplicate sample with the highest PID from each of the faces of the excavation was selected for laboratory analysis. The sampling locations are shown on Drawing 723169/3

Six samples WW, WN, WE, WS, B1, and B2 were analysed for a range of heavy metals and TPH fractions. The results are summarised in Table 2 and 3. The results for heavy metals were below the NEHF (F) criteria. The results for hydrocarbons were also below the NSW EPA criteria and below laboratory detection limits. The results are consistent with the absence of odour, discolouration and the low PID readings obtained.

The overall results indicated that the affected soil in this area had been removed.

4.1.3 Excavated Soil

Based on visual observations, odour and further sampling and analysis, the excavated soil was segregated into stockpiles according to those that could be retained on site and those that needed to be disposed off-site. The management of the excavated soil is presented in Figure 1 below.

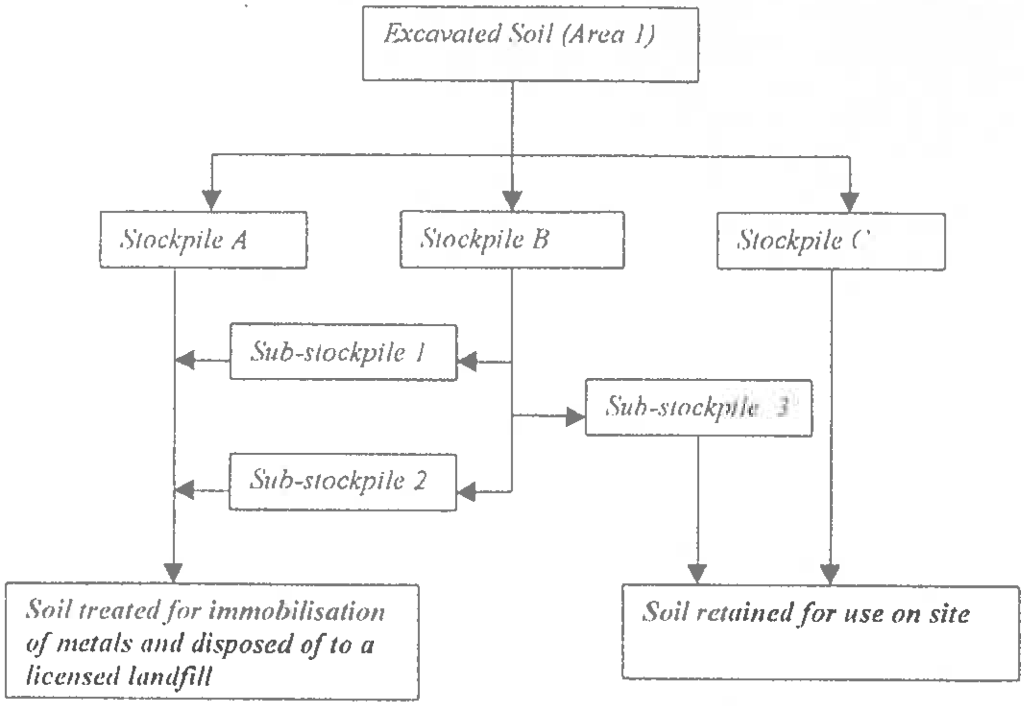

Figure 1 Management of Excavated Soil

Stockpile A

Stockpile A consisted of about 6 m^3 of soil from around TP34. This soil was found to have concentrations of hydrocarbons and heavy metals that exceeded the criteria for an industrial site.

Two samples, SP 34 (S1) and SP34 (S2) from Stockpile A were collected for analysis of heavy metals and hydrocarbons (TPH). The concentrations of TPH (Table 6) were 1630 mg/kg in SP34 (S1) and below laboratory detection limits in SP34 (S2). Based on these results the waste was classified as Inert waste with respect to hydrocarbons for the purpose of off site disposal (Reference 5).

Based on the concentration of lead, the stockpile was classified hazardous waste (Table 5). Further treatment of the soil from this stockpile was then carried out to immobilise the lead prior to off site disposal. This is further discussed in Section 4.1.4

Stockpile B

Stockpile B consisted of about 23 m^3 of soil, which was slightly discoloured in areas and was generally excavated from around TP7 A sample from this area was found to contain elevated concentrations of heavy metals during the investigation stage There were also localised areas with a mild hydrocarbon odour during the excavation For the purpose of segregating the contaminated soil, Stockpile B was divided into three sub-stockpiles as follows:

- The first sub-stockpile was designated Sub-stockpile 1 and had a relatively small volume (about 4 m^3) Samples SP7 (S1) and SP7 (S2) were collected from this sub-stockpile and were found to have a mild hydrocarbon odour The results of laboratory analysis indicated TPH concentrations (C_{10} – C_{36}) of 2740 mg/kg and 1990 mg/kg in SP7 (S1) and SP7 (S2) respectively. The soil was classified as Inert waste with respect to hydrocarbons Based on the concentrations of metals in samples SP7(S1) and SP7 (S2), the soil was classified as Inert waste however, based on the concentration of lead in the in-situ sample (TP7) and the discolouration observed, the soil from this sub-stockpile was subsequently combined with that of Stockpile A for further treatment and off site disposal. This is further discussed in Section 4.1.4.

- The second sub-stockpile was designated Sub-stockpile 2 and was approximately 10 m^3 The soil had no apparent discolouration or odour One sample SP7(S3) was collected from this sub-stockpile for analysis of hydrocarbons (TPH) and heavy metals (Table 2,3). The concentrations were below detection limits and below the criteria for TPH. The concentrations of heavy metals were also below the criteria. Based on these observations and results of laboratory analysis, the sub-stockpile was retained for use on the site

- The third sub-stockpile was designated Sub-stockpile 3 and was estimated to be about 9 m^3. The soil was discoloured. One sample SP7(4) was collected for analysis of TPH and heavy metals. The results of laboratory analysis (Table 5, 6) indicated a concentration of 2224 mg/kg for TPH in the C_{10} – C_{36} fraction and the soil was classified as Inert waste with respect to hydrocarbons. However, based on the concentration of lead, the soil was classified as Industrial waste. Subsequent analysis of additional samples SP7/1 to SP7/6 to further characterise the soil resulted in the soil being classified as Hazardous waste (Table 5) Based on the results, this sub-stockpile was subsequently combined with that of Stockpile A for further treatment to immobilise the lead prior to off site disposal. This is further discussed in Section 4.1.4.

Stockpile C

Stockpile C consisted of the remaining soil (about 8 m^3) which was not discoloured and did not have an odour during the excavation

The sample from this stockpile SP (C) had a concentration of 437 mg/kg TPH in the C_{10}-C_{36} fraction which was below the NSW EPA criteria of 1000 mg/kg (Table 4). Further, the concentrations of metals were well below the adopted NEHF (F) criteria (Table 3). Based on these results, the soil was retained for use on the site

4.1.4 Treatment and Disposal of Contaminated Soil

Immobilisation of lead

Based on the results of laboratory analysis and the subsequent leachate tests, the soil from Stockpile A and Stockpile B (Sub-stockpiles 1 and 3) were treated for immobilisation of lead for the purpose of disposal to a landfill

A series of bench scale trial tests for the immobilisation were carried out. The tests consisted of treating the soil with varying quantities of lime, cement and fly ash. The mixture was allowed to cure and samples collected for laboratory analysis to assess the concentration of lead in the leachate. The optimum concentration arrived at was the addition of 30 % (10% lime, 10 % fly ash and 10 % cement) of the immobilisation mixture to the soil. The concentration of lead in the leachate on a sample after curing the mixture was 4.1 mg/L (Table 7). As a measure of precaution, leachate tests were also carried out for cadmium and nickel in this sample. The concentrations were below laboratory detection limits.

Based on concentration of lead in the leachate of the treated sample, the NSW EPA granted a Consent for the treatment and disposal of the waste to licensed landfill

Disposal of Treated Soil

The soil to be disposed of was treated as discussed above. After the treatment, leachate concentrations of lead in two samples (AT1 and AT2) were 1.3 mg/L and 1.4 mg/L (Table 7) which confirmed the results of the bench scale trial test and the classification of the waste as Solid. Subsequently, after the treated material was allowed to dry out, it was disposed of to a licensed landfill (Envrioguard Pty Ltd) by the owner of the site. The weighbridge dockets obtained are presented in Appendix C.

4.1.5 Backfilling of Excavation

According to the owner, the excavation was backfilled with natural material excavated from some elevated areas on the other parts of the site. No compaction tests were carried out as the excavation was relatively shallow.

4.2 AREA 2 – (UNDERGROUND STORAGE TANK AREA)

The USTs were located in an area south east of the former APS Plastics Pty Ltd (Drawing 723169/2). The results of the samples collected in the area around the USTs during the investigation did not indicate the presence of elevated concentrations of the contaminants of concern. However, after the USTs were removed and disposed of by the owner of the site, the walls and the base of the excavation were sampled to ensure that the residual soils did not contain elevated concentrations of the contaminants of concern.

In addition, a sample from the stockpiled soil was also collected for laboratory analysis.

4.2.1 Sampling

Prior to sampling, the dimensions of the excavation were about 6 m x 6 m and about 2 m deep. Samples were collected from each of the walls and the base of the excavation and from the stockpiled soil. All samples were collected in duplicate. The primary samples were screened using a photoionisation detector (PID) and the duplicate sample was preserved for selection of samples for laboratory analysis. The PID readings were generally low with the maximum concentrations was 7.8 ppm (Table 4). The sampling locations are shown on Drawing 723169/4.

4.2.2 Laboratory Analysis

Five samples were analysed for total petroleum hydrocarbons (TPH), monocyclic aromatic hydrocarbons (BTEX) and lead. The samples for laboratory analysis were selected based on visual observations, odour and results of PID screening.

The laboratory samples consisted of:

- One sample from each of the walls and base of the excavation (N2, S4, E3, W3, B2 and B4);
- One sample from the stockpiled material which was used to supplement the results of the soil sampling carried out during the investigation of this area; and
- One duplicate sample for the purposes of quality control.

The analytical program is presented in Table 1.

4.2.3 Results

The results of laboratory analysis were assessed by comparing the concentrations reported with criteria recommended by the NSW EPA (Reference 3) as discussed in Section 3.4. The results are summarised in Table 4 and laboratory certificates are presented in Appendix B.

Excavation

The results of laboratory analysis were below detection limits and below the criteria for TPH and BTEX. The results for lead were below laboratory detection limits except for sample E3 in which the concentration was 5.4 mg/kg, which is well below the criteria of 300 mg/kg.

Stockpile

The results of the sample collected from the stockpile were below laboratory detection limits for all the parameters for which the sample was analysed. The results confirm those obtained from the soil samples collected from this area during the investigation in which the concentrations were well below the NSW EPA criteria (Reference 3).

Backfilling

According to the owner, the excavation was backfilled with natural material excavated from some elevated areas on other parts of the site. Compaction tests were not part of the scope of work and were not carried out after the backfilling.

5. QUALITY ASSURANCE / QUALITY CONTROL

The fieldwork for this remediation was carried out in accordance with Golder Associates standard procedures. This included collection of samples in new glass jars, preservation of samples in ice chests and transport of samples to the contract laboratory under chain of custody documentation.

Three pairs of duplicate samples were collected to assess laboratory precision (Table 8)

- Samples WE and WE (D) were duplicate pairs collected from the eastern wall of the excavation in Area 1 and were analysed for heavy metals.
- Samples WW and WW (D) were duplicate pairs collected for from the northern wall of the excavation in Area 1 and were analysed for TPH.
- Samples B4 and B4/D were duplicate pairs collected from the base of the excavation in Area 2 and were analysed for TPH, BTEX and lead.

The results are normally assessed by calculating the relative percent difference (RPD) values between the primary and duplicate. An RPD value of 0% indicates perfect agreement between results, whilst an RPD value of 200% reflects total disagreement between results.

In the case of duplicates WE / WE(D) the maximum RPD for heavy metals was 16 2% for zinc which is well below the targeted RPD value of 50%.

The results for hydrocarbons in both pairs of duplicates were below laboratory detection limits and hence the RPD values could not be calculated. However, the results theoretically indicate an acceptable level of agreement between the primary and duplicate samples

No equipment blanks were generated as the samples were collected from the centre of the excavator bucket during sampling.

The internal laboratory QA/QC results are presented with the laboratory certificates (Appendix B) and are considered acceptable based on the duplicate and control samples analysed

6. CONCLUSIONS

The remediation of two areas (Area 1 and Area 2) were carried out at an industrial site located at 65 - 87 Dunheved Circuit, St Marys, NSW. These areas were identified following two stages of a contamination investigation of the site.

- Area 1 was found to contain concentrations of heavy metals and hydrocarbons that exceeded the criteria for industrial use of the site. The remediation consisted of excavation and segregation of the contaminated soil, followed by treatment and subsequent disposal to an approved landfill. The area excavated was about 150 m^2 laterally and about 0.25 m deep. The contaminated soil was disposed of to a licensed landfill in accordance with a Consent for disposal issued by the NSW EPA. The residual soils in the excavation and those retained on site after segregation were sampled and analysed. The results were below the adopted criteria for industrial use of the site.

- Area 2 was located south east of a former building and contained three 5000 litre underground storage tanks (USTs). After removal of the USTs by the owner of the site, the residual soil in the excavation (walls and base) and a stockpile of soil which was excavated from around the USTs was sampled. Selected samples were analysed for the contaminants of concern consisting of total petroleum hydrocarbons (TPH), monocyclic aromatic hydrocarbons (BTEX) and lead. The results were below the NSW EPA criteria for industrial use of the site.

- The excavations were backfilled by the owner of the site with soils retained on the site and natural material excavated from other parts of the site.

The overall results of the remediation and validation indicate that the likelihood of hydrocarbon and heavy metal contamination in the residual soils in the areas remediated are considered to be low and based on the results, these areas are considered acceptable for ongoing industrial use.

7. LIMITATIONS

This report has been prepared for a limited purpose and for a specific client. Golder Associates does not accept any responsibility arising from the use of the information and interpretation of the results for any other purpose or by any other party.

Attached as Appendix D is a document entitled "Important Information About Your Environmental Site Assessment" which details important additional limitations regarding the work undertaken and this report.

GOLDER ASSOCIATES PTY LTD

Dr Chris Farias MRACI C Chem
Senior Environmental Scientist

REFERENCES

1. *Background Investigation (Potential Contaminants), Otek Australia Pty Ltd Report No S96C130 November 1996.*
2. *Stage 2 Contamination Investigation, 65 – 87 Dunheved Circuit, St Marys; Golder Associates report No. 97623111A, August 1997.*
3. *Guidelines for Assessing Service Station Site, NSW EPA December 1994.*
4. *Guidelines for the NSW Site Auditor Scheme, NSW EPA June 1998.*
5. *Environmental Guidelines: Assessment, Classification and Management of Non-Liquid Wastes NSW EPA, July 1997.*

Area	Sample ID	Sample Date	Sample Type	Sample Depth (m)	Analyses		
Area 1 - Validation of Excavation							
West wall	WW	28.8.97	Soil	0.2	Metals	TPH	
North Wall	WN	28.8.97	Soil	0.1	Metals	TPH	
East Wall	WE	28.8.97	Soil	0.2	Metals	TPH	
South wall	WS	28.5.97	Soil	0.1	Metals	TPH	
Base	B1	28.8.97	Soil	0.3	Metals	TPH	
Base	B2	28.8.97	Soil	0.3	Metals	TPH	
Duplicate	WW(D)	28.8.97	Soil	0.3		TPH	
Duplicate	WE(D)	28.8.97	Soil	0.3	Metals		
Area 1 - Excavated Soil							
Stockpile A	SP34 (S1)	28 8.97	Soil	Stockpile	Metals	TPH	
	SP34(S2)	28.8 97	Soil	Stockpile	Metals	TPH	TCLP
	TP34	23.5 97	Soil	0.2	Metals	TPH	TCLP
Stockpile B	SP7(S1)	28.8.97	Soil	Stockpile	Metals	TPH	
	SP7(S2)	28.8.97	Soil	Stockpile	Metals	TPH	
	SP7(S3)	28.8.97	Soil	Stockpile	Metals	TPH	
	SP7(S4)	28.8.97	Soil	Stockpile	Metals	TPH	TCLP
	SP7/1	11.9.97	Soil	Stockpile	Cu, Pb, Zn		
	SP7/2	11.9.97	Soil	Stockpile	Cu, Pb, Zn		
	SP7/3	11 9 97	Soil	Stockpile	Cu, Pb, Zn		
	SP7/4	11 9.97	Soil	Stockpile	Cu, Pb, Zn		
	SP7/5	11 9.97	Soil	Stockpile	Cu, Pb, Zn		
	SP7/6	11 9 97	Soil	Stockpile	Cu, Pb, Zn		
	TP7	23.5.97	Soil	0.2	Metals	TPH	TCLP
Stockpile C	SP C	28.8.97	Soil	Stockpile	Metals	TPH	

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TABLE 1 (1 of 2)
ANALYTICAL PROGRAM

Magnaye Brothers & Tomy Pty Ltd
Remediation and Validation
Chartered Circuit, St Mary's

723169a.xls
24/12/98

Prepared by. GF Date.24/12/98
Checked by: Cmf Date 24/12

Area	Sample ID	Sample Date	Sample Type	Sample Depth (m)	Analysis		
Lechate tests after Immobilisation of Lead							
Bench Scale	Mix E	22.4.98	Mixture	-	TCLP		
Field Sample	AT1	12.6.98	Mixture	-	TCLP		
Field Sample	AT2	12.6.98	Mixture	-	TCLP		
Area 2 - Excavation							
North wall	N2	24.6.97	Soil	2	TPH	BTEX	Lead
South wall	S4	24.6.97	Soil	2.5	TPH	BTEX	Lead
East wall	E3	24.6.97	Soil	2.5	TPH	BTEX	Lead
West wall	W3	24.6.97	Soil	2.5	TPH	BTEX	Lead
Base	B2	24.6.97	Soil	3	TPH	BTEX	Lead
Base	B4	24.6.97	Soil	3	TPH	BTEX	Lead
Duplicate	B4 (D)	24.6.97	Soil	3	TPH	BTEX	Lead
Area 2 Sockpile	Stockpile	24.6.97	Soil	-	TPH	BTEX	Lead

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TABLE 1 (2 of 2)
ANALYTICAL PROGRAM

Maganic Brothers & Sister Pty Ltd
Remediation and Validation
Dunheved Circuit, St Mary's

723169a.xls
24/12/98

Prepared by: GF Date: 24/12/98
Checked by: CMF Date: 24/12

Sample ID	Sample Depth	PID	C_6-C_9	C_{10}-C_{14}	C_{15}-C_{28}	C_{29}-C_{36}	Total C_{10}-C_{36}
Validation of Excavation - Area 1							
WW	0.2	8.2	< 20	< 20	< 50	< 50	ND
WN	0.1	19.4	< 20	< 20	< 50	< 50	ND
WW (D)	0.1		< 20	< 20	< 50	< 50	ND
WE	0.2	11.6	< 20	< 20	< 50	< 50	ND
WS	0.1	9.4	< 20	< 20	< 50	< 50	ND
B1	0.3	11	< 20	< 20	< 50	< 50	ND
B2	0.3	12.3	< 20	< 20	< 50	< 50	ND
Soil retained on site							
SPC		2	<20	57	240	140	437
SP7(3)		14	< 20	< 20	< 50	< 50	ND
NSW EPA			65				1000

Notes

All results are expressed as mg/kg

Figures in bold italics exceed the NSW EPA criteria

PID calibrated with 99 ppm isobutylene

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TABLE 2
SUMMARY OF ANALYTICAL RESULTS
Area 1 - Excavation
Total Petroleum Hydrocarbons

Maganic Brothers & Sister Pty Ltd
Remediation and Validation
Dunheved Circuit, St Mary's

723169a.xls
24/12/98

Prepared by: GF Date 24/12/98
Checked by: cmt Date 24/12

Sample ID	Sample Depth	Cu	Pb	Zn	Cd	Cr	As	Hg
Validation of Excavation - Area A								
WW	0.2	12	16	14	< 0.5	8	4.5	0.060
WN	0.1	38	29	51	< 0.5	7.5	5.5	0.110
WE	0.2	22	25	17	< 0.5	9	5	0.050
WE(D)	0.2	20	29	20	< 0.5	8.5	4.5	0.060
WS	0.1	23	44	23	< 0.5	9	6	0.025
B1	0.3	8	18	36	< 0.5	11	5	0.015
B2	0.3	45	39	53	< 0.5	9	5	0.310
Soil retained on site								
SPC	Stockpile	400	370	410	2.5	12	5.5	0.030
SP7(S3)	Stockpile	84	90	90	0.5	9	5	0.190
NEHF (F) Criteria		**5000**	**1500**	**35000**	**100**	**500**	500	75

Notes

All results are expressed as mg/kg

Figures in bold italics exceed the criteria

Golder Associates

TABLE 3
Summary of Analytical Results
Area 1 Excavation - Heavy Metals

Magasic Brothers & Sister Pty Ltd

Remediation and Validation

Dunheved Circuit, St Mary's

723169a.xls
24/12/98

Prepared by: GF Date:24/12/98
Checked by: CMF Date:24/12

Sample ID	Sample Depth	PID	C_6-C_9	C_{10}-C_{14}	C_{15}-C_{28}	C_{29}-C_{36}	Total C_{10}-C_{36}	Benzene	Toluene	Ethyl Benzene	Xylene	Lead
Validation - UST Area												
N2	2	5.9	< 20	< 20	< 50	< 50	ND	<0.5	<0.5	<0.5	<1.5	<0.5
S4	2.5	4.6	< 20	< 20	< 50	< 50	ND	<0.5	<0.5	<0.5	<1.5	<0.5
E3	2.5	4.9	< 20	< 20	< 50	< 50	ND	<0.5	<0.5	<0.5	<1.5	<0.5
W3	2.5	3.6	< 20	< 20	< 50	< 50	ND	<0.5	<0.5	<0.5	<1.5	<0.5
B2	3	6.5	< 20	< 20	< 50	< 50	ND	<0.5	<0.5	<0.5	<1.5	<0.5
B4	3	7.8	< 20	< 20	< 50	< 50	ND	<0.5	<0.5	<0.5	<1.5	<0.5
B4(D)	3	-	< 20	< 20	< 50	< 50	ND	<0.5	<0.5	<0.5	<1.5	<0.5
Stockpile	N/A	0	< 20	57	240	140	437	<0.5	<0.5	<0.5	<1.5	<0.5
NSW EPA			65				1000	1	1.4	3.1	14	300

Notes

All results are expressed as mg/kg

Figures in bold italics exceed the NSW EPA criteria

PID calibrated with 99 ppm isobutylene

TABLE 4

SUMMARY OF ANALYTICAL RESULTS
Area 2 Validation Sampling and Analysis
Total petroleum Hydrocarbons
Monocyclic Aromatic Hydrocarbons
Lead

Maganic Brothers & Sister Pty Ltd

Remediation and Validation

Dunheved Circuit, St Mary s

Golder Associates

723169a.xls
24/12/98

Prepared by GF Date 24/12/98
Checked by EMC Date [illegible]

Sample ID	Sample Depth	Cu	Pb	Zn	Cd	Cr	As	Hg
In situ sampling								
TP34	Stockpile A	20,308	4,208	11,408	10	22	9.5	0.15
TP34	TCLP Test	175	220	840				
Classification		-	Hazardous	-	Solid	Solid	Inert	Inert
After Excavation								
SP34 (S1)	Stockpile A	940	620	850	3.5	22	7.5	0.025
SP34(S2)	Stockpile A	8000	6100	4750	1.5	24	10	0.025
SP34 (S2)	TCLP Test	15.2	17.9	60.8	< 0.01	< 0.01	-	-
Classification		-	Hazardous	-	Solid	Solid	Inert	Inert

Classification Criteria Without TCLP

		Copper	Lead	Zinc	Cadmium	Chromium	Arsenic	Mercury
CT1	Inert	-	10	-	2	10	10	0.4
CT2	Solid	-	100	-	20	100	100	4
CT3	Industrial	-	400	-	80	400	400	16

Classification Criteria With TCLP

TCLP	Inert	-	0.5	-	0.1	0.5	0.5	0.02
SCC1	Inert	-	1500	-	100	1900	500	50
TCLP	Solid	-	5	-	1.0	5	5	0.2
SCC2	Solid	-	1500	-	100	1900	500	50
TCLP	Industrial	-	20	-	4.0	20	20	0.8
SCC3	Industrial	-	6000	-	400	7600	2000	200

Notes:
Units mg/kg for soils, mg/L for TCLP tests
TCLP - Toxicity Characteristic Leaching Tests

Golder Associates

TABLE 5 (1 of 3)
Summary of Analytical Results
Area 1 Stockpile A
Heavy Metals

Maganic Brothers & Sister Pty Ltd
Remediation and Validation
Dunheved Circuit, St Mary's

723169a.xls
24/12/98

Prepared by GF Date 24/12/98
Checked by CMF Date 24/12

Sample ID	Sample Depth	Cu	Pb	Zn	Cd	Cr	As	Hg
In-situ sampling								
SP7	0.2	6250	2580	5300	115			
SP7	TCLP	21.5	23.8	75.9	1			
Classification			Hazardous	-	Industrial			
After Excavation								
SP7(S1)	Stockpile B	140	290	280	9	14	3	0.02
SP7(S2)	Stockpile B	17	17	22	<0.5	10	4	0.025
SP7(S3)	Stockpile B	84	90	90	0.5	9	3	0.18
SP7(S4)	Stockpile B	3850	4300	4400	155	140	8	0.73
SP7(S4)	TCLP	8.5	32.5	56.9	1.2	0.02	-	-
Classification		-	Industrial	-	Industrial	Inert	Inert	Inert

Classification Criteria Without TCLP

		Copper	Lead	Zinc	Cadmium	Chromium	Arsenic	Mercury
CT1	Inert	-	10	-	2	10	10	0.4
CT2	Solid	-	100	-	20	100	100	4
CT3	Industrial	-	400	-	80	400	400	16

Classification Criteria With TCLP

TCLP	Inert	-	0.5	-	0.1	0.5	0.5	0.02
SCC1	Inert	-	1500	-	100	1900	500	50
TCLP	Solid	-	5	-	1.0	5	5	0.2
SCC2	Solid	-	1500	-	100	1900	500	50
TCLP	Industrial	-	20	-	4.0	20	20	0.8
SCC3	Industrial	-	6000	-	400	7000	2000	200

Notes

Units mg/kg for soils; mg/L for TCLP tests

TCLP - Toxicity Characteristic Leaching Tests

Golder Associates

TABLE 5 (2 of 3)
Summary of Analytical Results
Area 1 - Stockpile B
Heavy Metals

Magnic Brothers & Sister Pty Ltd
Remediation and Validation
Dunheved Circuit, St Marys

723169a.xls
24/12/98

Prepared by: GP Date 24/12/98
Checked by: [illegible] Date [illegible]

Sample ID	Sample Depth	Cu	Pb	Zn
After Excavaton (Cont)				
SP7/1	Stockpile B	980	1650	1000
SP7/2	Stockpile B	570	1090	570
SP7/3	Stockpile B	730	550	430
SP7/4	Stockpile B	1110	1460	1070
SP7/5	Stockpile B	850	870	570
SP7/6	Stockpile B	1850	2450	1730
Classification		-	Hazardous	-

Classification Criteria Without TCLP

		Copper	Lead	Zinc
CT1	Inert	-	10	-
CT2	Solid	-	100	-
CT3	Industrial	-	400	-

Classification Criteria With TCLP

TCLP	Inert	-	0.5	-
SCC1	Inert	-	1500	-
TCLP	Solid	-	5	-
SCC2	Solid	-	1500	-
TCLP	Industrial	-	20	-
SCC3	Industrial	-	6000	-

Notes
Units mg/kg for soils; mg/L for TCLP tests
TCLP Toxicity Characteristic Leaching Tests

Golder Associates

TABLE 5 (3 of 3)
Summary of Analytical Results
Area 1 Stockpile B
Heavy Metals

Maganic Brothers & Sister Pty Ltd
Remediation and Validation
Dunheved Circuit, St Mary's

723169a.xls
24/12/98

Prepared by: GF Date 24/12/98
Checked by: [illegible] Date [illegible]

Sample ID	Sample Depth	PID	C_6-C_9	C_{10}-C_{14}	C_{15}-C_{28}	C_{29}-C_{36}	Total C_{10}-C_{36}	PAHs
Stockpile A								
In-situ sampling								
TP34	0.2	8.9	< 20	80	11000	11000	22080	3
Classification			Inert				Industrial	Inert
After Excavation								
SP34(S1)	Stockpile	17.6	< 20	< 20	950	680	1630	
SP34(S2)	Stockpile	4.3	< 20	< 20	< 50	< 50	ND	
Classification			Inert				Inert	
Stockpile B								
In-situ sampling								
TP7	0.2	3.6	< 20	< 20	< 50	< 50	ND	ND
Classification			Inert				Inert	Inert
After Excavation								
SP7(S1)	Stockpile	19.3	< 20	840	1900	< 50	2740	
SP7(S2)	Stockpile	18	< 20	890	1100	< 50	1990	
SP7(S3)	Stockpile	12.3	< 20	< 20	< 50	< 50	ND	
SP7(S4)	Stockpile	14.8	< 20	24	1300	900	2224	
Classification			Inert				Inert	

Inert			650				5,000	
Solid			650				10,000	
Industrial			-				40,000	

Notes

All results are expressed as mg/kg

PID calibrated with 99 ppm isobutylene

Golder Associates

TABLE 6

SUMMARY OF ANALYTICAL RESULTS

Area 1 Stockpiles A and B

Total Petroleum Hydrocarbons

Maganic Brothers & Sister Pty Ltd

Remediation and Validation

Dunheved Circuit, St Mary's

723169a.xls
24/12/98

Prepared by: GF Date 24/12/98
Checked by: CMS Date: 24/12

Bench Trial		Pb	Cd	Ni
Mix E	TCLP	4.1	< 0.01	< 0.01
Treatment on Site				
AT1	TCLP	1.3	< 0.01	< 0.01
AT1	TCLP	1.4	< 0.01	< 0.01

Concentrations in mg/L

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TABLE 7
SUMMARY OF ANALYTICAL RESULTS
Leachate Tests (After Immobilisation)

Maganic Brothers & Sister Pty Ltd
Remediation and Validation
Dunheved Circuit, St Mary's

723169a.xls
24/12/98

Prepared by: GF Date 24/12/98
Checked by: [illegible] Date 24/12

Sample ID	Sample Depth	Cu	Pb	Zn	Cd	Cr	As	Hg
WE	0.2	22	25	17	<0.5	9	5	0.050
WE(D)	0.2	20	29	20	<0.5	8.5	4.5	0.060
RPD		9.5	14.8	16.2		5.7	10.5	18.2

Sample ID	Depth	TPH	BTEX
WW	0.2	ND	-
WW(D)	0.2	ND	
B4	Base	ND	ND
B4 (D)	Base	ND	ND

Notes
All results are expressed as mg/kg
RPD - Relative Percent Difference

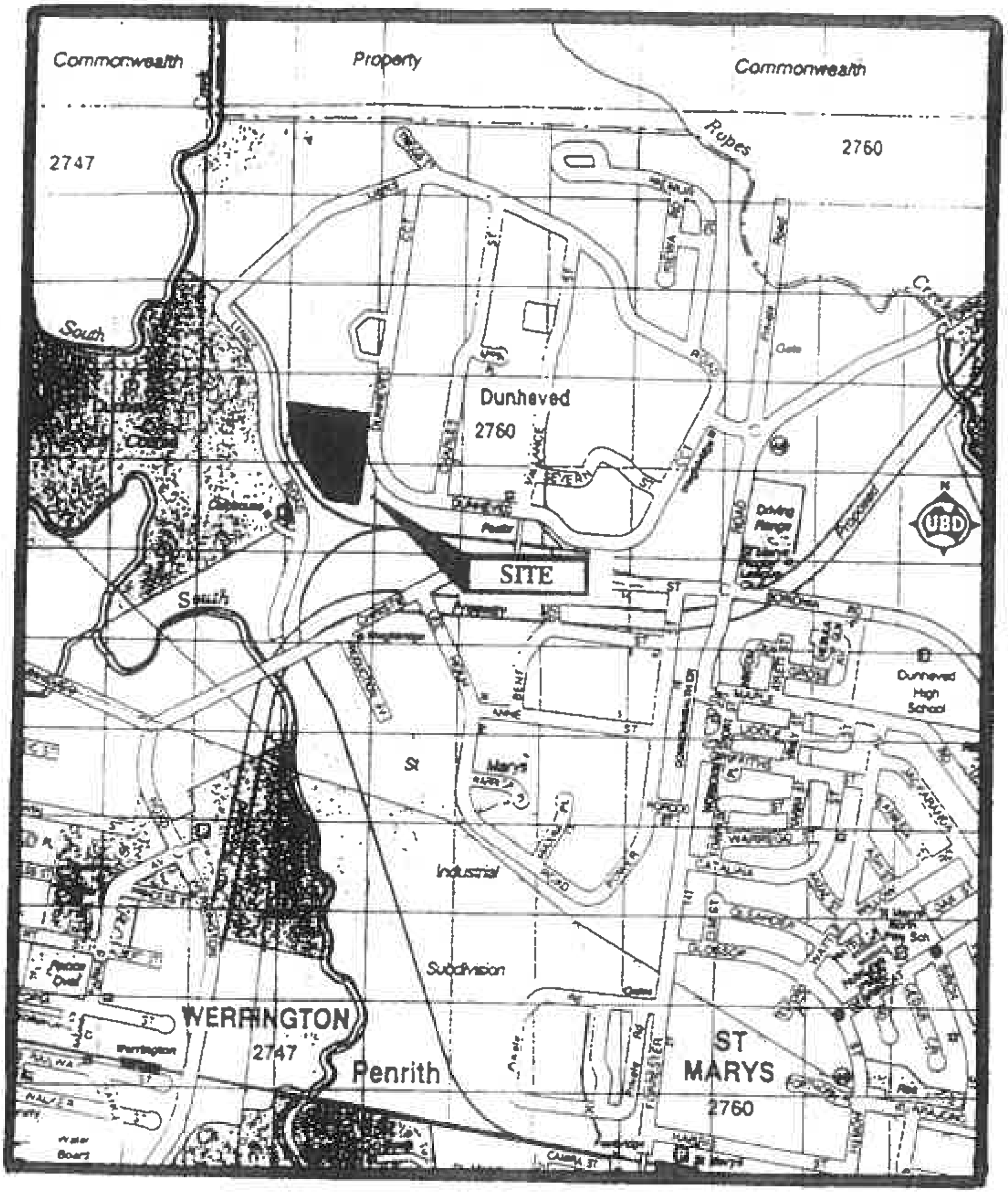
Golder Associates

TABLE 8
Summary of Analytical Results
Quality Control Samples

Maganic Brothers & Sister Pty Ltd
Remediation and Validation
Dunheved Circuit, St Mary's

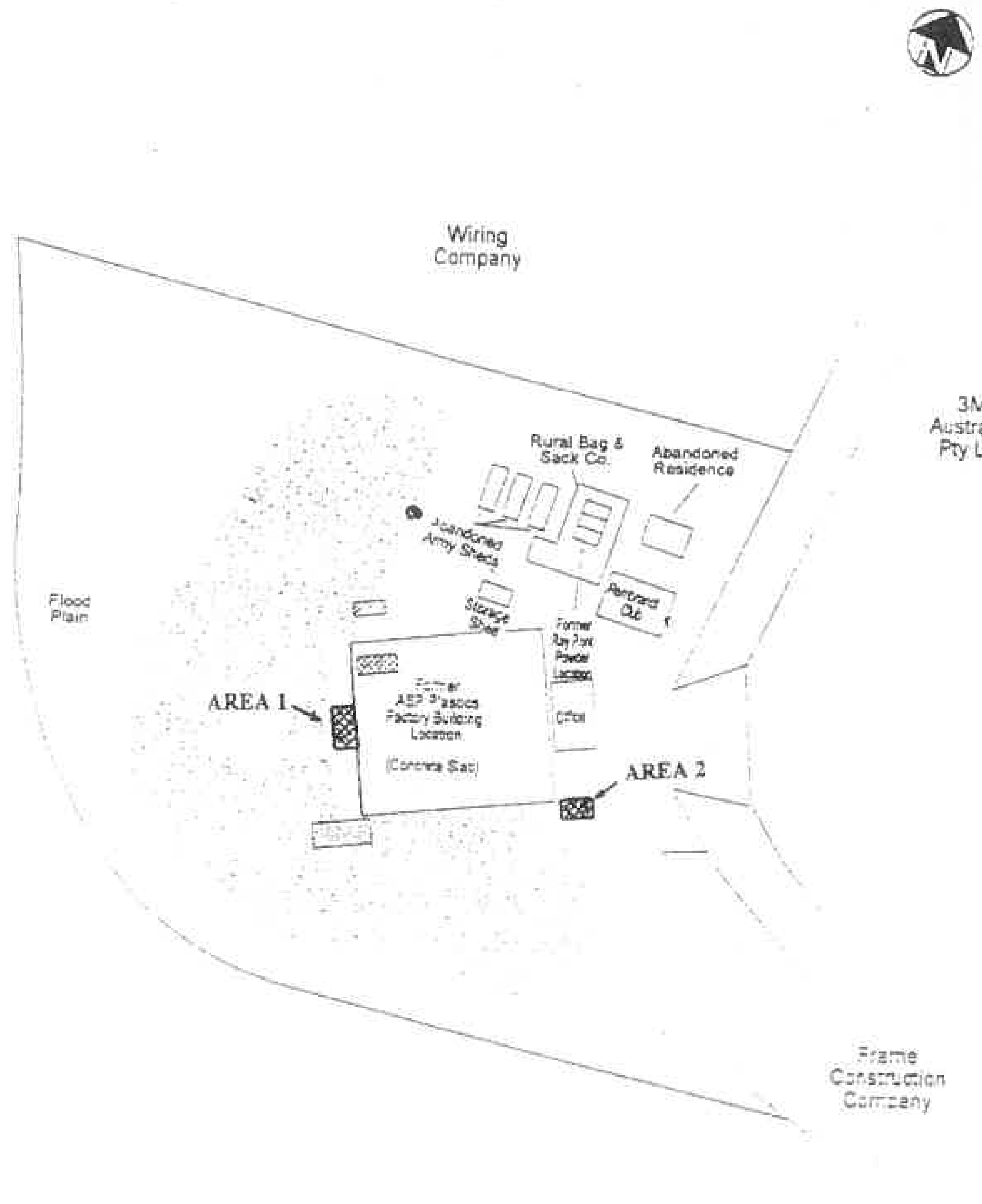
723169a.xls
24/12/98

Prepared by GF Date:24/12/98
Checked by: CMF Date: 24/12



Golder Associates	Drawn: GF	Date: 28.11.98	MAGANIC BROTHERS & SISTER PTY LTD
	Checked By:	Date: 24/12	SITE LOCALITY
	Revision	Date:	DUNHEVED CIRCUIT, ST MARYS NSW
	Scale 1:20,000	A4	Project No: 97623169 — Drg No: 723169/1

c:\forms\reports\siteplan.xls



Denotes remediated areas

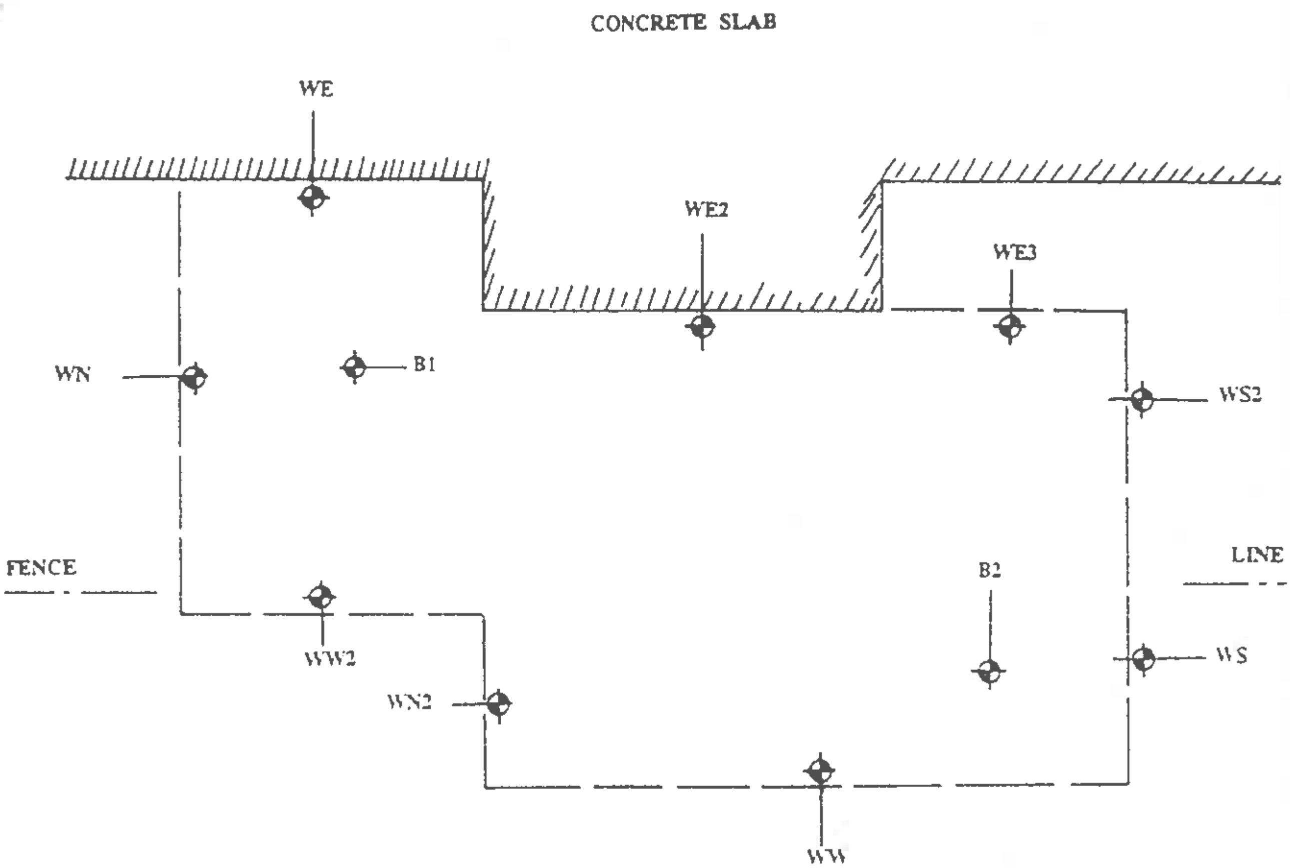
Golder Associates

Drawn: GF	Date: 28.11.98	MAGANIC BROTHERS & SISTER PTY LTD
Checked By:	Date: 24/12	SITE PLAN
Revision	Date:	DUNHEVED CIRCUIT, ST MARYS NSW
Scale: Approx 1:120	A4	Project No: 97623169 — Drg No: 723169/2

Sample ID	PID (ppm)
WN	12.6*
WN2	10.4
WE	11.6*
WE2	4.3
WE3	5.1
WS	9.4*
WS2	3.6
WW	8.2*
WW2	6.4
B1	11
B2	12.3*

Note:

* Sampled analysed for TPH & Metals



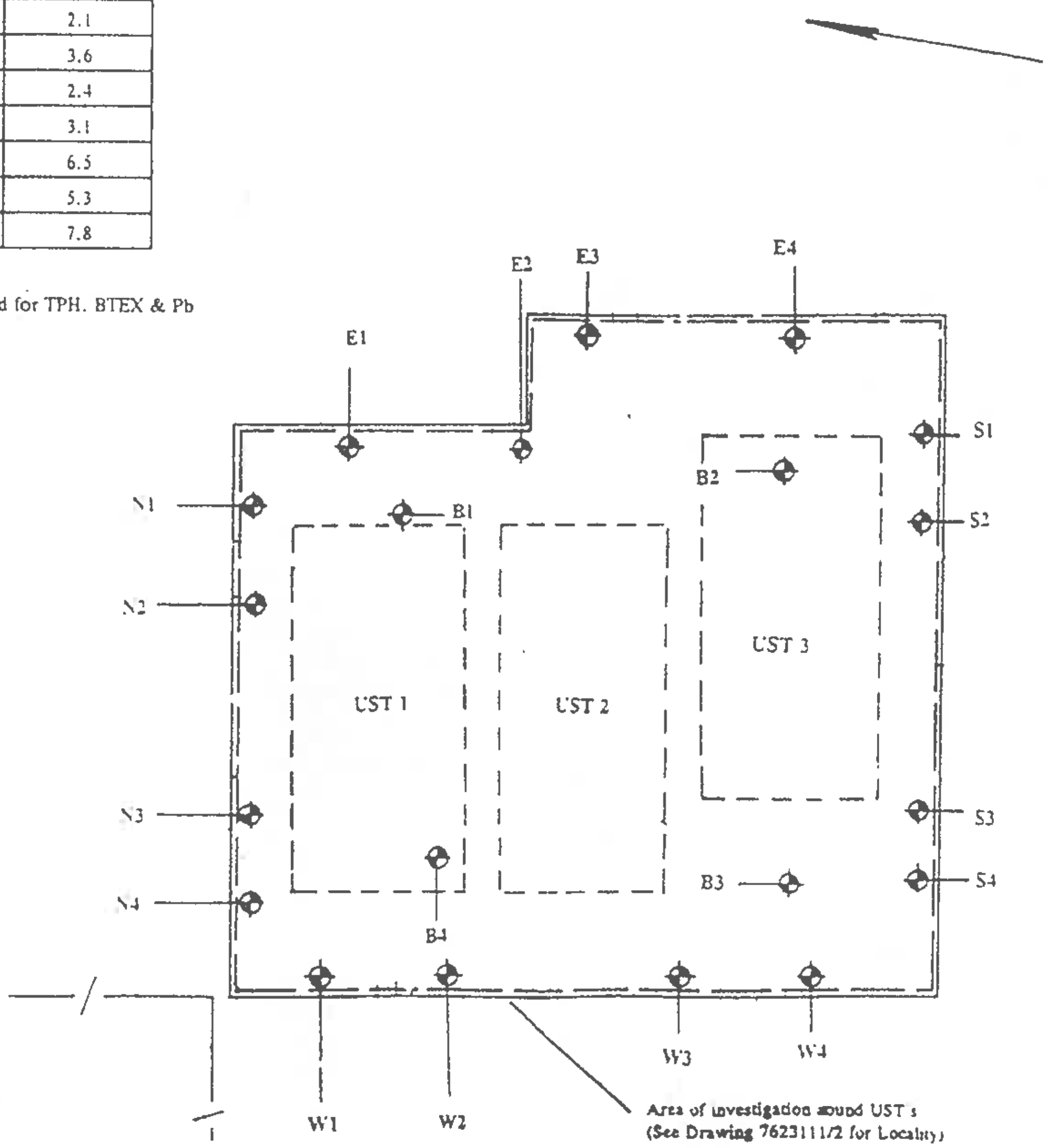
Drawn: GF	Date: 28.11.98	MAGANIC BROTHERS & SISTER PTY LTD
Checked By:	Date: 24/12	SAMPLING LOCATIONS - AREA 1
Revision	Date:	DUNHEVED CIRCUIT, ST MARYS NSW
Scale: Approx 1:120 A4	Project No: 97623169	Drg No: 723169/3

Golder Associates

Sample ID	PID (ppm)
N1	3.6
N2	5.9*
N3	2.4
N4	2.3
E1	1.6
E2	2.1
E3	4.9*
E4	3.4
S1	3.9
S2	0.5
S3	1.0
S4*	4.6
W1	0.9
W2	2.1
W3*	3.6
W4	2.4
B1	3.1
B2*	6.5
B3	5.3
B4*	7.8

Note;

* Sample analysed for TPH, BTEX & Pb



Golder Associates

Drawn: GF	Date: 28.11.98	MEGANIC BROTHERS & SISTER PTY LTD
Checked By: cmt	Date: 24/12	SAMPLING LOCATIONS - AREA 2
Revision	Date	DUNHEVED CIRCUIT, ST MARYS NSW
Scale: Approx 1:60	A4	Project No: 97623169 · Drg No: 723169/4

Appendix A

INFORMATION ON SAMPLING AND PID SCREENING

SOIL SAMPLING

Soil samples recovered were collected directly from the excavator bucket. Immediately after collection, samples were placed in new jars and stored in cooled conditions while in the field and in transit to the laboratory.

Samples were collected in duplicate at all intervals of depth. The primary sample was retained for selection of samples for laboratory analysis whilst the duplicate samples were used for PID screening for volatile compounds. The instrument used was a Photovac Microtip Model MP-1000 fitted with a 10.6 eV lamp. Prior to use, the instrument was calibrated with isobutylene in nitrogen at a concentration of 92 ppm_v.

HEADSPACE SCREENING USING THE PHOTOIONISATION DETECTOR (PID)

GENERAL PRINCIPLES

The photoionisation detector (PID) is used to detect the presence of volatile compounds especially hydrocarbons and chlorinated solvents which are commonly encountered as contaminants.

Although the PID is useful in detecting 'hot spots' and provides qualitative information on the potential for contamination with volatile compounds, the technique has the following limitations:

- The PID works on the principle of ionisation of a compound using an ultraviolet lamp. It is important for the lamp to have an energy higher than the ionisation potential of the compound to be detected. The ionisation potential of a compound is the minimum energy that the compound needs to be ionised. Hence if the PID is fitted with a lamp with an energy of 10.6 eV, it will ionise compounds with ionisation potentials less than this value. Therefore it is important to have some prior indication of the contaminants of concern on the site to interpret the PID readings.
- The PID will respond cumulatively to several compounds simultaneously which means that the reading is the additive concentrations of all the compounds present. Hence even if the PID reading is relatively high, the concentrations of the several individual compounds which have contributed to the reading may be relatively low.
- Each compound will have what is termed a 'response factor' which is the response obtained per mole of the compound being detected. Depending upon the degree of ionisation, the number of ions produced and hence the response of the PID will vary for different compounds. The PID used on this site was calibrated with isobutylene at 92 ppm.
- The geology of the soil is and important factor in the process of partitioning the contaminant between the soil matrix and the headspace. For example the concentration of a contaminant in the headspace will be much higher in a sample of contaminated sand from which the contaminant is easily released compared with the concentration of the contaminant in a clay to which the contaminant may be more strongly adsorbed.
- The method of screening varies and there is currently no standard established. The method used for the present assessment is presented below and has been found to provide results that are appropriate for the information required from screening.

INSTRUMENT AND METHODOLOGY

The PID instrument used was a Photovac Microtip MP100 fitted with a 10.6 eV lamp. Prior to use the instrument was calibrated in accordance with the manufacturers instructions using standard isobutylene gas at a concentration of 92 ppm.

The soil sample was collected in a 250 ml glass jar to half its capacity. The jar was immediately covered with aluminium foil and capped. The jar was then shaken and was allowed to stand for at least 15 minutes. The lid of the jar was unscrewed and the inlet of the PID nose tube introduced through a small hole made in the aluminium foil. The maximum reading on the display was then recorded.

Appendix B

Laboratory Certificates

SY NEY
A ALYTICAL
LABORATORIES

Office:
PO BOX 48
ERMINGTON NSW 2115

Laboratory:
1/4 ABBOTT ROAD
SEVEN HILLS NSW 2147
Telephone: (02) 9838 8903
Fax: (02) 9838 8919
A.C.N. 003 614 695
NATA Reg. 1884

ANALYTICAL REPORT for:

GOLDER ASSOCIATES PTY LTD

16/11 ROMFORD ROAD
BLACKTOWN 2148

ATTN: CHRIS FARIAS

JOB NO:	SAL5856
CLIENT ORDER:	97623169
DATE RECEIVED:	28/08/97
DATE COMPLETED:	17/09/97
TYPE OF SAMPLES:	SOILS
NO OF SAMPLES:	20

Issued on 20/09/97
Lance Smith
(Chief Chemist)

SYDNEY ANALYTICAL LABORATORIES

ANALYTICAL REPORT

JOB NO: SAL5856
CLIENT ORDER: 97623169

	SAMPLES	Cu mg/kg	Pb mg/kg	Zn mg/kg	Cd mg/kg	Cr mg/kg	As mg/kg
1	SP34(S1)	940	620	850	5.5	12	7.5
2	SP34(S2)	6000	6100	4750	1.5	24	10
3	SPC	400	370	410	2.5	12	5.5
4	SP7(S1)	140	290	260	9.0	14	5.0
5	SP7(S2)	17	17	22	<0.5	10	4.0
6	SP7(S3)	84	90	90	0.5	9.0	5.0
7	SP7(S4)	3950	4300	4400	155	140	9.0
8	WW/0.2	12	16	14	<0.5	8.0	4.5
9	WN/0.1	38	29	51	<0.5	7.5	5.5
10	WE/0.2	22	25	17	<0.5	9.0	5.0
11	WS/0.1	23	44	23	<0.5	9.0	6.0
12	B1/0.3	8.0	18	36	<0.5	11	5.0
13	B2/0.3	45	39	53	<0.5	9.0	5.0
14	WE(D)/0.2	20	29	20	<0.5	8.5	4.5
15	SP7/1	980	1650	1000			
16	SP7/2	570	1090	570			
17	SP7/3	730	550	430			
18	SP7/4	1110	1460	1070			
19	SP7/5	850	870	570			
20	SP7/6	1850	2450	1730			
DUPLICATES:							
15	SP7/1	1000	1680	960			
	BCSS-1	18	22	110	<0.5	81	11
MDL		0.5	0.5	0.5	0.5	0.5	0.5
Method Code		M1	M1	M1	M1	M1	M7
Preparation		P3	P3	P3	P3	P3	P3

SYDNEY ANALYTICAL LABORATORIES

ANALYTICAL REPORT

JOB NO: SAL5856
CLIENT ORDER: 97623169

	SAMPLES	Hg mg/kg
1	SP34(S1)	0.025
2	SP34(S2)	0.035
3	SPC	0.030
4	SP7(S1)	0.020
5	SP7(S2)	0.025
6	SP7(S3)	0.19
7	SP7(S4)	0.75
8	WW/0.2	0.060
9	WN/0.1	0.11
10	WE/0.2	0.050
11	WS/0.1	0.025
12	B1/0.3	0.015
13	B2/0.3	0.31
14	WE(D)/0.2	0.060
	BCSS-1	0.12

MDL	0.005
Method Code	M3
Preparation	P1

RESULTS ON DRY BASIS

SYDNEY ANALYTICAL LABORATORIES

LABORATORY DUPLICATE REPORT

JOB NO: SAL5856
CLIENT ORDER: 97623169

Sample Number	Analyte	Units	MDL	Sample Result	Duplicate Result	%RPD
SP7/1	Copper	mg/kg	0.5	980	1000	2
SP7/1	Lead	mg/kg	0.5	1650	1680	2
SP7/1	Zinc	mg/kg	0.5	1000	960	4

Acceptance criteria:

RPD <50% for low level (<20xMDL)
RPD <30% for medium level (20-100xMDL)
RPD <15% for high level (>100xMDL)
No limit applies at <2xMDL

MDL = Method Detection Limit

All results are within the acceptance criteria

SYDNEY
ANALYTICAL
LABORATORIES

CERTIFIED REFERENCE MATERIAL

JOB NO: SAL5856
CLIENT ORDER: 97623169

CRM Number	Analyte	Units	CRM Result	Certified Value	%Recovery	Acceptance Criteria %
BCSS-1	Copper	mg/kg	18	18.5	97	90-115
BCSS-1	Lead	mg/kg	22	22.7	97	90-110
BCSS-1	Zinc	mg/kg	110	119	92	90-110
BCSS-1	Cadmium	mg/kg	<0.5	0.25	-	-
BCSS-1	Chromium	mg/kg	81	123	66	60-80
BCSS-1	Arsenic	mg/kg	11	11.1	99	90-120
BCSS-1	Mercury	mg/kg	0.12	0.129	93	85-110

All results are within the acceptance criteria

Note: The hot acid digest does not always determine 'total' metals. Refractory elements such as Iron and Aluminium and some base metals (particularly Chromium) show lower recoveries depending on their form within the sample matrix. Silicates and oxides are normally less soluble than elements in metallic or salt forms. The acceptance criteria for this reference material is based on histories of analyte recoveries using the nitric acid based digestion procedures.

SY NEY
ANALYTICAL
LABORATORIES

ANALYTICAL REPORT

JOB NO: SAL5856
CLIENT ORDER: 97623169

METHODS OF PREPARATION AND ANALYSIS

The tests contained in this report have been carried out on the samples as received by the laboratory.

P3	Sample dried, jaw crushed and sieved at 2mm
P1	Analysis performed on sample as received
M1	Base Metal - Digestion Method 3050 (HNO3/H2O2) Element determined by APHA 3111B (Flame AAS)
M7	Hydride Element - Digestion Method 7061 (HNO3/H2SO4) Element determined by APHA 3114B (Hydride Generation AAS)
M3	Mercury - Digestion Method 7471 (HNO3/HCl) Determined by APHA 3112B (Cold Vapour AAS)

A preliminary report was faxed on 17/09/97

Golder Associates

LAB: SAL

CHAIN OF CUSTODY

Golder Associates Pty Ltd
25 Home Street
CHATSWOOD WEST NSW 2067
Phone: (02) 425 26
Fax: 436 0693

Page ___ of ___

Job Number: 97623169
Location/Job: St. Mary's
Order No.:
Sampled By: GF
Job Contact: CHRIS FARIAR

SAMPLE No.	SAMPLE DEPTH (m)	MEDIA	No. of Vessels	SAMPLE DATE	GC/MS Scan (TPH/PAH/Phenolics)	Metals I (As Cd Cr Cu Hg Pb Zn)	Metals II (Be Co Mn Ni Sb Se Sn)		pH	Total Petroleum Hydrocarbons (TPH)	BTEX	Polycyclic Aromatic Hydrocarbons (PAH)	Phenolics	Organochlorine Pesticides (OCP)	Polychlorinated Biphenyls (PCB)	Halogenated Volatile Organics	Cyanide				
SP24 (S1)		SOIL	1	27/8/97		✓															
SP24 (S2)		"	1	"		✓															
SP C		"	1	"		✓✓															
SP7 (S1)		"	1	"		✓✓															
SP7 (S2)		"	1	"		✓															
SP7 (S3)		"	1	"		✓															
SP7 (S4)		"	1	"		✓															
WM	0.2	"	1	"		✓															
WN	0.1	"	1	"		✓															
W E	0.2	"	1	"		✓															
W S	0.1	"	1	"		✓															
B1	0.3	"	1	"		✓															
B2	0.3	"	1	"		✓															
WE (D)	0.2	"	1	"		✓															

Special Instructions:

Relinquished by: C Fori	Date: 26-6-97	Relinquished by:	Date:
Organisation: Golder Assoc	Time: 11:40 AM	Organisation:	Time:
Received by: [signature]	Date: 28.8.97	Received by:	Date:
Organisation:	Time: 3.45	Organisation:	Time:

CHAIN OF CUSTODY

Golder Associates

LAB: S.A.L

Golder Associates Pty Ltd
35 Hume Street
CROWS NEST NSW 2065
Phone: (02) 439 36
Fax: 436 0693

Page 1 of 1

Job Number: 9762309
Location/Job: ST MARYS
Order No.: 9762309
Sampled By: CF
Job Contact: CHRIS FARRANS

SAMPLE No.	SAMPLE DEPTH (m)	MEDIA	No. of Vessels	SAMPLE DATE	GCMS Scan (TPH,PAH,Phenolics)	Metals I (As Cd Cr Cu Hg Pb Zn)	Metals II (Be Co Mn Ni Sb Se Sn)	(Lead Pb)	pH	Total Petroleum Hydrocarbons (TPH)	BTEX	Polycyclic Aromatic Hydrocarbons (PAH)	Phenolics	Organochlorine Pesticides (OCP)	Polychlorinated Biphenyls (PCB)	Halogenated Volatile Organics	Cyanide	Copper (Cu)	Zinc (Zn)		
SP7 / 1	N/A	Soil	1	11.9.97				+										x	x		
SP7 / 2	"	"	1	"				+										x	x		
SP7 / 3	"	"	1	"				+										x	x		
SP7 / 4	"	"	1	"				+										x	x		
SP7 / 5	"	"	1	"				+										x	x		
SP7 / 6.	"	"	1	"				+										x	x		

Special Instructions:

Relinquished by: Glen Fuller Date: 12/9/97
Organisation: Golder Associates Time: 9.30
Received by: [signature] Date: 12.9.97
Organisation: Time: 9.30

Relinquished by: Date:
Organisation: Time:
Received by: Date:
Organisation: Time:

SYDNEY
ANALYTICAL
LABORATORIES

Office:
PO BOX 48
ERMINGTON NSW 2115

Laboratory:
1/4 ABBOTT ROAD
SEVEN HILLS NSW 2147
Telephone: (02) 9838 8903
Fax: (02) 9838 8919
A.C.N. 003 614 695
NATA Reg. 1884

ANALYTICAL REPORT for:

GOLDER ASSOCIATES PTY LTD

16/11 ROMFORD ROAD
BLACKTOWN 2148

ATTN: CHRIS FARIAS

JOB NO: SA5856B

CLIENT ORDER: 97623169

DATE RECEIVED: 28/08/97

DATE COMPLETED: 17/09/97

TYPE OF SAMPLES: SOILS

NO OF SAMPLES: 4

National Association of Testing Authorities, Australia
NATA ENDORSED DOCUMENT
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Issued on 20/09/97
Lance Smith
(Chief Chemist)

RECEIVED
23 SEP 1997

SYDNEY ANALYTICAL LABORATORIES

ANALYTICAL REPORT

JOB NO: SA5856B
CLIENT ORDER: 97623169

	SAMPLES	pH Initial	Cu mg/L	Pb mg/L	Zn mg/L	Cd mg/L	Cr mg/L
1	SP34(S2)	7.1	15.2	17.9	60.8	<0.01	<0.01
2	SP7(S4)	7.4	8.5	12.5	56.5	1.2	0.02
3	TP7/0.2	7.8	21.5	23.8	75.9	1.0	
4	TP34/0.2	6.5	175	220	840		
	MDL	0.1	0.01	0.01	0.01	0.01	0.01
	Method Code	METER	LT1	LT1	LT1	LT1	LT1
	Preparation	P1	P1	P1	P1	P1	P1

ANALYSES ON LEACHATE
LEACHATE MEDIUM = 1

SYDNEY
ANALYTICAL
LABORATORIES

ANALYTICAL REPORT

JOB NO: SA5856B
CLIENT ORDER: 97623169

METHODS OF PREPARATION AND ANALYSIS

The tests contained in this report have been carried out on the samples as received by the laboratory.

P1	Analysis performed on sample as received
METER	Initial pH - 1:20 water extract
LT1	Metal - Leaching WD3 Determined by APHA 3111B/D (Flame AAS)

A preliminary report was faxed on 17/09/97

'97-09-04 11:41 02 821 7224 GOLDER WESTERN SYDNEY 009 P01

Golder Associates

CHAIN OF CUSTODY

LAB: SAL

Golder Associates Pty Ltd
35 Hume Street
CROWS NEST NSW 2065
Phone: (02) 439 36..
Fax: 436 0193

Page ___ of ___

Job Number: 97623169
Location/Job: St Mary's
Order No.:
Sampled By: GF
Job Contact: CHRIS FARIAS

SAMPLE No.	SAMPLE DEPTH (m)	MEDIA	No. of Vessels	SAMPLE DATE	GC/MS Scan (TPH, PAH, Phenolics)	Metals I (As Cd Cr Cu Hg Pb Zn)	Metals II (Be Co Mn Ni Sb Se Sn)		pH	Total Petroleum Hydrocarbons (TPH)	BTEX	Polycyclic Aromatic Hydrocarbon Scan (PAH)	Phenolics	Organochlorine Pesticides (OCP)	Polychlorinated Biphenyls (PCB)	Halogenated Volatile Organics	Cyanide	Cu Pb Zn	Cd	Cr	
SP34 (SL)	SP	SOIL	1	*														✓			
SP7 (S4)	SP	"	1	*														✓	✓	✓	
TP7 (0.2)	0.2	"	1	*														✓	✓		
TP34 (0.2)	0.2	"	1	*														✓			

* Samples sent earlier refer previous COC

Special Instructions: * Only TCLP Tests ...

Relinquished by: Chris Farias Date: 4/9/97
Organisation: Golder Associates Time:
Received by: [signature] SAL Date: 4/9/97
Organisation: Time:

Relinquished by: Date:
Organisation: Time:
Received by: Date:
Organisation: Time:

Australian
Environmental
Laboratories

Quality Endorsed Company

4 September 1997

GOLDER ASSOCIATES
UNIT 16, 11 ROMFORD ROAD
BLACKTOWN NSW 2148

Your Reference: St Mary's 97623169
Australian Environmental Laboratories Report No: 5788

Attention: CHRIS FARIAS

Dear Sir

We received 14 soil samples on the 28th of August 1997. The samples were analysed in accordance with your instructions and the results are contained in this report.

A preliminary report was faxed to you on the 3rd of September 1997.

Results are reported on a dry weight basis for soils.

Yours faithfully
AUSTRALIAN ENVIRONMENTAL LABORATORIES

Tania Notaras
Laboratory Manager

Melanie Murray
Senior Organic Chemist

National Association of Testing Authorities, Australia
NATA ENDORSED DOCUMENT
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(Analabs Pty. Ltd.) ACN 004 591 664
12 Exell Street Banksmeadow New South Wales 2019 Australia
Telephone: (61 2) 9316 4255 Facsimile: (61 2) 9316 5541

Analabs REPORT NO.:6788

GOLDER ASSOCIATES
Project: St Mary's (97623169)

OUR REFERENCE	6788-1	6788-1.rpt	6788-2	6788-3	6788-4	6788-5	6788-6	6788-7	6788-8	6788-9	6788-10
YOUR REFERENCE	SP34(S1)	SP34(S1)	SP34(S2)	SPC	SP7(S1)	SP7(S2)	SP7(S3)	SP7(S4)	WW	WN	WE
SAMPLE TYPE	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Hydrocarbons C6-C9	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Hydrocarbons C10-C14	590	830	<20	57	840	890	<20	24	<20	<20	<20
Hydrocarbons C15-C28	950	1100	<50	240	1900	1100	<50	1300	<50	<50	<50
Hydrocarbons C29-C40	680	920	<50	140	<50	<50	<50	900	<50	<50	<50

Method Codes : TPH (SEO-020)

Analabs REPORT NO.:6788

GOLDER ASSOCIATES
Project: St Mary's (97623169)

OUR REFERENCE	6788-11	6788-12	6788-13	6788-14	.BLANK	.SPK (6788/4)
YOUR REFERENCE	WS	B1	B2	WW (D)		
SAMPLE TYPE	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%Recovery
Hydrocarbons C6-C9	<20	<20	<20	<20	<20	108
Hydrocarbons C10-C14	<20	<20	<20	<20	<20	114
Hydrocarbons C15-C28	<50	<50	<50	<50	<50	101
Hydrocarbons C29-C40	<50	<50	<50	<50	<50	115

Method Codes : TPH (SEO-020)

8 SEP 1997

09/9

CHAIN OF CUSTODY

8 SEP 1997

Golder Associates

Golder Associates Pty Ltd
35 Hume Street
CROWS NEST NSW 2065

Phone: (02) 439 36
Fax: 436 0693

Page of

LAB: AEL

Job Number: 97623169

Location/Job: St Mary's

Order No.:

Sampled By: CF

Job Contact: CHRIS FARRAR.

	SAMPLE No.	SAMPLE DEPTH (m)	MEDIA	No. of Vessels	SAMPLE DATE	GC/MS Scan (TPH,PAH,Phenolics)	Metals I (As Cd Cr Cu Hg Pb Zn)	Metals II (Be Co Mn Ni Sb Se Sn)		pH	Total Petroleum Hydrocarbons (TPH)	BTEX	Polycyclic Aromatic Hydrocarbons (PAH)	Phenolics	Organochlorine Pesticides (OCP)	Polychlorinated Biphenyls (PCB)	Halogenated Volatile Organics	Cyanide
-1	SP34 (S1)		Soil	1	~~27~~ 27/7/97						✓							
-2	SP34 (S2)		"	1	27/8/97						✓							
-3	SP C		"	1							✓							
-4	SP7 (S1)		"	1	"						✓							
-5	SP7 (S2)		"	1	"						✓							
-6	SP7 (S3)		"	1	"						✓							
-7	SP7 (S4)		"	1	"						✓							
-8	WH1	0.2	"	1	"						✓							
-9	WN	0.1	"	1	"						✓							
-10	WC	0.2	"	1	"						✓							
-11	WS	0.1	"	1	"						✓							
-12	B1	0.3	"	1	"						✓							
-13	B2	0.3	"	1	"						✓							
~~[illegible]~~	~~[illegible]~~				"													
-14	HW (D)	0.2	"	1	"						✓							

Australian Environmental Laboratories
Received 28/8/97
Time 6.30 am/pm
By BCN
Ice/cooler pack yes/no
Samples intact yes/no
Results Expected By: 2/9/97
Contact Name: DAVID
Comments:
6788

Special Instructions:

Relinquished by: C. Farrar	Date: 28-8-97	Relinquished by:	Date:
Organisation: Golder Associates	Time:	Organisation:	Time:
Received by: David S.	Date: 28/8/97	Received by:	Date:
Organisation: AEL	Time: 6:30pm	Organisation:	Time:

Australian Environmental Laboratories

Quality Endorsed Company

3 July 1997

RECEIVED 7 JUL 1997

GOLDER ASSOCIATES
16/11 ROMFORD RD
BLACKTOWN NSW 2148

Your Reference: ST MARYS 97623137
Australian Environmental Laboratories Report No 6319

Attention: CHRIS FARIAS

Dear Sir

We received 8 soil samples on the 30th of June 1997. The samples were analysed in accordance with your instructions and the results are contained in this report.

Results are reported on a dry weight basis for soils.

Yours faithfully
AUSTRALIAN ENVIRONMENTAL LABORATORIES

Tania Notaras
Laboratory Manager

Melanie Murray
Senior Organic Chemist

National Association of Testing Authorities, Australia
NATA ENDORSED DOCUMENT
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(Anlabs Pty. Ltd.) ACN 004 591 664
12 Exell Street Banksmeadow New South Wales 2019 Australia
Telephone: (61 2) 9316 4255 Facsimile: (61 2) 9316 5511

7 JUL 1997

Analabs REPORT NO.:6319

GOLDER ASSOCIATES

Project: ST MARYS (97623137)

OUR REFERENCE	6319-1	6319-1.rpt	6319-2	6319-3	6319-3 rpt	6319-4	6319-5	6319-6	6319-7	6319-8	BLANK
YOUR REFERENCE	N2	N2	W3	E3	E3	S4	B2	B4	B4 D	STOCKPILE	
DEPTH	2.0	2 0	2 5	2 5	2 5	2 5	3 0	3 0	3 0		
SAMPLE TYPE	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
Lead, Pb	<5	<5	<5	5 4	-	<5	<5	<5	<5	<5	<5
Hydrocarbons C6-C9	<20	-	<20	<20	<20	<20	<20	<20	<20	<20	<20
Hydrocarbons C10-C14	<20	-	<20	<20	<20	<20	<20	<20	<20	<20	<20
Hydrocarbons C15-C28	<50	-	<50	<50	<50	<50	<50	<50	<50	<50	<50
Hydrocarbons C29-C40	<50	-	<50	<50	<50	<50	<50	<50	<50	<50	<50
Benzene	<0 5	<0 5	<0.5	<0.5	-	<0 5	<0 5	<0 5	<0.5	<0.5	<0 5
Toluene	<0 5	<0 5	<0 5	<0.5	-	<0.5	<0 5	<0 5	<0 5	<0 5	<0 5
Ethyl Benzene	<0.5	<0.5	<0 5	<0 5	-	<0.5	<0 5	<0 5	<0 5	<0 5	<0 5
Xylenes	<1 5	<1 5	<1 5	<1.5	-	<1.5	<1 5	<1 5	<1 5	<1 5	<1 5
BTEX 'Surrogate Spike (%)	111	115	115	112	-	113	115	107	106	113	-

Method Codes : TPH (SEO-020) / BTEX (SEO-017), ' OUTSIDE ACCEPTED CRITERIA, ALL OTHER SPIKES IN BATCH / RUN OK.

3/7

Analabs REPORT NO.:6319

GOLDER ASSOCIATES
Project: ST MARYS (97623137)

OUR REFERENCE	SPK (6319/2)	SPK (6319/2) rpt	SPK (6319/8)	SPK (6319/8) rpt
YOUR REFERENCE				
DEPTH				
SAMPLE TYPE	SOIL	SOIL	SOIL	SOIL
UNITS	%Recovery	%Recovery	%Recovery	%Recovery
Lead, Pb	102	101	-	-
Hydrocarbons C6 C9	-	-	79	83
Hydrocarbons C10-C14	-	-	70	65 *
Hydrocarbons C15-C28	-	-	84	83
Hydrocarbons C29-C40	-	-	89	87
Benzene	84	85	-	-
Toluene	106	108	-	-
Ethyl Benzene	115	116	-	-
Xylenes	116	118	-	-
BTEX 'Surrogate Spike (%)	113	112	-	-

Method Codes : TPH (SEO-020) / BTEX (SEO-017). * OUTSIDE ACCEPTED CRITERIA. ALL OTHER SPIKES IN BATCH / RUN OK.

Golder Associates

CHAIN OF CUSTODY

LAB: AEL

7 JUL 1997

Golder Associates Pty Ltd
35 Hume Street
CROWS NEST NSW 2065
Phone: (02) 439 36
Fax: 436 0693

Job Number: 9762 3137

Location/Job: ST MARYS

Order No.: 97623

Sampled By: GF

Job Contact: CHRIS TARIAS

	SAMPLE No.	SAMPLE DEPTH (m)	MEDIA	No. of Vessels	SAMPLE DATE	GC/MS Scan (TPH,PAH,Phenolics)	Metals I (As Cd Cr Cu Hg Pb Zn)	Metals II (Be Co Mn Ni Sb Se Sn)	Pb	pH	Total Petroleum Hydrocarbons (TPH)	BTEX	Polycyclic Aromatic Hydrocarbons (PAH)	Phenolics	Organochlorine Pesticides (OCP)	Polychlorinated Biphenyls (PCB)	Halogenated Volatile Organics	Cyanide
1	N2	2.0m	SOIL	1	24.6.97				X		X	X						
2	W3	2.5m	SOIL	1	"				X		X	X						
3	E3	2.5m	SOIL	1	"				X		X	X						
4	S4	2.5m	SOIL	1	"				X		X	X						
5	B2	3.0m	SOIL	1	"				X		X	X						
6	B4	3.0m	SOIL	1	"				X		X	X						
7	B4 (D)	3.0m	SOIL	1	"				X		X	X						
8	STOCKPILE	—	SOIL	1	"				X		X	X						

Australian Environmental Laboratories
Received: 30.6.97
Time: 3:20 pm
By: Vera
Ice/cooler pack: yes/no
Samples intact: yes/no
Results Expected By: 7/7/97
Contact Name: BAVID
Comments:
6319

Special Instructions:

Relinquished by: Glen Tarias	Date: 30.6.97	Relinquished by:	Date:
Organisation: Golder Associates	Time: 11:00am	Organisation:	Time:
Received by: Vera	Date: 30/6/97	Received by:	Date:
Organisation: AEL	Time: 3:20pm	Organisation:	Time:

SYDNEY ANALYTICAL LABORATORIES

Office:
PO BOX 48
ERMINGTON NSW 2115

Laboratory:
1/4 ABBOTT ROAD
SEVEN HILLS NSW 2147
Telephone: (02) 9838 8903
Fax: (02) 9838 8919
A.C.N. 003 614 695
NATA Reg. 1884

ANALYTICAL REPORT for:

GOLDER ASSOCIATES PTY LTD

PO BOX 6027
BLACKTOWN 2148

ATTN: CHRIS FARIAS

JOB NO:	SA7294D
CLIENT ORDER:	97623169
DATE RECEIVED:	22/04/98
DATE COMPLETED:	23/04/98
TYPE OF SAMPLES:	SOIL
NO OF SAMPLES:	1

National Association of Testing Authorities, Australia
NATA Endorsed Test Report
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Issued on 24/04/98
Lance Smith
(Chief Chemist)

SYDNEY ANALYTICAL LABORATORIES

ANALYTICAL REPORT

JOB NO: SA7294D
CLIENT ORDER: 97623169

SAMPLES	pH Initial	Pb mg/L	Cd mg/L	Ni mg/L
1 MIX/E	12.0	4.1	<0.01	<0.01
MDL	0.1	0.01	0.01	0.01
Method Code	METER	LT1	LT1	LT1
Preparation	P1	P1	P1	P1

ANALYSES ON LEACHATE
LEACHATE MEDIUM = 2

SYDNEY
ANALYTICAL
LABORATORIES

ANALYTICAL REPORT

JOB NO: SA7294D
CLIENT ORDER: 97623169

METHODS OF PREPARATION AND ANALYSIS

The tests contained in this report have been carried out on the samples as received by the laboratory.

P1	Analysis performed on sample as received
METER	Initial pH - 1:20 water extract
LT1	Metal - Leaching WD3 Determined by APHA 3111B/D (Flame AAS)

A preliminary report was faxed on 23/04/98

SYDNEY ANALYTICAL LABORATORIES

Office:
PO BOX 48
ERMINGTON NSW 2115

Laboratory:
1/4 ABBOTT ROAD
SEVEN HILLS NSW 2147
Telephone: (02) 9838 8903
Fax: (02) 9838 8919
A.C.N. 003 614 695
NATA Reg. 1884

ANALYTICAL REPORT for:

GOLDER ASSOCIATES PTY LTD

PO BOX 6027
BLACKTOWN 2148

ATTN: CHRIS FARIAS

JOB NO:	SA7294C
CLIENT ORDER:	97623169
DATE RECEIVED:	12/06/98
DATE COMPLETED:	19/06/98
TYPE OF SAMPLES:	SOILS
NO OF SAMPLES:	2

National Association of Testing Authorities, Australia
NATA Endorsed Test Report
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Issued on 22/06/98
Lance Smith
(Chief Chemist)

SYDNEY ANALYTICAL LABORATORIES

ANALYTICAL REPORT

JOB NO: SA7294C
CLIENT ORDER: 97623169

SAMPLES	pH Initial	Pb mg/L	Cd mg/L	Ni mg/L
1 AT/1	12.5	1.3	<0.01	<0.01
2 AT/2	12.4	1.4	<0.01	<0.01
MDL	0.1	0.01	0.01	0.01
Method Code	METER	LT1	LT1	LT1
Preparation	P1	P1	P1	P1

ANALYSES ON LEACHATE
LEACHATE MEDIUM = 2

SYDNEY
ANALYTICAL
LABORATORIES

ANALYTICAL REPORT

JOB NO: SA7294C
CLIENT ORDER: 97623169

METHODS OF PREPARATION AND ANALYSIS

The tests contained in this report have been carried out on the samples as received by the laboratory.

P1 Analysis performed on sample as received

METER Initial pH - 1:20 water extract

LT1 Metal - Leaching WD3
Determined by APHA 3111B/D (Flame AAS)

A preliminary report was faxed on 19/06/98

Golder Associates

CHAIN OF CUSTODY

LAB: S.A.L

Golder Associates Pty Ltd
Unit 1/20 Garling Rd
Kings Park NSW, 2148
Phone: (02) 9831 7194
Fax: (02) 9831 7224

cocfcom.xls

Job Number: 97623169
Location/Job: ST MARYS
Order No.: 97623169
Sampled By: CF
Job Contact: Glen Fuller.

SAMPLE No:	SAMPLE DEPTH(m)	MEDIA	No of Vessels	SAMPLE DATE	GC/MS SCAN (TPH, PAH, Phenolics)	Metals I (As, Cd, Cr, Cu, Hg, Pb, Zn, Ni)	Metals II (Be, Co, Mn, Ni, Sb, Se, Sn)	pH	Total Petroleum Hydrocarbons (TPH)	BTEX	Polycyclic Aromatic Hydrocarbons (PAH)	Phenolics	Organochlorine Pesticides (OCP)	Polychlorinated Biphenyls (PCB)	Halogenated Volatile Organics	Cyanide	Pb/TCLP		
AT 1	—	Fill	1	29/5/98													X		
AT 2	—	Fill	1	"													X		

Special Instructions: Please Advise on Result of Pb before proceeding with TCLP.

Relinquished by: Glen Fuller	Date: 12/6/98	Relinquished by:	Date:
Organisation: Golder Associates.	Time: 1:00pm	Organisation:	Time:
Received by: M [illegible]	Date: 12.6.98	Received by:	Date:
Organisation: SAL Michael	Time: 1.00	Organisation:	Time:

Appendix C

Weighbridge Dockets

Enviroguard
COMMUNITY WASTE MANAGEMENT
A.C.N. 060 919 164

PHONE: (02) 9834 341
FAX: (02) 9834 330

WEIGHBRIDGE DOCKET No. A0023985

15:22
02/10/98

Time out
Date out

ORN322

C

ACCOUNT No. = 209999
COMMERCIAL CASH SALES
ERSKINE PARK

H 093516

EPA Consent = 25272/76/OS
CNT8
LL CONTAMINATED SOIL
Price Per= $45.00/tonne

GROSS 16.08
TARE 9.66
NET 6.42

AMOUNT OWING ⇒ $288.90 PAID
COMMUNITY WASTE MANAGEMENT 353100

Enviroguard

DOCKET No. A0023945

14:19
02/10/98

ORN322

C

Account No. = 209999
Customer COMMERCIAL CASH SALES
Address = ERSKINE PARK
Suburb

H 093515

EPA Consent = 25272/76/OS
CNT8
Product = LL CONTAMINATED SOIL
Price Per = Price Per= $45.00/tonne

GROSS 18.98
TARE 9.66
NET 9.32

AMOUNT OWING ⇒ $419.40 PAID
COMMUNITY WASTE MANAGEMENT 353062

Appendix D

"Important Information About Your Environmental Site Assessment"

Important Information About Your

Environmental Site Assessment

These notes have been prepared by Golder Associates Pty Ltd using guidelines prepared by ASFE; The Association of Engineering Firms Practising in the Geosciences, of which Golder Associates Pty Ltd is a member. They are offered to help you in the interpretation of your Environmental Site Assessment (ESA) report.

Reasons For Conducting An ESA

ESA's are typically, though not exclusively carried out in the following circumstances :

- as pre-acquisition assessments, on behalf of either purchaser or vendor, when a property is to be sold;
- as pre-development assessments, when a property or area of land is to be redeveloped or have its use changed, for example, from a factory to a residential subdivision;
- as pre-development assessments of greenfield sites, to establish "baseline" conditions and assess environmental, geological and hydrogeological constraints to the development of, for example, a landfill; and
- as audits of the environmental effects of an ongoing operation.

Each of these circumstances requires a specific approach to the assessment of soil and groundwater contamination. In all cases, however, the objective is to identify and if possible quantify the risks which unrecognised contamination poses to the proposed activity. Such risks may be both financial, for example, clean-up costs or limitations on site use, and physical, for example, health risks to site users or the public.

The Limitations of An ESA

Although the information provided by an ESA can reduce exposure to such risks, no ESA, however diligently carried out, can eliminate them. Even a rigorous professional assessment may fail to detect all contamination on a site. Contaminants may be present in areas that were not surveyed or sampled, or may migrate to areas which showed no signs of contamination when sampled.

An ESA Report Is Based On A Unique Set of Project Specific Factors

Your environmental report should not be used :

- When the nature of the proposed development is changed, for example, if a residential development is proposed instead of a commercial one;
- When the size or configuration of the proposed development is altered;
- when the location or orientation of the proposed structure is modified;
- When there is a change of ownership; or
- For the application to an adjacent site.

To help avoid costly problems, refer to your consultant to determine how any factors which have changed subsequent to the date of the report may affect its recommendations.

ESA "Findings" Are Professional Estimates

Site assessment identifies actual subsurface conditions only at those points where samples are taken, when they are taken. Data derived through sampling and subsequent laboratory testing are interpreted by geologists, engineers or scientists who then render an opinion about overall subsurface conditions, the nature and extent of contamination, its likely impact on the proposed development and appropriate remediation measures. Actual conditions may differ from those inferred to exist, because no professional, no matter how qualified, and no subsurface exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than a report indicates. Actual conditions in areas not sampled may differ from predictions. Nothing can be done to prevent the unanticipated, but steps can be taken to help minimise its impact. For this reason, owners should retain the services of their consultants through the development stage, to identify variations, conduct additional tests which may be needed, and to recommend solutions to problems encountered on site.

Subsurface Conditions Can Change

Subsurface conditions are changed by natural processes and the activity of man. Because an ESA report is based on conditions which existed at the time of subsurface exploration, decisions should not be based on an ESA report whose adequacy may have been affected by time. Speak with the consultant to learn if additional tests are advisable.

ESA Services Are Performed For Specific Purposes And Persons

Every study and ESA report is prepared in response to a specific Brief to meet the specific needs of specific individuals. A report prepared for a consulting civil engineer may not be adequate for a construction contractor, or even some other consulting civil engineer. A report should not be used by other persons for any purpose, or by the client for a different purpose. No individual other than the client should apply a report even apparently for its intended purpose without first conferring with the consultant. No person should apply a report for any purpose other than that originally contemplated without first conferring with the consultant.

An ESA Report Is Subject To Misinterpretation

Costly problems can occur when design professionals develop their plans based on misinterpretations of an ESA. To help avoid these problems, the environmental consultant should be retained to work with appropriate design professionals to explain relevant findings and to review the adequacy of their plans and specifications relative to contamination issues.

Logs Should Not Be Separated From The Engineering Report

Final borehole or test pit logs are developed by environmental scientists, engineers or geologists based upon their interpretation of field logs (assembled by site personnel) and laboratory evaluation of field samples.

Only final logs are customarily included in our reports These logs should no under any circumstances be redrawn for inclusion in site remediation or other design drawings, because drafters may commit errors or omissions in the transfer process. Although photographic reproduction eliminates this problem, it does nothing to minimise the possibility of contractors misinterpreting the logs during bid preparation. When this occurs, delays, disputes and unanticipated costs are the all-too-frequent result.

To reduce the likelihood of boring log misinterpretation, the complete report must be available to persons or organisations involved in the project, such as contractors, for their use. Those who do not provide such access may proceed under the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing all the available information to persons and organisations such as contractors helps prevent costly construction problems and the adversarial attitudes which may aggravate them to disproportionate scale

Read Responsibility Clauses Closely

Because an ESA is based extensively on judgement and opinion, it is necessarily less exact than other disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, model clauses have been developed for use in written transmittals. These are not exculpatory clauses designed to foist liabilities onto some other party. Rather, they are definitive clauses which identify where your consultant's responsibilities begin and end. Their use helps all parties involved recognise their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your ESA report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

5

C.S.T.S.

REPORT

TO

MARK MULOCK & CO

ON

CONTAMINATION ASSESSMENT

FOR

POTENTIAL ASBESTOS AND HYDROCARBON CONTAMINATION

AT

65 – 75 DUNHEVED CIRCUIT, ST MARYS NSW

Job No: MAG 1930

Report No: ENV AA

Our Ref No: 427

Postal Address: 1/78 Owen Street
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Job No: MAG 1930
Report No: ENV AA
Our Ref: 427

Mr Ante Maganic
C/O
Mark Mulock & Co
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Nepean Walkway Arcade
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Attention: Mr Mark Mulock

Potential Asbestos & Hydrocarbon Contamination Report
65-75 Dunheved Circuit, St Marys NSW

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Document Status	
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Revision Number	Status	Date
0	Draft	12 December 2013
1	Final	13 December 2013

C.S.T.S.

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Executive Summary

Compaction & Soil Testing Services Pty Ltd (CSTS) was engaged by Mark Mulock & Co on behalf of Mr Ante Maganic to conduct an assessment of the recycled crushed concrete product which has been placed upon the site known as 65-75 Dunheved Circuit, St Marys NSW. The objective of the assessment was to determine whether the material was impacted by Asbestos. CSTS was also requested to assess two areas of stained material to determine whether fluid spills had contaminated the soils.

In order to achieve the objective, the following scope of work was undertaken;

- Site walkover searching for potential Asbestos Containing Material (ACM),
- Recovery of thirty (30) samples of the recycled crushed concrete product,
- Recovery of two (2) surface samples from the stained areas,
- Comparison of the results of the laboratory analysis to the Health Based Investigation Levels for Commercial / Industrial development,
- Compilation of this contamination assessment report.

The material covers an area of approximately 2ha and consists of crushed concrete, brick, tile and PVC plastic pipes. Limited evidence of foam, rubber and fabric was observed within the material. No fragments of material suspected of containing Asbestos were observed during the investigation. The layer varied in thickness, though was on average approximately 50-100mm thick. The stained areas were approximately 800mm x 500mm and 1300mm x 600mm in size and were assumed to be from a truck and/or trailer stored on the site.

In order to adequately assess the contamination status of the material, samples were recovered and submitted for analysis to a NATA Accredited laboratory. Field and laboratory quality assurance and quality control measures were implemented to ensure the reliability of the results.

No Asbestos fines were detected within any of the samples. TPH F3 and TPH F4 were detected within the samples of the stained material, the concentrations of which were below the HBILs for Commercial / Industrial land use. No concentrations of BTEX, Naphthalene, TPH F1 or TPH F2 were detected within any samples.

Therefore, CSTS concluded the recycled crushed concrete product placed upon the site known as 65-75 Dunheved Circuit, St Marys NSW is of a suitable condition for ongoing Commercial / Industrial land use, from a contamination perspective, in accordance with the *National Environment Protection (Assessment of Site Contamination) Measure 1999 (Amended 2013)* and the WA DOH *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia; May 2009.*

Should you have any queries about the methodology, findings or recommendations of this investigation, please do not hesitate to contact our office on (02) 9675 7522.

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Appendices

Abbreviations

ACM	Asbestos Containing Material
AF	Asbestos Fines
BTEX	Benzene, Toluene, Ethyl-benzene, Xylene
CSTS	Compaction & Soil Testing Services Pty Ltd
COAG	Council of Australian Government
DOH	Department of Health
FA	Friable Asbestos
Ha	Hectare
HBIL	Health Based Investigation Levels
IEC	International Electrotechnical Commission
ISO	International Organisation for Standardisation
mg/kg	Milligrams per Kilogram
mm	Millimetre
NATA	National Association of Testing Authorities
NEPC	National Environment Protection Council (Now COAG SCEW)
NEPM 1999	National Environment Protection (Assessment of Site Contamination) Measure 1999 (Amended 2013)
NSW	New South Wales
PVC	Polyvinyl Chloride
QA	Quality Assurance
QC	Quality Control
SCEW	Standing Council on Environment and Water
TP	Test Pit
TPH	Total Recoverable Petroleum Hydrocarbons
TPH (F1)	C_6-C_{10} Carbon Fraction TPH minus BTEX
TPH (F2)	>C_{10}-C_{16} Carbon Fraction TPH minus Naphthalene
TPH (F3)	>C_{16}-C_{34} Carbon Fraction TPH
TPH (F4)	>C_{34}-C_{40} Carbon Fraction TPH
USEPA	United States Environment Protection Authority
WA	Western Australia

C.S.T.S.

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1 Introduction

1.1 Background

Compaction & Soil Testing Services Pty Ltd (CSTS) was engaged by Mark Mulock & Co, on behalf of Mr Ante Maganic to conduct an assessment of the recycled crushed concrete product which had been placed upon the site known as 65-75 Dunheved Circuit, St Marys NSW.

CSTS is of the understanding that a civil dispute has arisen regarding the site, and that this report may be used for evidence. We, Craig Ridley and Ashleigh Brice, have read the Part 31 of Division 2 of the Uniform Civil Rules 2005 and Schedule 7 of the Uniform Civil Procedure Rules 2005. We understand our obligations to the Court and agree to abide by the rules in Part 31 in Schedule 7. We, Craig Ridley and Ashleigh Brice hereby attach our current CVs in Appendix D with the qualifications and experience as set out therein.

1.2 Objectives

The objective of this assessment was to determine whether the recycled crushed concrete product placed upon the surface of the site contained Asbestos, and contaminated the site. CSTS was also requested to assess two areas of stained material to determine whether fluid spills had contaminated the soils.

2 Scope of Works

In order to achieve the objectives of this assessment, the following scope of works was undertaken;

- Walkover of site with multiple passes searching for potential Asbestos Containing Material (ACM),
- Excavation of thirty (30) test pits within the recycled crushed concrete product,
- Recovery of thirty (30) samples of the fines from the test pits,
- Recovery of two (2) surface samples from the stained areas,
- Transportation of recovered samples to a NATA accredited laboratory for analysis,
- Review of analysis results in comparison to Health Based Investigation Levels (HBILs) for Commercial / Industrial land use as detailed within the *National Environment Protection (Assessment of Site Contamination) Measure 1999 (Amended 2013)*,
- Correlation of data and preparation of this report.

3 Site Identification

3.1 Site Description

The site under assessment is known as 65-75 Dunheved Circuit, St Marys NSW. The site is bordered by Dunheved Circuit to the east, vacant industrial land to the south, Links Road to the west and a large industrial factory and associated space to the north. The site is 'battle-axed' and an engineering workshop and the Rembrandt Dutch Club occupy the northeast of the site. Refer to Appendix A – Site Location.

The area under assessment is within the driveway and open area upon which a recycled crushed concrete product has been placed. The assessment area covers an area of approximately 2 Ha. The area CSTS was engaged to assess is detailed within Appendix A – Assessment Area.

3.2 Material Description

The material under assessment is the surface covering of the site. Specifically, the assessed material is identified as the imported recycled crushed concrete product used to form an aggregate hardstand. The material appeared to consist of crushed concrete, brick, tile and PVC plastic pipes. Limited evidence of foam, rubber and fabric was observed within the material. No fragments of material suspected of containing Asbestos were observed during the investigation. The layer varied in thickness, though was on average approximately 50-100mm thick. Refer to Photographs A-C within Appendix B.

Within the open area, two (2) small areas of stained material were observed. The stained area was observed to be approximately 800mm x 500mm (ST1) and 1300mm x 600mm (ST2), and based on the location, was assumed to be from a truck and/or trailer stored on the site. A limited quantity of asphalt was observed within Stain 2. Refer to Photographs D-F within Appendix B.

4 Sampling Process

4.1 Sampling Pattern

In order to provide spatial distribution of sampling locations, a stratified sampling pattern was adopted in accordance with the *NSW EPA Sampling Design Guidelines 1995*. Based on the size of the site, a 26m grid pattern was adopted, with the sampling locations located within the centre of each grid location. This approach was deemed suitable, as Asbestos contamination is heterogeneous, and therefore would not likely be in distinct phases.

Where the centre of the grid was inappropriate for sampling, such as when obstructions were present or the point was not within the recycled crushed concrete product, the sample point was moved within the grid to an available, suitable location. This was the case for a number of test pits, as detailed in Table A.

Refer to Appendix A – Sampling Pattern.

Table A: Alterations to the Stratified Sampling Pattern

Test Pit	Reason for Relocation	Altered Sampling Location[1]
TP101	Asphalt	3m South
TP102	Asphalt	4m South
TP111	Spatial extent of assessed material	3m South; 2m East
TP114	Obstruction	3m West
TP119	Obstruction	4m South
TP121	Obstruction	2m West
TP122	Obstruction	2m East
TP124	Obstruction	4m South
TP128	Obstruction	5m North; 3m West
TP129	Obstruction	3m East

1. As measured from the planned sampling point at the centre of the grid square

4.2 Sampling Technique

Sampling was undertaken in accordance with AS 4482.1 – 2005 – Guide to the investigation and sampling of sites with potentially contaminated soil – Part 1: Non-volatile and semi-volatile compounds, AS 4482.2 – 1999 – Guide to the sampling and investigation of potentially contaminated soil – Part 2: Volatile substances and current industry guidelines.

At each sampling location, a test pit was excavated by a representative of the client using a back-hoe to the depth of the recycled crushed concrete, that is, approximately 50-100mm. A sample was recovered using disposable latex gloves to transfer a portion of the fines into a food-grade 'snap lock' sample bag. The sample was sealed and labelled with a job number and sample ID before being transferred to a chilled container. Once the sample had been recovered, the test pit was re-filled with the excavated material in accordance with Work Health and Safety requirements.

At each stain, a decontaminated stainless steel trowel was used to transfer a portion of the surface material into a laboratory supplied 250mL glass jar with Teflon seal lid. The sample was sealed and labelled with a job number and sample ID before being transferred into a chilled container to begin the cool down process as required prior to chemical analysis of the soil.

When all the samples had been recovered, the chilled container was sealed and transported to SGS Australia Pty Ltd under stringent chain of custody procedures. SGS Australia Pty Ltd is a laboratory accredited by NATA (Accreditation Number 2562) and was chosen to undertake the chemical analysis due to their past experience with this form of analysis. Upon receipt of the samples, a technician from SGS Australia Pty Ltd checked the samples to confirm their condition, including the integrity of the sample jar seals. When satisfied the samples were received in an appropriate condition as required under current Australian Standards, SGS Australia Pty Ltd returned a Sample Receipt. Laboratory Documentation is located within Appendix C.

5 Field Quality Assurance and Quality Control

5.1 Sampling Team
Sampling was conducted by Mr Craig Ridley and Ms Ashleigh Brice, Environmental Consultants from Compaction & Soil Testing Services Pty Ltd on 04 December 2013. Therefore, the samples were deemed to be recovered by suitably qualified and experienced samplers.

5.2 Decontamination Process
To minimise the potential for cross-contamination to occur during the sampling process, a new set of disposable latex gloves was used to recover each sample. In addition, the trowel used to sample the stained material was decontaminated prior to the recovery of both samples. The decontamination process is as follows;

- Remove soils adhering to the object by scrubbing with a clean, soft bristled brush,
- Thoroughly wash the equipment in a solution of 3% phosphate-free detergent (Decon 90),
- Thoroughly rinse the equipment in either distilled water or portable water, depending on availability,
- Dry the equipment with a clean cloth or terry towel.

5.3 Sample Preservation
To ensure the reliability of the results obtained, the samples were analysed in accordance with the appropriate holding periods detailed within the *NEPM 1999 (Amended 2013)* published by the NEPC. The samples were preserved in accordance with *NEPM 1999 (Amended 2013)* as detailed in Table B.

Table B: Recommended Holding Times & Sample Preservations

Analyte	Holding Time	Container	Preservation
Asbestos	Indefinite	Sealed bag, Double bagged	N/A
BTEX	14 days	Glass with PTFE-lined lid	Chilled, No Headspace
TPH	14 days	Glass with PTFE-lined lid	Chilled, No Headspace
Naphthalene	14 days	Glass with PTFE-lined lid	Chilled, No Headspace

Adapted from *National Environment Protection (Assessment of Site Contamination) Measure 1999 (Amended 2013)*

5.4 Detailed Site Records
Detailed site records were created during the site assessment. These records consisted of written records and photographs including details of locations, material condition and samples. The samples were transferred to the laboratory in accordance with stringent chain of custody procedures with appropriate documentation (Appendix C).

5.5 Field Quality Control Samples
No field QA/QC samples were recovered or analysed, as this was beyond the scope of works. Field QA/QC relied upon the measures outlined within Sections 5.1-5.4.

5.6 Field QA/QC Evaluation
Due to the compliance and extent of field Quality Assurance and Quality Control measures, CSTS considers the field procedure was adequate and the results obtained reliable and useable for the expressed purpose.

6 Laboratory Quality Assurance and Quality Control

SGS Australia Pty Ltd is registered by NATA for Chemical Testing and Quality System compliance to ISO/IEC 17025 (Accreditation Number 2562). For this reason they were deemed as suitably qualified to conduct the assessment of these soil samples.

6.1 Quality Control Samples

As a NATA accredited laboratory, SGS Australia Pty Ltd must conform to a variety of quality assurance procedures. Quality control samples included in any analytical run are listed below.

6.1.1 Reagent/Analysis Blank & Method Blank

Sample free reagents carried through the preparation/extraction/digestion procedure and analysed at the beginning of every sample batch analysis. A reagent blank is prepared and analysed with every batch of samples plus with each new batch of solvent prior to use.

6.1.2 Sample Matrix Spike & Matrix Spike Duplicate

Sample replicates spiked with identical concentrations of target analyte(s). The spiking occurs during the sample preparation and prior to the extraction/digestion procedure. They are used to document the precision and bias of a method in a given sample matrix. Where there is not enough sample available to prepare a spiked sample, another known soil/sand or water may be used. A duplicate spiked sample is analysed at least every 20 samples.

6.1.3 Surrogate Spike

Used to determine the extraction efficiency, surrogate spikes are organic compounds which are similar to the target analyte(s) in chemical composition and behaviour in the analytical process, but which are not normally found in environmental samples. Where possible they are surrogate compounds recommended by the USEPA. At least one, but up to three, surrogate compounds are added to all samples requiring analysis for organics prior to extraction.

6.1.4 Control Matrix Spike

To ensure spike recoveries can be determined for every batch of samples a control matrix is spiked with identical concentrations of target analyte(s) and then analysed. These results allow recoveries to be determined in the event that the matrix spikes are unusable (eg. Matrix spikes performed on heavily contaminated samples). These are analysed at least every 20 samples.

6.1.5 Internal Standard

Added to all samples requiring analysis for organics (where relevant) after the extraction process; the compounds serve to give a standard of retention time and response, which is invariant from run-to-run with the instruments. Where possible they are standard compounds recommended by the USEPA.

6.1.6 Lab Duplicates

A separate portion of a sample being analysed that is treated the same as the other samples in the batch. One duplicate is processed at least every 10 samples.

6.1.7 Lab Control Samples

Prepared from a source independent of the calibration standards, at least one control standard is included in each run to confirm calibration validity. Thereafter they are analysed at least every one in 20 samples plus at the end of each analytical run.

6.1.8 Continuous Calibration Verification

A calibration check standard or continuous calibration standard and blank are run after every 20 samples of an instrumental analysis run to assess analytical drift. Calibration standards are checked old versus new with a criteria of ±20%.

6.2 Quality Assurance Programs

6.2.1 Statistical Analysis of Quality Control Data

Quality control data is plotted on control charts using the APHA procedure with warning and control limits at 2 and 3 standard deviations respectively.

6.2.2 Certified Reference Materials

Certified Reference Materials and Standards are analysed for method validation. These materials/standards have certified reference values for various parameters and may also be used for method troubleshooting.

6.2.3 Proficiency Testing

Regular proficiency test samples are analysed by our laboratories. SGS Australia Pty Ltd participates in a number of programs. Results and proficiency status are compiled and sent to participating laboratory post data interpretation. Failure to comply with acceptable values results in further investigation.

6.2.4 Inter-laboratory & Intra-laboratory Testing

SGS Australia Pty Ltd has schedules in the Quality Systems to participate in Inter/Intra laboratory testing conducted internally and by other parties.

6.3 Laboratory QA/QC Evaluation

CSTS has checked the QA/QC procedures adopted by the laboratory against the appropriate guidelines. The quality control sample numbers adopted by SGS Australia Pty Ltd are considered to be adequate for the analyses undertaken and conform to the recommendations provided in *NEPM 1999 (Amended 2013)*.

Overall, the quality control elements indicate that the analytical data fall within acceptable levels of accuracy and precision for the analysis of soils and water. The analytical data provided is therefore considered reliable and useable for this assessment.

7 Assessment Criteria

As the assessment was based upon the potential for Asbestos contamination to be evident within the imported material, the material was assessed for Asbestos presence. Furthermore, two (2) areas of stained material were observed, which were assessed for the presence of hydrocarbons associated with petroleum products. Provided the concentrations detected were within the assessment criteria detailed in Table B, the site can be considered suitable for the ongoing industrial land-use.

Table C: Assessment Criteria

Analyte	Assessment Criteria (HIL – D)
Asbestos	No Visible Asbestos at Surface 0.001% w/w for FA & AF 0.05% w/w asbestos for ACM
Benzene	3[1] / 430[2]
Toluene	NL[1] / 99,000[2]
Ethyl-benzene	NL[1] / 27,000[2]
Xylene	NL[1] / 81,000[2]
Naphthalene	NL[1] / 11,000[2]
TPH (F1)	NL[1] / 26,000[2]
TPH (F2)	NL[1] / 20,000[2]
TPH (F3)	27,000[2]
TPH (F4)	38,000[2]

Adapted from *National Environment Protection (Assessment of Site Contamination) Measure 1999 (Amended 2013)* and WA DOH *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia; May 2009.*

Notes:

(A): FA – Friable Asbestos; AF – Asbestos Fines; ACM – Asbestos Containing Material; NL – Not Limiting

1. *Soil Vapour Intrusion Value*
2. *Direct contact HSL*

8 Results of Laboratory Analysis

The laboratory analysis was undertaken by experienced technicians from SGS Australia Pty Ltd in accordance with relevant Australian Standards, government guidelines and the conditions of their NATA accreditation.

8.1 Asbestos

No Asbestos fines were detected within any of the samples. The estimated fibres present within each sample were less than 0.01%w/w (Table D). These values are below the assessment criteria, and as such, the material is considered unaffected by Asbestos.

8.2 Hydrocarbons

The chemical analysis detected TPH F3 and TPH F4 within the samples recovered from both stained areas within the site (Table D). The concentrations detected were below the HBILs for Commercial / Industrial development, and as such, the presence of these contaminants will not affect the suitability of the property for the ongoing Commercial / Industrial use.

No concentrations of Benzene, Toluene, Ethyl-benzene, Xylene, Naphthalene, TPH F1 or TPH F2 were detected within any of the samples (Table D), and as such, will not affect the suitability of the site for the ongoing Commercial / Industrial use.

Table D: Laboratory Analysis

Sample	Asbestos (%w/w)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Xylene (mg/kg)	Naphthalene (mg/kg)	TPH - F1 (mg/kg)	TPH - F2 (mg/kg)	TPH - F3 (mg/kg)	TPH - F4 (mg/kg)
TP101	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP102	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP103	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP104	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP105	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP106	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP107	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP108	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP109	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP110	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP111	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP112	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP113	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP114	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP115	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP116	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP117	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP118	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP119	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP120	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP121	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP122	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP123	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP124	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP125	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP126	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP127	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP128	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP129	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP130	<0.01	NT	NT	NT	NT	NT	NT	NT	NT	NT
ST-1	NT	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL[1]	16,000	4,500
ST-2	NT	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL[2]	22,000	13,000

Adapted from SGS Australia Pty Ltd, Analytical Report SE122986 (Appendix C)
Notes: NT – Not tested, Bolded & Shaded = exceeds the assessment criteria

1. *Limit of reporting raised by SGS Australia Pty Ltd to 130mg/kg*
2. *Limit of reporting raised by SGS Australia Pty Ltd to 250mg/kg*

9 Conclusions & Recommendations

Based on the conducted assessment, CSTS drew the following conclusions:

- The assessment area covers an area of approximately 2ha within the site known as 65-75 Dunheved Circuit, St Marys NSW,
- The material under investigation consists of imported recycled crushed concrete product consisting of concrete, brick, tile and PVC plastic pipes. Limited evidence of foam, rubber and fabric was observed,
- The material was approximately 50-100mm thick on average,
- Two small areas of stained material were observed approximately 800mm x 500mm and 1300mm x 600mm in size,
- No material suspected of containing Asbestos was observed during the investigation,
- No Asbestos fines were detected within any of the samples,
- TPH F3 and TPH F4 were detected within the samples of the stained material, the concentrations of which were below the HBILs for Commercial / Industrial land use,
- No concentrations of BTEX, Naphthalene, TPH F1 or TPH F2 were detected within any samples.

Therefore, CSTS concluded the recycled crushed concrete product placed upon the site known as 65-75 Dunheved Circuit, St Marys NSW is of a suitable condition for ongoing Commercial / Industrial land use, from a contamination perspective, in accordance with the *National Environment Protection (Assessment of Site Contamination) Measure 1999 (Amended 2013)* and the WA DOH *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia; May 2009.*

Should you have any queries about the methodology, findings or recommendations of this investigation, please do not hesitate to contact our office on (02) 9675 7522.

10 Limitations

This classification covers **ONLY** the crushed recycled concrete product placed upon the surface of the property known as 65-75 Dunheved Circuit, St Marys NSW. No other material is covered under this classification.

This report covers the site at the time of sampling. Should there be any variations in site conditions since the above mentioned date such as importation of fill, chemical spillage, illegal dumping, the detection of suspected ACM etc, further assessment will be required. Should any suspect materials be encountered, we recommend that this office be contacted immediately for further assessment. Neither Compaction & Soil Testing Services Pty Ltd nor any other reputable firm can give unqualified warranties on the conditions of the site and subsurface conditions.

While Compaction & Soil Testing Services Pty Ltd takes all reasonable due care and diligence, we offer no absolute warranty for the material between the locations sampled and investigated. In addition, Compaction & Soil Testing Services Pty Ltd does not assume any liability for site conditions unobserved or inaccessible at the time of the investigation.

This report has been prepared for the particular project described and no responsibility is accepted for the use of any part of this report in any other context or for any other purpose. If there is any change in the proposed development described in the report then all recommendations should reviewed. No other warranty expressed or implied is made or intended. Copyright on this report remains the property of Compaction & Soil Testing Services Pty Ltd.

Subject to payment of all fees due for the investigation, the client alone shall have license to use the report. This report shall not be reproduced except in full.

If you have any queries about this investigation please do not hesitate to contact our office on (02) 9675 7522.

11 References

National Environment Protection Council, 2013, *National Environment Protection (Assessment of Site Contamination) Measure 1999*

New South Wales Environment Protection Authority, 1995, Sampling Design Guidelines 1995

SGS Australia Pty Ltd, 12 December 2013, *Analytical Report SE122986*, prepared for Compaction & Soil Testing Services Pty Ltd

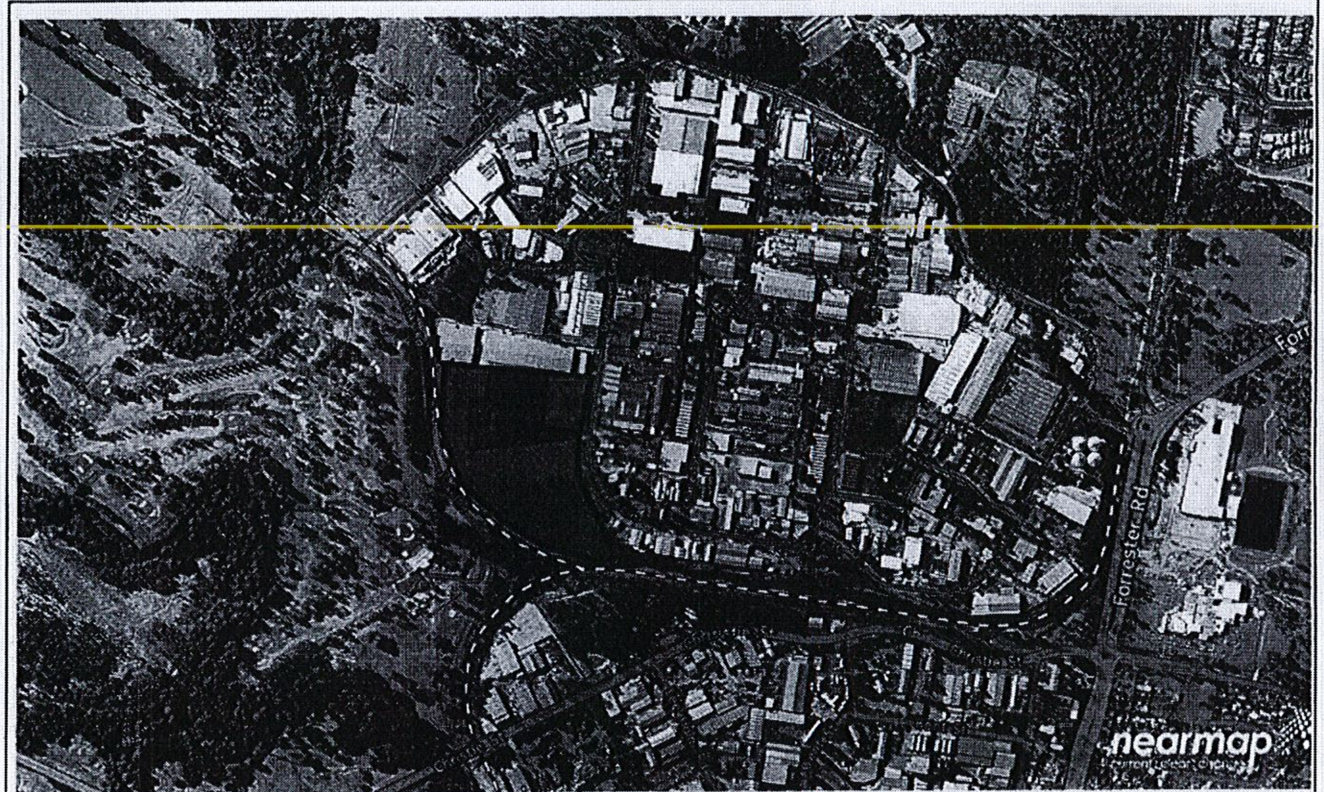
Standards Australia, 2005, AS 4482.1 – 2005 – Guide to the investigation and sampling of sites with potentially contaminated soil – Part 1: Non-volatile and semi-volatile compounds

Standards Australia, 1999, AS 4482.2 – 1999 – Guide to the sampling and investigation of potentially contaminated soil – Part 2: Volatile substances and current industry guidelines

Western Australian Government Department of Health, 2009, *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia; May 2009*

Appendix A

Site Location



Sourced: www.nearmap.com under licence to Compaction & Soil Testing Services Pty Ltd 2013, imagery date, 02 September 2013

Compaction and Soil Testing Services Pty Ltd

CSTS	**Notes:** *This drawing has been produced using a base plan provided by others to which additional information e.g.: density test, DCP and Test Pit locations or notes have been added. Some or all the information shown on the plan may not be relevant at the time of producing this drawing.*	Drawn:	CR	**Site Location** 65-75 Dunheved Circuit St Marys NSW	Job No:	MAG 1930
		Approved:	CR			
		Date:	05/12/2013		Drawing No:	**ENV AA001**
		Scale:	As Shown			

Form No.WS 014 01/06/2010 Issued No.1.1 Issued By:PC

Sourced: www.nearmap.com under licence to Compaction & Soil Testing Services Pty Ltd 2013, Imagery date, 02 September 2013

Compaction and Soil Testing Services Pty Ltd

CSTS	**Notes:** *This drawing has been produced using a base plan provided by others to which additional Information e.g.: density test, DCP and Test Pit locations or notes have been added. Some or all the information shown on the plan may not be relevant at the time of producing this drawing.*	Drawn:	CR	**Assessment Area** 65-75 Dunheved Circuit St Marys NSW	Job No:	MAG 1930
		Approved:	CR			
		Date:	05/12/2013		Drawing No:	**ENV AA002**
		Scale:	As Shown			

Form No WS 014 01/06/2010 Issued No.1.1 Issued By:PC

Sourced: www.neatmap.com under licence to Compaction & Soil Testing Services Pty Ltd 2013, imagery date, 02 September 2013

Compaction and Soil Testing Services Pty Ltd

CSTS	**Notes:** *This drawing has been produced using a base plan provided by others to which additional information e.g.: density test, DCP and Test Pit locations or notes have been added. Some or all the information shown on the plan may not be relevant at the time of producing this drawing.*	Drawn:	CR	**Sampling Locations** 65-75 Dunheved Circuit St Marys NSW	Job No:	MAG 1930
		Approved:	CR		Drawing No:	**ENV AA003**
		Date:	05/12/2013			
		Scale:	As Shown			

Form No.WS 014 01/05/2010 Issued No.1.1 Issued By.PC

C.S.T.S.

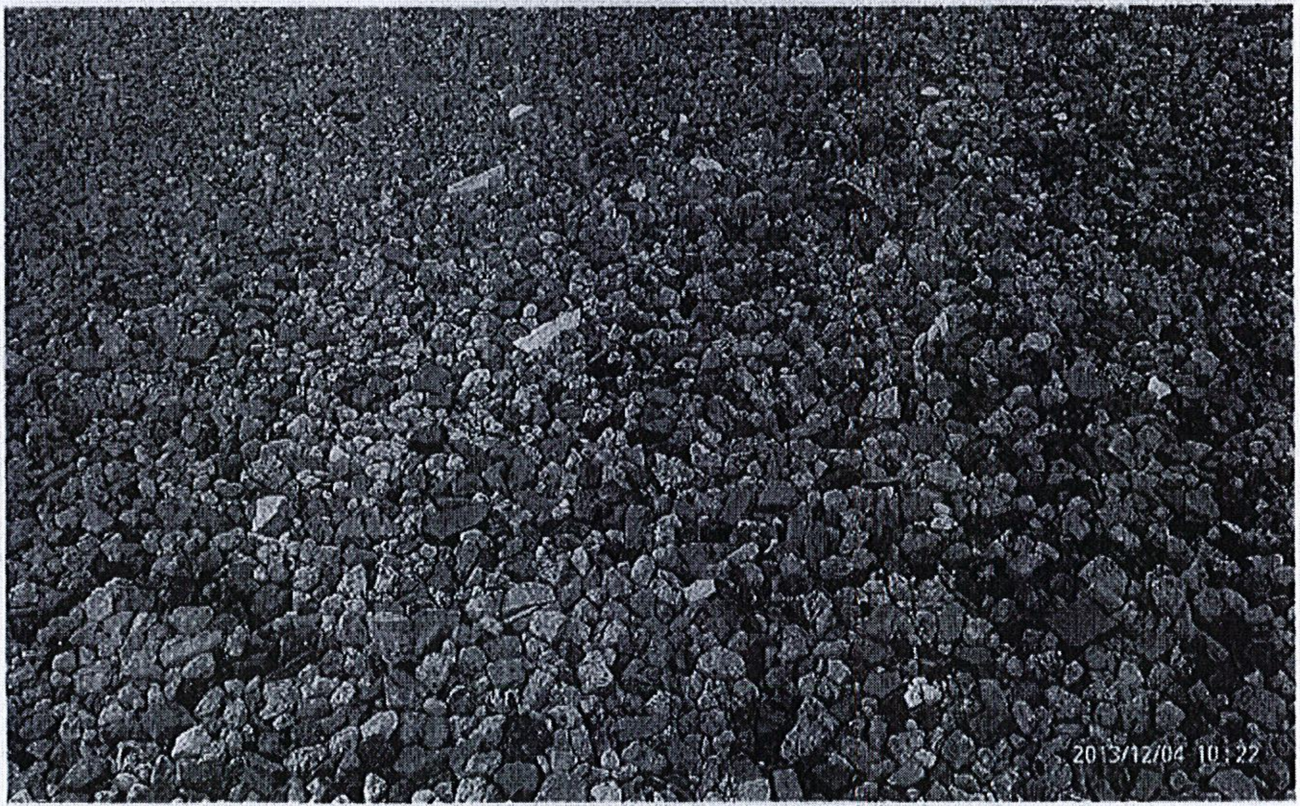
Compaction & Soil Testing Services Pty Limited

1/78 Owen Street, GLENDENNING NSW 2761 • ABN 44 106 976 738
Phone: (02) 9675 7522 Fax: (02) 9675 7544
Email: office@comsoiltest.com.au Web: www.comsoiltest.com.au

Appendix B

Site Photographs

A: Site Condition – taken from the north western portion of the site, looking south east



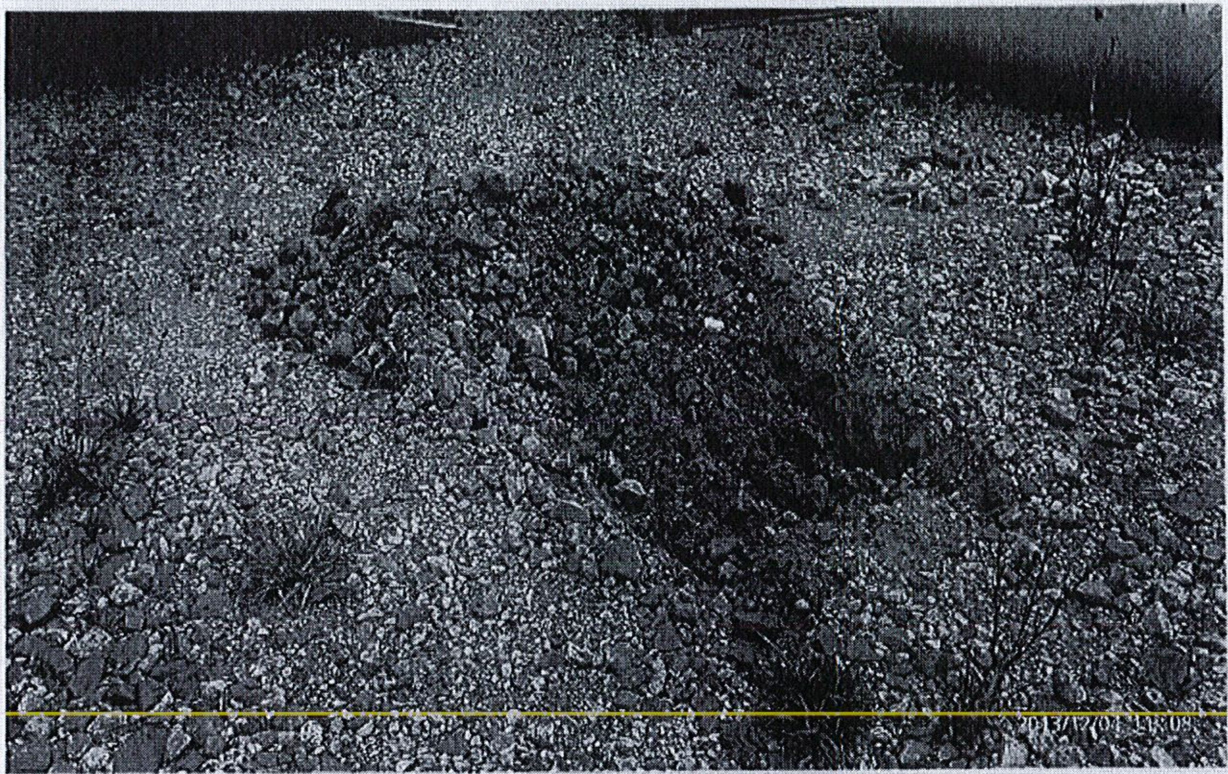
B: Recycled Crushed Concrete; marked sampling location; TP119

Photographs Taken by CSTS Environmental Consultant 04/12/2013

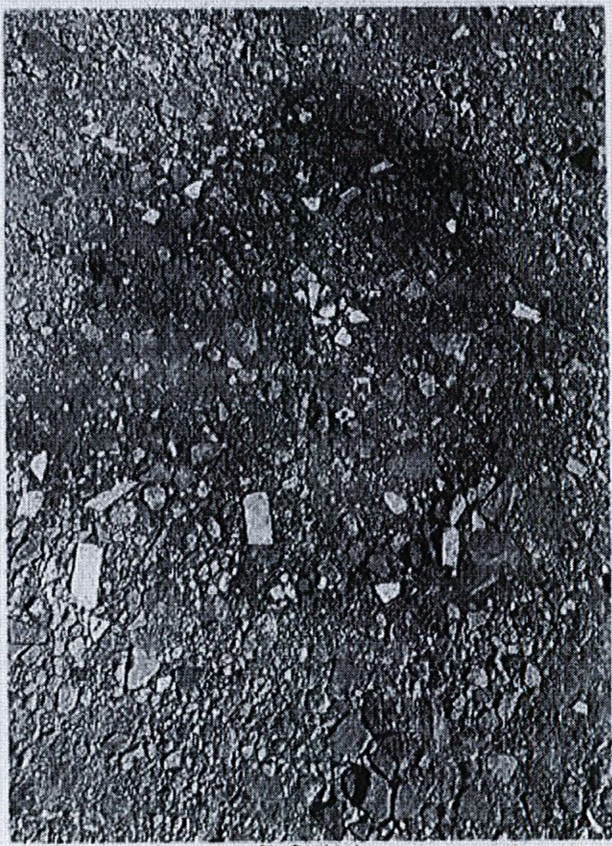
Compaction and Soil Testing Services Pty Ltd

CSTS	**Notes:** *This drawing has been produced using a base plan provided by others to which additional information e.g.: density test, DCP and Test Pit locations or notes have been added. Some or all the information shown on the plan may not be relevant at the time of producing this drawing*	Drawn:	AB	**Site Photographs**	Drawing No:	ENV AA004
		Approved:	CR			
		Date:	09/12/2013	65-75 Dunheved Circuit St Marys NSW	Job No:	MAG 1930
		Scale:	Not to scale			

Form No WS 014 A 01/06/2010 Issued No 1.1 Issued By: RC



C: Excavated Test Pit; TP122



D: Stain 1

Photographs Taken by CSTS Environmental Consultant 04/12/2013

Compaction and Soil Testing Services Pty Ltd

CSTS	Notes: *This drawing has been produced using a base plan provided by others to which additional information e.g.: density test, DCP and Test Pit locations or notes have been added. Some or all the information shown on the plan may not be relevant at the time of producing this drawing*	Drawn:	AB	Site Photographs 65-75 Dunheved Circuit St Marys NSW	Drawing No:	ENV AA005
		Approved:	CR			
		Date:	09/12/2013		Job No:	MAG 1930
		Scale:	Not to scale			

Form No.WS 014 A 01/06/2010 Issued No.1.1 Issued By: PC

E: Stain 2

F: Stain 2 - Asphalt

Photographs Taken by CSTS Environmental Consultant 04/12/2013

Compaction and Soil Testing Services Pty Ltd

CSTS	Notes: This drawing has been produced using a base plan provided by others to which additional information e.g.: density test, DCP and Test Pit locations or notes have been added. Some or all the information shown on the plan may not be relevant at the time of producing this drawing.	Drawn:	AB	Site Photographs 65-75 Dunheved Circuit St Marys NSW	Drawing No:	ENV AA006
		Approved:	CR			
		Date:	09/12/2013		Job No:	MAG 1930
		Scale:	Not to scale			

Form No.WS 014 A 01/06/2010 Issued No.1.1 Issued By: PC

1/78 Owen Street, GLENDENNING NSW 2761 • ABN 44 106 976 738
Phone: (02) 9675 7522 Fax: (02) 9675 7544
Email: office@comsoiltest.com.au Web: www.comsoiltest.com.au

Appendix C

Laboratory Documentation

CHAIN OF CUS ,C DY & ANALYSIS REQUEST

SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: IRFAN.SAYEED@SGS.COM

Company Name: Compaction & Soil Testing Services Pty Ltd
Address: 1/78 Owen Street
Glendenning NSW 2761
Contact Name: Craig Ridley

Project Name/No: Dunheved
Purchase Order No:
Results Required By: STA
Telephone: (02) 9675 7522
Facsimile: (02) 9675 7544
Email Results: office@comsoiltest.com.au / craig@comsoiltest.com.au

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	Asbestos	TRHC6-C40/BTEXN
TP101	4/12/2013	1		X			X	
TP 102	4/12/2013	2		X			X	
TP 103	4/12/2013	3		X			X	
TP 104	4/12/2013	4		X			X	
TP 105	4/12/2013	5		X			X	
TP 106	4/12/2013	6		X			X	
TP 107	4/12/2013	7		X			X	
TP 108	4/12/2013	8		X			X	
TP 109	4/12/2013	9		X			X	

SGS
Received 04/12/13
By SS
Time 4.45 am/pm
Samples Intact Yes/No
Ice/Cooler Pack Yes/No
Temperature on Receipt 4.3 °C
Storage Location ASR 3 545
SGS REF No
SB 12:2954

Relinquished By: CSTS	Date/Time: 3.4.45 4/12	Received By:	Date/Time 4/12/13 4.45
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: Yes/ No	Temperature: Ambient Chilled	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No: ENVI-27CSRE-v3
	Comments:		

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Ref. BLANK_COC.doc/ver.2/16.08.2007/Page 1 of 1

CHAIN OF CUSTODY & ANALYSIS REQUEST

Page 2 of 4

SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: IRFAN.SAYEED@SGS.COM

Company Name: Compaction & Soil Testing Services Pty Ltd
Address: 1/78 Owen Street
Glendenning NSW 2761

Contact Name: Craig Ridley

Project Name/No: Dunheved
Purchase Order No:
Results Required By: STA
Telephone: (02) 9675 7522
Facsimile: (02) 9675 7544
Email Results: office@comsoiltest.com.au / craig@comsoiltest.com.au

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	Asbestos	TRHC6-C40/BTEXN
TP110	4/12/2013	10		X			X	
TP 111	4/12/2013	11		X			X	
TP 112	4/12/2013	12		X			X	
TP 113	4/12/2013	13		X			X	
TP 114	4/12/2013	14		X			X	
TP 115	4/12/2013	15		X			X	
TP 116	4/12/2013	16		X			X	
TP 117	4/12/2013	17		X			X	
TP 118	4/12/2013	18		X			X	

Relinquished By: CSTS	Date/Time:	Received By: [illegible]	Date/Time 04/12/13
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: Yes/ No	Temperature: Ambient / Chilled	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No: ENVI-27CSRE-v3
	Comments:		

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Ref: BLANK_COC.doc/ver.2/16.08.2007/Page 1 of 1

CHAIN OF CUSTODY & ANALYSIS REQUEST

SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: IRFAN.SAYEED@SGS.COM

Company Name:	Compaction & Soil Testing Services Pty Ltd
Address:	1/78 Owen Street Glendenning NSW 2761
Contact Name:	Craig Ridley
Project Name/No:	Dunheved
Purchase Order No:	
Results Required By:	STA
Telephone:	(02) 9675 7522
Facsimile:	(02) 9675 7544
Email Results:	office@comsoiltest.com.au / craig@comsoiltest.com.au

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	Asbestos	TRHC6-C40/BTEXN
TP128	4/12/2013	28		X			X	
TP 129	4/12/2013	29		X			X	
TP 130	4/12/2013	30		X			X	
ST1	4/12/2013	31		X				X
ST2	4/12/2013	32		X				X

Relinquished By: CSTS	Date/Time:	Received By: [signature]	Date/Time 04/12
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: Yes / No	Temperature: Ambient / Chilled	Sample Cooler Sealed: Yes / No	Laboratory Quotation No: ENVI-27CSRE-v3
	Comments:		

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Ref. BLANK_COC.doc/ver.2/16.08.2007/Page 1 of 1

SGS

AUSTRALIA – ENVIRONMENTAL SERVICES SYDNEY – PROFORMA FORM
SAMPLE INFORMATION

Approved: D. Liang

JOB No. SE 122956

Sample No.	P 100ml UP	P 250ml UP	P 500ml UP	P 1L UP	G 100 Amber UP	G 200 Amber UP	G 500 Amber UP	G 1L Amber UP	G 40ml vial Up	G 40ml Vial HCl	P 100ml HCl	G 40ml Vial H2SO4	P 100ml H2SO4	P 250ml H2SO4	G 500ml Amber H2SO4	G 1L H2SO4	P 100/250ml HN03 Total	P 100ml HN03 Filtered	P 250ml NaOH	P 250ml Zn Acetate	Plastic Bag	G 250ml Soil Jar				Sample Matrix	Lab Bottles Supplied By	Comments
1-30																					1					Soil	Client	100g
31-32																						1				"	SGS	tub

SAMPLE RECEIPT ADVICE

SE122986

CLIENT DETAILS

Contact	Craig Ridley
Client	Compaction and Soil Testing Services Pty Ltd
Address	Unit 1 / 78 Owen St GLENDENNING NSW 2761
Telephone	02 9675 7522
Facsimile	02 9675 7544
Email	craig@comsoiltest.com.au
Project	Dunheved
Order Number	(Not specified)
Samples	32

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Wed 4/12/2013
Report Due	Thu 12/12/2013
SGS Reference	SE122986

SUBMISSION DETAILS

This is to confirm that 32 samples were received on Wednesday 4/12/2013. Results are expected to be ready by Thursday 12/12/2013. Please quote SGS reference SE122986 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	32 Soils	Type of documentation received	COC
Date documentation received	4/12/2013	Samples received in good order	Yes
Samples received without headspace	N/A	Sample temperature upon receipt	4.3°C
Sample container provider	Client	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

Samples will be held for one month for water samples and two months for soil samples from date of report, unless otherwise instructed.

COMMENTS

Samples received at SGS on 4/12/2013@4.45pm. Samples were not registered until the next working day.

SAMPLE RECEIPT ADVICE

SE122986

CLIENT DETAILS

Client Compaction and Soil Testing Services Pty Ltd

Project Dunheved

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre Identification in soil
001	TP 101	2
002	TP 102	2
003	TP 103	2
004	TP 104	2
005	TP 105	2
006	TP 106	2
007	TP 107	2
008	TP 108	2
009	TP 109	2
010	TP 110	2
011	TP 111	2
012	TP 112	2
013	TP 113	2
014	TP 114	2
015	TP 115	2
016	TP 116	2
017	TP 117	2
018	TP 118	2
019	TP 119	2
020	TP 120	2
021	TP 121	2
022	TP 122	2
023	TP 123	2
024	TP 124	2

The above table represents SGS Environmental Services' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details.
Testing as per this table shall commence immediately unless the client intervenes with a correction.

SGS

SAMPLE RECEIPT ADVICE

SE122986

CLIENT DETAILS

Client Compaction and Soil Testing Services Pty Ltd

Project Dunheved

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre Identification in soil	Moisture Content	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
025	TP 125	2	-	-	-	-
026	TP 126	2	-	-	-	-
027	TP 127	2	-	-	-	-
028	TP 128	2	-	-	-	-
029	TP 129	2	-	-	-	-
030	TP 130	2	-	-	-	-
031	ST1	-	1	9	12	8
032	ST2	-	1	9	12	8

The above table represents SGS Environmental Services' interpretation of the client-supplied Chain Of Custody document
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details.
Testing as per this table shall commence immediately unless the client intervenes with a correction

ANALYTICAL REPORT

NATA

WORLD RECOGNISED ACCREDITATION

CLIENT DETAILS

Contact	Craig Ridley
Client	Compaction and Soil Testing Services Pty Ltd
Address	Unit 1 / 78 Owen St GLENDENNING NSW 2761
Telephone	02 9675 7522
Facsimile	02 9675 7544
Email	craig@comsoiltest.com.au
Project	Dunheved
Order Number	(Not specified)
Samples	32
Date Received	4/12/2013

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	SE122966 R0
Report Number	0000071720
Date Reported	12/12/2013

COMMENTS

Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(4354).

TRH - The Limit of Reporting (LOR) has been raised due to interferences from the sample matrix.

No respirable fibres detected in all samples using trace analysis technique.
Asbestos analysed by Approved Identifier Ravee Sivasubramaniam.

SIGNATORIES

Andy Sutton
Senior Organic Chemist

Huong Crawford
Production Manager

Ly Kim Ha
Organic Section Head

Ravee Sivasubramaniam
Asbestos Analyst

SGS

ANALYTICAL RESULTS

SE122986 R0

VOC's in Soil [AN433/AN434]

PARAMETER	UOM	LOR	ST1 SOIL 4/12/2013 SE122986.031	ST2 SOIL 4/12/2013 SE122986.032
Benzene	mg/kg	0.10	<0.1	<0.1
Toluene	mg/kg	0.10	<0.1	<0.1
Ethylbenzene	mg/kg	0.10	<0.1	<0.1
m/p-xylene	mg/kg	0.20	<0.2	<0.2
o-xylene	mg/kg	0.10	<0.1	<0.1
Total Xylenes*	mg/kg	0.30	<0.3	<0.3
Total BTEX*	mg/kg	0.60	<0.6	<0.6
Naphthalene	mg/kg	0.10	<0.1	<0.1

ANALYTICAL RESULTS

SE122986 R0

Volatile Petroleum Hydrocarbons in Soil [AN433/AN434/AN410]

PARAMETER	UOM	LOR	ST1 SOIL 4/12/2013 SE122986.031	ST2 SOIL 4/12/2013 SE122986.032
TRH C6-C9	mg/kg	20	<20	<20
Benzene (F0)	mg/kg	0.10	<0.1	<0.1
TRH C6-C10	mg/kg	25.0	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25.0	<25	<25

ANALYTICAL RESULTS

SE122986 R0

TRH (Total Recoverable Hydrocarbons) in Soil [AN403]

PARAMETER	UOM	LOR	ST1 SOIL 4/12/2013 SE122986.031	ST2 SOIL 4/12/2013 SE122986.032
TRH C10-C14	mg/kg	20	<100↑	<200↑
TRH C15-C28	mg/kg	45.0	9000	9600
TRH C29-C36	mg/kg	45.0	9400	19000
TRH C37-C40	mg/kg	100	1900	6000
TRH >C10-C16 (F2)	mg/kg	25.0	<130↑	<250↑
TRH >C16-C34 (F3)	mg/kg	90	16000	22000
TRH >C34-C40 (F4)	mg/kg	120	4600	13000
TRH C10-C36 Total	mg/kg	110	18000	29000
TRH C10-C40 Total	mg/kg	210	20000	35000

SGS

ANALYTICAL RESULTS

SE122986 R0

Fibre Identification in soil [AN602]

PARAMETER	UOM	LOR	TP 101 SOIL 4/12/2013 SE122986.001	TP 102 SOIL 4/12/2013 SE122986.002	TP 103 SOIL 4/12/2013 SE122986.003	TP 104 SOIL 4/12/2013 SE122986.004	TP 105 SOIL 4/12/2013 SE122986.005	TP 106 SOIL 4/12/2013 SE122986.006
Asbestos Detected	No unit	-	No	No	No	No	No	No
Estimated Fibres	%w/w	0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

PARAMETER	UOM	LOR	TP 107 SOIL 4/12/2013 SE122986.007	TP 108 SOIL 4/12/2013 SE122986.008	TP 109 SOIL 4/12/2013 SE122986.009	TP 110 SOIL 4/12/2013 SE122986.010	TP 111 SOIL 4/12/2013 SE122986.011	TP 112 SOIL 4/12/2013 SE122986.012
Asbestos Detected	No unit	-	No	No	No	No	No	No
Estimated Fibres	%w/w	0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

PARAMETER	UOM	LOR	TP 113 SOIL 4/12/2013 SE122986.012	TP 114 SOIL 4/12/2013 SE122986.014	TP 115 SOIL 4/12/2013 SE122986.015	TP 116 SOIL 4/12/2013 SE122986.016	TP 117 SOIL 4/12/2013 SE122986.017	TP 118 SOIL 4/12/2013 SE122986.018
Asbestos Detected	No unit	-	No	No	No	No	No	No
Estimated Fibres	%w/w	0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

PARAMETER	UOM	LOR	TP 119 SOIL 4/12/2013 SE122986.019	TP 120 SOIL 4/12/2013 SE122986.020	TP 121 SOIL 4/12/2013 SE122986.021	TP 122 SOIL 4/12/2013 SE122986.022	TP 123 SOIL 4/12/2013 SE122986.023	TP 124 SOIL 4/12/2013 SE122986.024
Asbestos Detected	No unit	-	No	No	No	No	No	No
Estimated Fibres	%w/w	0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

PARAMETER	UOM	LOR	TP 125 SOIL 4/12/2013 SE122986.025	TP 126 SOIL 4/12/2013 SE122986.026	TP 127 SOIL 4/12/2013 SE122986.027	TP 128 SOIL 4/12/2013 SE122986.028	TP 129 SOIL 4/12/2013 SE122986.029	TP 130 SOIL 4/12/2013 SE122986.030
Asbestos Detected	No unit	-	No	No	No	No	No	No
Estimated Fibres	%w/w	0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Moisture Content [AN002]

PARAMETER	UOM	LOR	ST1 SOIL 4/12/2013 SE122986.031	ST2 SOIL 4/12/2013 SE122986.032
% Moisture	%	0.50	0.6	3.1

METHOD SUMMARY SE122986 R0

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN088	Orbital rolling for Organic pollutants are extracted from soil/sediment by transferring an appropriate mass of sample to a clear soil jar and extracting with 1:1 Dichloromethane/Acetone. Orbital Rolling method is intended for the extraction of semi-volatile organic compounds from soil/sediment samples, and is based somewhat on USEPA method 3570 (Micro Organic extraction and sample preparation). Method 3700.
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the Draft NEPM 2011, >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is not corrected for Naphthalene.
AN433/AN434	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC's are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
AN433/AN434/AN410	VOCs and C6-C9/C6-C10 Hydrocarbons by GC-MS P&T: VOC's are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic 'clues', which provide a reasonable degree of certainty, dispersion staining is a mandatory 'clue' for positive identification. If sufficient 'clues' are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.

FOOTNOTES

*	Analysis not covered by the scope of accreditation.	-	Not analysed.	UOM	Unit of Measure.
**	Indicative data, theoretical holding time exceeded.	NVL	Not validated.	LOR	Limit of Reporting.
^	Performed by outside laboratory.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: http://www.sgs.com.au.pv.sgsv3/~/media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf

ANALYTICAL REPORT

NATA

WORLD RECOGNISED ACCREDITATION

CLIENT DETAILS		LABORATORY DETAILS	
Contact	Craig Ridley	Manager	Huong Crawford
Client	Compaction and Soil Testing Services Pty Ltd	Laboratory	SGS Alexandria Environmental
Address	Unit 1 / 78 Owen St GLENDENNING NSW 2761	Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	02 9675 7522	Telephone	+61 2 8594 0400
Facsimile	02 9675 7544	Facsimile	+61 2 8594 0499
Email	craig@comsoiltest.com.au	Email	au.environmental.sydney@sgs.com
Project	Dunheved	SGS Reference	SE122986 R0
Order Number	(Not specified)	Report Number	0000071704
Samples	32	Date Reported	12 Dec 2013
		Date Received	04 Dec 2013

COMMENTS

Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(4354).

TRH - The Limit of Reporting (LOR) has been raised due to interferences from the sample matrix.

No respirable fibres detected in all samples using trace analysis technique.
Asbestos analysed by Approved Identifier Ravee Sivasubramaniam.

SIGNATORIES

Andy Sutton Senior Organic Chemist	Huong Crawford Production Manager	Ly Kim Ha Organic Section Head

Ravee Sivasubramaniam
Asbestos Analyst

Environmental Services | Unit 16 33 Maddox St, PO Box 6432 Bourke Rd BC | Alexandria NSW 2015, Alexandria NSW 2015 | Australia, Australia | t +61 2 8594 0400 | f +61 2 8594 0499 | www.au.sgs.com

SE122986 R0

ANALYTICAL REPORT

Fibre Identification in soil

Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est (w/w)
SE122986.001	TP 101	Soil	104g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE122986.002	TP 102	Soil	98g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE122986.003	TP 103	Soil	165g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE122986.004	TP 104	Soil	117g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE122986.005	TP 105	Soil	154g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE122986.006	TP 106	Soil	95g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE122986.007	TP 107	Soil	171g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE122986.008	TP 108	Soil	156g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE122986.009	TP 109	Soil	104g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE122986.010	TP 110	Soil	158g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE122986.011	TP 111	Soil	138g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE122986.012	TP 112	Soil	105g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE122986.013	TP 113	Soil	148g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE122986.014	TP 114	Soil	121g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE122986.015	TP 115	Soil	177g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE122986.016	TP 116	Soil	90g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE122986.017	TP 117	Soil	190g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE122986.018	TP 118	Soil	172g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE122986.019	TP 119	Soil	220g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE122986.020	TP 120	Soil	150g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE122986.021	TP 121	Soil	166g Soil,clay,rocks	04 Dec 2013	No Asbestos Found	<0.01
SE122986.022	TP 122	Soil	182g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE122986.023	TP 123	Soil	158g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE122986.024	TP 124	Soil	132g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE122986.025	TP 125	Soil	198g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01

ANALYTICAL REPORT

SE122986 R0

RESULTS

Fibre Identification in soil

Method AN802

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est. %w/w
SE122986.026	TP 126	Soil	214g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE122986.027	TP 127	Soil	175g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE122986.028	TP 128	Soil	166g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE122986.029	TP 129	Soil	130g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01
SE122986.030	TP 130	Soil	229g Soil,clay,rocks	04 Dec 2013	No Asbestos Found Organic Fibres Detected	<0.01

SGS

METHOD SUMMARY

SE122986 R0

METHOD	METHODOLOGY SUMMARY
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic 'clues', which provide a reasonable degree of certainty, dispersion staining is a mandatory 'clue' for positive identification. If sufficient 'clues' are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf).
AN602	AS4964 2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."

FOOTNOTES

Amosite	-	Brown Asbestos	NA	-	Not Analysed
Chrysotile	-	White Asbestos	LNR	-	Listed, Not Required
Crocidolite	-	Blue Asbestos	*	-	Not Accredited
Amphiboles	-	Amosite and/or Crocidolite	**	-	Indicative data, theoretical holding time exceeded.

This report does not comply with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment and Remediation and Management of Asbestos Contaminated sites in Western Australia - May 2009.

Sampled by the client.

Where reported: 'Asbestos Detected': Asbestos detected by polarized light microscopy, including dispersion staining.
Where reported: 'No Asbestos Found': No Asbestos Found by polarized light microscopy, including dispersion staining.
Where reported: 'UMF Detected': Mineral fibres of unknown type detected by polarized light microscopy, including dispersion staining. Confirmation by another independent analytical technique may be necessary.

Even after disintegration it can be very difficult, or impossible, to detect the presence of asbestos in some asbestos-containing bulk materials using polarised light microscopy. This is due to the low grade or small length or diameter of asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: http://www.sgs.com.au pv.sgsv3/~/media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan pdf

Appendix D

Curriculum Vitae

Craig Ridley - Curriculum Vitae

Tertiary Education

University of Western Sydney, Hawkesbury
Bachelor of Applied Science (Environmental Health), 02/2007 – 04/2013

- Major: Environmental Health Management

Professional Experience

Compaction & Soil Testing Services Pty Ltd
Environmental Consultant, 02/2011 - Present

Roles;

- Waste Classification Assessments
- Preliminary and Detailed Site Investigations
- Site Validation Assessments
- Acid Sulphate Soil Assessments
- Salinity Investigations

Major Projects;

- Great Western Highway Upgrade, Woodford to Hazelbrook NSW
- Tempo Apartments Development, Mascot NSW
- Centre for Obesity, Diabetes and Cardiovascular Disease, University of Sydney, Camperdown NSW
- Bunning's Warehouse, Wallsend NSW
- Habitat Apartments, Braddon ACT
- Wollongong Private Hospital NSW
- ERKO Apartments, Erskineville NSW
- Greenway, Marsden Park NSW

Ashleigh Brice - Curriculum Vitae

Tertiary Education

Macquarie University
Bachelor of Environment, 02/2010 – 11/2012
- Major: Biology
- Minor: Environmental Management

Professional Experience

Compaction & Soil Testing Services Pty Ltd
Environmental Consultant, 03/2013 - Present

Roles;
- Waste Classification Assessments
- Preliminary and Detailed Site Investigations
- Site Validation Assessments
- Acid Sulphate Soil Assessments
- Salinity Investigations

Major Projects;
- Bunning's Warehouse, Wallsend NSW
- ERKO Apartments, Erskineville NSW
- Putney Hill Development, Ryde NSW

C.S.T.S.

REPORT

TO

MARK MULOCK & CO

ON

RECYCLED CRUSHED CONCRETE ASSESSMENT

FOR

SUITABILITY OF SITE FOR COMMERCIAL/INDUSTRIAL USE

AT

65-73A DUNHEVED CIRCUIT, ST MARYS NSW

17 Jan 2014

Job No: MAG 1930

Report No: ENV AB

Our Ref No: 433

Postal Address: 1/78 Owen Street
Glendenning NSW 2761
Tel: 02 9675 7522 Fax: 02 9675 7544
Email: office@comsoiltest.com.au
ABN: 44 106 976 738

Job No: MAG 1930
Report No: ENV AB
Our Ref: 433

Mark Mulock & Co
Suite 1, Level 1
Nepean Walkway Arcade
374 High Street
Penrith NSW 2750

Attention: Mr Mark Mulock

Recycled Crushed Concrete Assessment Report
65-73A Dunheved Circuit, St Marys NSW

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All enquiries regarding this project are to be directed to the undersigned

Document Status	
Author C. Moloney Celia Moloney *B.Engineering (Environmental)* Environmental Consultant *Compaction & Soil Testing Services Pty Ltd*	Co-author Craig Ridley *B. App. Sci. (Environmental Health)* Environmental Consultant *Compaction & Soil Testing Services Pty Ltd*

Revision Number	Status	Date
0	Final	17 January 2014

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Executive Summary

Compaction & Soil Testing Services Pty Ltd (CSTS) was engaged by Mark Mulock & Co to conduct an assessment of the recycled crushed concrete product which has been placed upon the site known as 65-73A Dunheved Circuit, St Marys NSW. The objective of the assessment was to determine whether the material was suitable for Commercial / Industrial land use. CSTS also assessed two areas of stained material to determine whether fluid spills had rendered impacted material unsuitable for Commercial / Industrial land use. This report should be read in conjunction with CSTS report 427 – MAG1930 ENV AA which details the previous TRH and BTEX assessment of two (2) stained areas (presumed to be from fuel spills) and asbestos investigation conducted upon the recycled crushed concrete.

In order to achieve the objective, the following scope of work was undertaken;

- Review of the report detailing the previous investigation (TRH and BTEX on two (2) areas of stained material and asbestos assessment), conducted upon the material under assessment (CSTS report 427 – MAG1930 ENV AA),
- Walkover of the site to determine the material composition and other properties determinable through visual inspection,
- Excavation of thirty (30) test pits,
- Recovery of fifteen (15) samples from the surface of the recycled crushed concrete and fifteen (15) samples from the interface of the recycled crushed concrete and underlying material,
- Recovery of two (2) surface samples from stained areas,
- Transportation of recovered samples to a NATA accredited laboratory for analysis,
- Review of analysis results in comparison to Health-Based Investigation Levels (HILs) for Commercial / Industrial land use as detailed within the *National Environment Protection (Assessment of Site Contamination) Measure 1999 (Amended 2013)*,
- Correlation of data and preparation of this report.

The material previously covered an area of approximately 2Ha, however, at the time of the investigation, material along the western side of the property had been scraped and stockpiled. The material consists of crushed concrete, brick, tile and PVC plastic pipes. Limited evidence of foam, rubber and fabric was observed within the material. No fragments of material suspected of containing Asbestos were observed during the investigation or the previous investigation. The layer varied in thickness, though was on average approximately 50-100mm thick.

In order to adequately assess the contamination status of the material, samples were recovered and submitted for analysis to a NATA Accredited laboratory. Field and laboratory quality assurance and quality control measures were implemented to ensure the reliability of the results.

The previous investigation (detailed in CSTS report 427 – MAG1930 ENV AA) detected no Asbestos fibres within any of the samples recovered during the investigation. TRH F3 and TRH F4 were detected within the samples of the stained material, the concentrations of which were below the HILs for Commercial / Industrial

land use. No concentrations of BTEX, Naphthalene, TRH F1 or TRH F2 were detected within any samples.

The laboratory analysis of this investigation detected concentrations of Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Zinc, PAH, B(a)P TEQ, TRH (F2), TRH (F3), TRH (F4), Toluene, Naphthalene and PCBs. Spikes in concentrations of TRH (F3) and TRH (F4) were detected within the stained material. All detected concentrations of tested analytes were within the HILs for Commercial/Industrial sites.

No concentrations of TRH (F1), Benzene, Ethyl-benzene, Xylene, OCP or OPP were detected within any samples.

Therefore, CSTS concluded the recycled crushed concrete product placed upon the site known as 65-73A Dunheved Circuit, St Marys NSW is of a suitable condition for ongoing Commercial / Industrial land use, from a contamination perspective, in accordance with the *National Environment Protection (Assessment of Site Contamination) Measure 1999 (Amended 2013)*.

Should you have any queries about the methodology, findings or recommendations of this investigation, please do not hesitate to contact our office on (02) 9675 7522.

Table of Contents

List of Tables

Appendices

Abbreviations

ACM	Asbestos Containing Material
AF	Asbestos Fines
BTEX	Benzene, Toluene, Ethyl-benzene, Xylene
CSTS	Compaction & Soil Testing Services Pty Ltd
COAG	Council of Australian Government
DOH	Department of Health
FA	Friable Asbestos
Ha	Hectare
HIL	Health-Based Investigation Levels
IEC	International Electrotechnical Commission
ISO	International Organisation for Standardisation
mg/kg	Milligrams per Kilogram
mm	Millimetre
NATA	National Association of Testing Authorities
NEPC	National Environment Protection Council (Now COAG SCEW)
NEPM 1999	National Environment Protection (Assessment of Site Contamination) Measure 1999 (Amended 2013)
NSW	New South Wales
PTFE	Polytetrafluoroethylene (Teflon)
PVC	Polyvinyl Chloride
QA	Quality Assurance
QC	Quality Control
SCEW	Standing Council on Environment and Water
TP	Test Pit
TRH	Total Recoverable Petroleum Hydrocarbons
TRH (F1)	C_6-C_{10} Carbon Fraction TRH minus BTEX
TRH (F2)	>C_{10}-C_{16} Carbon Fraction TRH minus Naphthalene
TRH (F3)	>C_{16}-C_{34} Carbon Fraction TRH
TRH (F4)	>C_{34}-C_{40} Carbon Fraction TRH
USEPA	United States Environment Protection Authority
WA	Western Australia

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1 Introduction

1.1 Background

Compaction & Soil Testing Services Pty Ltd (CSTS) was engaged by Mark Mulock & Co to conduct an assessment of the recycled crushed concrete product which had been placed upon the site known as 65-73A Dunheved Circuit, St Marys NSW.

CSTS is of the understanding that a civil dispute has arisen regarding the site, and that this report may be used for evidence. We, Celia Moloney and Craig Ridley, have read the Part 31 of Division 2 of the Uniform Civil Rules 2005 and Schedule 7 of the Uniform Civil Procedure Rules 2005. We understand our obligations to the Court and agree to abide by the rules in Part 31 in Schedule 7. We, Celia Moloney and Craig Ridley hereby attach our current CVs in Appendix D with the qualifications and experience as set out therein.

1.2 Objectives

The objective of this assessment was to determine whether the recycled crushed concrete product placed upon the surface was suitable for use on Commercial / Industrial properties. CSTS also assessed two areas of stained material to determine whether suspected fluid spills had rendered the impacted material unsuitable for Commercial / Industrial use.

2 Scope of Works

In order to achieve the objectives of this assessment, the following scope of works was undertaken;

- Review of the report detailing the previous investigation (TRH and BTEX on two (2) areas of stained material and asbestos assessment), conducted upon the material under assessment (CSTS report 427 – MAG1930 ENV AA),
- Walkover of the site to determine the material composition and other properties determinable through visual inspection,
- Excavation of thirty (30) test pits,
- Recovery of fifteen (15) samples from the surface of the recycled crushed concrete and fifteen (15) samples from the interface of the recycled crushed concrete and underlying material,
- Recovery of two (2) surface samples from stained areas,
- Transportation of recovered samples to a NATA accredited laboratory for analysis,
- Review of analysis results in comparison to HILs for Commercial / Industrial land use as detailed within the *National Environment Protection (Assessment of Site Contamination) Measure 1999 (Amended 2013)*,
- Correlation of data and preparation of this report.

3 Site Identification

3.1 Site Description

The site under assessment is known as 65-73A Dunheved Circuit, St Marys NSW. The site is bordered by Dunheved Circuit to the east, vacant industrial land to the south, Links Road to the west and a large industrial factory and associated space to the north. The site is 'battle-axed' and an engineering workshop and the Rembrandt Dutch Club occupy the northeast of the site. Refer to Appendix A.

The area under assessment is within the driveway and open area upon which a recycled crushed concrete product has been placed. The assessment area is considered to cover an area of approximately 2 Ha, to a depth of between 50-100mm. This area is inclusive of the area of assessment which has been scraped and stockpiled (refer to Section 3.2 Material Description). The area CSTS was engaged to assess is detailed within Appendix A.

3.2 Material Description

The material under assessment is the surface covering of the site. Specifically, the assessed material is identified as the imported recycled crushed concrete product used to form an aggregate hardstand. The material appeared to consist of crushed concrete, brick, tile and PVC plastic pipes. Limited evidence of foam, rubber and fabric was observed within the material. No fragments of material suspected of containing Asbestos were observed during this or the previous investigation. Laboratory testing of the material from the previous investigation did not detect any asbestos within the sampled material. The layer of recycled crushed concrete varied in thickness, though was on average approximately 50-100mm thick. Refer to Photographs within Appendix B.

Within the previous investigation two (2) areas of stained material were tested for BTEX and TRH. At the time of this investigation (06 January 2014), the recycled crushed concrete which had been placed along the western side of the property, had been scraped and stockpiled. Refer to Appendix A. One of the stains observed in the previous investigation was located within this scraped area, however, a more recent stain was observed at another location (refer to Appendix A for location). Therefore, ST1 from the previous investigation was re-sampled and an additional sample from the more recent stain was also taken (ST2).

4 Sampling Process

4.1 Sampling Pattern

Samples were collected at two approximate depths a) near the surface of the recycled crushed concrete and b) at the interface of the crushed concrete and the underlying material. This alternated between sampling locations. Samples collected near the surface and samples collected at the interface of the recycled crushed concrete and the underlying material was denoted by the suffix -1 and -2 respectively in their sample IDs.

The sampling pattern closely mimicked the sampling pattern adopted during the investigation conducted on the 04 December 2013. Most samples were collected as close as possible to the sampling locations of the previous investigation. As stated previously, at the time of the investigation, the recycled crushed concrete placed along the western side of the property had been cleared and stockpiled. In this area, 50% of the samples were taken from the stockpile of recycled crushed concrete to represent the surface material, and 50% of the samples were taken from the sampling locations of the previous investigations (to represent the interface of the recycled crushed concrete and the underlying material).Two additional samples were collected from material where staining was observed.

In the previous investigation, and by extension a majority of this investigation, a stratified sampling pattern was adopted in accordance with the *NSW EPA Sampling Design Guidelines 1995*. Based on the size of the site, a 26m grid pattern was adopted, with the sampling locations located within the centre of each grid location.

Where the centre of the grid was inappropriate for sampling, such as when obstructions were present or the point was not within the recycled crushed concrete product, the sample point was moved within the grid to an available, suitable location. This was the case for a number of test pits, as detailed in Table A. Refer to Appendix A.

Table A: Alterations to the Stratified Sampling Pattern

Test Pit	Reason for Relocation	Altered Sampling Location[1]
TP101	Asphalt	3m South
TP102	Asphalt	4m South
TP111	Spatial extent of assessed material	3m South; 2m East
TP119	Obstruction	4m South
TP121	Obstruction	2m West
TP122	Obstruction	2m East
TP124	Obstruction	4m South
TP128	Obstruction	5m North; 3m West
TP129	Obstruction	3m East

1. *As measured from the planned sampling point at the centre of the grid square*

4.2 Sampling Technique

Sampling was undertaken in accordance with AS 4482.1 – 2005 – Guide to the investigation and sampling of sites with potentially contaminated soil – Part 1: Non-volatile and semi-volatile compounds, AS 4482.2 – 1999 – Guide to the sampling and investigation of potentially contaminated soil – Part 2: Volatile substances and current industry guidelines.

At each sampling location, a test pit was excavated using a back-hoe supplied and operated by Antqip Pty Ltd to the depth of the recycled crushed concrete, that is, approximately 50-100mm. A sample was recovered using disposable latex gloves, sometimes with the aid of a trowel, to transfer a portion of the material into a laboratory supplied 250mL glass jar with a Teflon seal lid. The sample was sealed and labelled with a job number and sample ID before being transferred to a chilled container. Once the sample had been recovered, the test pit was re-filled with the excavated material in accordance with Work Health and Safety requirements.

At each stain, a decontaminated stainless steel trowel was used to transfer a portion of the surface material into a laboratory supplied 250mL glass jar with Teflon seal lid. The sample was sealed and labelled with a job number and sample ID before being transferred into a chilled container to begin the cool down process as required prior to chemical analysis of the soil.

When all the samples had been recovered, the chilled container was sealed and transported to SGS Australia Pty Ltd under stringent chain of custody procedures. SGS Australia Pty Ltd is a laboratory accredited by NATA (Accreditation Number

2562) and was chosen to undertake the chemical analysis due to their past experience with this form of analysis. Upon receipt of the samples, a technician from SGS Australia Pty Ltd checked the samples to confirm their condition, including the integrity of the sample jar seals. When satisfied the samples were received in an appropriate condition as required under current Australian Standards, SGS Australia Pty Ltd returned a Sample Receipt. Laboratory Documentation is located within Appendix C.

5 Field Quality Assurance and Quality Control

5.1 Sampling Team

Sampling was conducted by Ms Celia Moloney and Ms Ashleigh Brice, Environmental Consultants from Compaction & Soil Testing Services Pty Ltd on 06 January 2014. Therefore, the samples were deemed to be recovered by suitably qualified and experienced samplers.

5.2 Decontamination Process

To minimise the potential for cross-contamination to occur during the sampling process, a new set of disposable latex gloves was used to recover each sample. When a trowel was used, it was decontaminated prior to recovery of a sample. The decontamination process is as follows;

- Remove soils adhering to the object by scrubbing with a clean, soft bristled brush,
- Thoroughly wash the equipment in a solution of 3% phosphate-free detergent (Decon 90),
- Thoroughly rinse the equipment in either distilled water or portable water, depending on availability,
- Dry the equipment with a clean cloth or terry towel.

5.3 Sample Preservation

To ensure the reliability of the results obtained, the samples were analysed in accordance with the appropriate holding periods detailed within the *NEPM 1999 (Amended 2013)* published by the NEPC. The samples were preserved in accordance with *NEPM 1999 (Amended 2013)* as detailed in Table B.

Table B: Recommended Holding Times & Sample Preservations

Analyte	Holding Time	Container	Preservation
Heavy Metals (excluding Hg)	6 months	Glass	Chilled
Mercury	28 days	Plastic / Glass*	Chilled
PCB	28 days	Glass with PTFE lined lid	Chilled, stored away from light
PAH	14 days	Glass with PTFE lined lid	Chilled, no headspace
TRH	14 days	Glass with PTFE lined lid	Chilled, no headspace
BTEX	14 days	Glass with PTFE lined lid	Chilled, no headspace
Naphthalene	14 days	Glass with PTFE-lined lid	Chilled, no Headspace
OCP/OPP	14 days	Glass with PTFE lined lid	Chilled, no headspace

Adapted from *National Environment Protection (Assessment of Site Contamination) Measure 1999 (Amended 2013)*

5.4 Detailed Site Records

Detailed site records were created during the site assessment. These records consisted of written records and photographs including details of locations, material condition and samples. The samples were transferred to the laboratory in accordance with stringent chain of custody procedures with appropriate documentation (Appendix C).

5.5 Field Quality Control Samples

No field QA/QC samples were recovered or analysed, as this was beyond the scope of works. Field QA/QC relied upon the measures outlined within Sections 5.1-5.4.

5.6 Field QA/QC Evaluation

Due to the compliance with and extent of field Quality Assurance and Quality Control measures, CSTS considers the field procedure was adequate and the results obtained reliable and useable for the expressed purpose.

6 Laboratory Quality Assurance and Quality Control

SGS Australia Pty Ltd is registered by NATA for Chemical Testing and Quality System compliance to ISO/IEC 17025 (Accreditation Number 2562). For this reason they were deemed as suitably qualified to conduct the assessment of these soil samples.

6.1 Quality Control Samples

As a NATA accredited laboratory, SGS Australia Pty Ltd must conform to a variety of quality assurance procedures. Quality control samples included in any analytical run are listed below.

6.1.1 Reagent/Analysis Blank & Method Blank

Sample free reagents carried through the preparation/extraction/digestion procedure and analysed at the beginning of every sample batch analysis. A reagent blank is prepared and analysed with every batch of samples plus with each new batch of solvent prior to use.

6.1.2 Sample Matrix Spike & Matrix Spike Duplicate

Sample replicates spiked with identical concentrations of target analyte(s). The spiking occurs during the sample preparation and prior to the extraction/digestion procedure. They are used to document the precision and bias of a method in a given sample matrix. Where there is not enough sample available to prepare a spiked sample, another known soil/sand or water may be used. A duplicate spiked sample is analysed at least every 20 samples.

6.1.3 Surrogate Spike

Used to determine the extraction efficiency, surrogate spikes are organic compounds which are similar to the target analyte(s) in chemical composition and behaviour in the analytical process, but which are not normally found in environmental samples. Where possible they are surrogate compounds recommended by the USEPA. At least one, but up to three, surrogate compounds are added to all samples requiring analysis for organics prior to extraction.

6.1.4 Control Matrix Spike

To ensure spike recoveries can be determined for every batch of samples a control matrix is spiked with identical concentrations of target analyte(s) and then analysed.

These results allow recoveries to be determined in the event that the matrix spikes are unusable (eg. Matrix spikes performed on heavily contaminated samples). These are analysed at least every 20 samples.

6.1.5 *Internal Standard*

Added to all samples requiring analysis for organics (where relevant) after the extraction process; the compounds serve to give a standard of retention time and response, which is invariant from run-to-run with the instruments. Where possible they are standard compounds recommended by the USEPA.

6.1.6 *Lab Duplicates*

A separate portion of a sample being analysed that is treated the same as the other samples in the batch. One duplicate is processed at least every 10 samples.

6.1.7 *Lab Control Samples*

Prepared from a source independent of the calibration standards, at least one control standard is included in each run to confirm calibration validity. Thereafter they are analysed at least every one in 20 samples plus at the end of each analytical run.

6.1.8 *Continuous Calibration Verification*

A calibration check standard or continuous calibration standard and blank are run after every 20 samples of an instrumental analysis run to assess analytical drift. Calibration standards are checked old versus new with criteria of ±20%.

6.2 Quality Assurance Programs

6.2.1 *Statistical Analysis of Quality Control Data*

Quality control data is plotted on control charts using the APHA procedure with warning and control limits at 2 and 3 standard deviations respectively.

6.2.2 *Certified Reference Materials*

Certified Reference Materials and Standards are analysed for method validation. These materials/standards have certified reference values for various parameters and may also be used for method troubleshooting.

6.2.3 *Proficiency Testing*

Regular proficiency test samples are analysed by our laboratories. SGS Australia Pty Ltd participates in a number of programs. Results and proficiency status are compiled and sent to participating laboratory post data interpretation. Failure to comply with acceptable values may result in further investigation.

6.2.4 *Inter-laboratory & Intra-laboratory Testing*

SGS Australia Pty Ltd has schedules in the Quality Systems to participate in Inter/Intra laboratory testing conducted internally and by other parties.

6.3 Laboratory QA/QC Evaluation

CSTS has checked the QA/QC procedures adopted by the laboratory against the appropriate guidelines. The quality control sample numbers adopted by SGS Australia Pty Ltd are considered to be adequate for the analyses undertaken and conform to the recommendations provided in *NEPM 1999 (Amended 2013)*.

Overall, the quality control elements indicate that the analytical data fall within acceptable levels of accuracy and precision for the analysis of soils and water. The analytical data provided is therefore considered reliable and useable for this assessment.

7 Assessment Criteria

The purpose of the assessment was to determine whether the recycled crushed concrete was fit for Commercial / Industrial use. The material was therefore assessed for a range of potential contaminants and was also compared to the HILs for Commercial/Industrial land-use (Table C).

The material was assessed for the presence and concentration of;

- Heavy Metals (Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Zinc)
- Total PAH and B(a)P TEQ,
- TRH,
- BTEX,
- Total OCP,
- Total OPP, and
- Total PCB.

Table C: Assessment Criteria (mg/kg)

Analyte	Commercial/Industrial Health Investigation Levels[1] (mg/kg)	
Arsenic	3,000	
Cadmium	900	
Chromium	3,600	
Copper	240,000	
Lead	1,500	
Mercury	180	
Nickel	6,000	
Zinc	400,000	
PAH	4,000	
B(a)P TEQ[2]	40	
Benzene	3[2]	430[3]
Toluene	NL[2]	99,000[3]
Ethyl-benzene	NL[2]	27,000[3]
Xylene	NL[2]	81,000[3]
Naphthalene	NL[2]	11,000[3]
TRH F1	250[2]	26,000[3]
TRH F2	NL[2]	20,000[3]
TRH F3	27,000	
TRH F4	38,000	
DDT + DDE + DDD	3,600	
Aldrin + Dieldrin	45	
Chlordane	530	
Endosulfan	2,000	
Endrin	100	
Heptachlor	50	
HCB	80	
Methoxychlor	2,500	
Chlorpyrifos	2,000	
PCB	7	

Adapted from NEPM 1999 (As amended)

1. *Adapted from NEPM 1999 (amended 2013)*
2. *Most Stringent Investigation Level for HILs D Vapour Intrusion (wether sand, silt or clay 0m to <1m),*
3. *Investigation Level for Direct Contact adopted from Friebel & Nadebaum (2011).*

8 Results of Laboratory Analysis

The laboratory analysis was undertaken by experienced technicians from SGS Australia Pty Ltd in accordance with relevant Australian Standards, government guidelines and the conditions of their NATA accreditation.

8.1 Heavy Metals

Within the recovered samples, concentrations of Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc were detected above the PQL (Table D).

Within all samples the levels of heavy metals were all within the HILs for Commercial/Industrial sites, with no great spike in any one sample. Therefore, the presence of the tested heavy metals is not considered to affect the material's suitability for its current land use.

8.2 Volatile Compounds & Hydrocarbons

Almost 50% of samples detected concentrations of PAH, while a minority of samples detected TRH (F2), TRH F(3), TRH F(4), Toluene and Naphthalene. A noticeable spike in concentrations of TRH (F3) and TRH (F4) was detected within the stained material. However, all detected concentrations of the tested volatile compounds and hydrocarbons were within the HILs for Commercial/Industrial sites and are therefore not considered to affect the material's suitability for its current land use.

No concentrations of TRH (F1), Benzene, Ethyl-benzene or Xylene were detected above the PQL within the recovered samples (Table D). Therefore, the site is considered as not impacted by the presence of TRH (F1), Benzene, Ethyl-benzene and Xylene.

8.3 Organic Compounds

Within all of the recovered samples, only one (1) sample detected a concentration of PCBs. The concentration was well below the HILs for Commercial/Industrial sites, and is therefore not considered to affect the material's suitability for its current land use.

No concentrations of OCP or OPP were detected above the PQL (Table D). As such, the site is considered as not affected by the presence of OCP or OPP.

Table D: Laboratory Analysis

Sample	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Total PAH	B(a)P TEQ	TRH (F1)	TRH (F2)	TRH (F3)	TRH (F4)	Benzene	Toluene	Ethyl-benzene	Xylenes	Naphthalene	DDT+DDE+DDD	Aldrin + Dieldrin	Chlordane	Endosulfan	Endrin	Heptachlor	HCB	Methoxychlor	Chlorpyrifos	Total PCB
TP201-2	<PQL	<PQL	12	110	22	0.01	21	76	4.6	0.5	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
TP202-1	<PQL	<PQL	40	27	18	0.02	34	81	19	1.8	<PQL	<PQL	260	130	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
TP203-2	<PQL	<PQL	16	25	15	0.01	18	60	0.9	<PQL	<PQL	<PQL	110	<PQL	<PQL	0.2	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
TP204-1	3	<PQL	14	34	40	0.03	23	90	5.7	0.5	<PQL	<PQL	130	<PQL	<PQL	0.1	<PQL	<PQL	0.2	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
TP205-2	5	<PQL	17	42	48	0.03	39	98	2.8	0.4	<PQL	<PQL	190	210	<PQL	0.1	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
TP206-1	3	<PQL	9.2	25	7	<PQL	6.6	42	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	0.2	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
TP207-2	4	<PQL	14	36	25	0.04	10	86	1.3	<PQL	<PQL	<PQL	92	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
TP208-1	3	<PQL	10	61	20	0.03	7.1	61	3.4	0.4	<PQL	<PQL	110	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
TP209-2	5	<PQL	16	23	25	0.05	11	65	1.4	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
TP210-1	5	<PQL	14	21	28	0.03	9.1	70	1.0	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
TP211-2	7	<PQL	15	26	25	0.06	11	73	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
TP212-1	5	<PQL	13	25	24	0.03	7.4	55	1.5	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
TP213-2	6	<PQL	14	22	21	0.03	11	110	2.8	0.4	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
TP214-1	5	<PQL	16	26	28	0.03	12	76	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
TP215-2	6	<PQL	12	22	23	0.03	9.4	66	2.3	0.3	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
TP216-1	4	<PQL	13	35	27	<PQL	6.7	92	1.4	<PQL	<PQL	<PQL	99	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
TP217-2	4	<PQL	11	24	23	2.3	7.1	64	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
TP218-1	<PQL	<PQL	10	49	9	2.0	11	51	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
TP219-2	5	0.3	21	37	42	3.3	33	100	<PQL	0.3	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
TP220-1	3	<PQL	12	59	27	1.5	19	100	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
TP221-2	5	<PQL	11	100	15	0.02	12	67	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
TP222-1	3	<PQL	12	140	9	0.02	15	55	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	1
TP223-2	4	<PQL	13	140	13	0.01	12	49	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
TP224-1	4	0.3	18	130	19	0.03	41	91	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
TP225-2	5	<PQL	14	120	14	0.02	13	76	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
TP226-1	3	<PQL	15	39	19	0.01	19	82	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
TP227-2	3	<PQL	13	150	12	0.02	16	77	<PQL	<PQL	<PQL	300	1400	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
TP228-1	6	0.3	22	110	26	0.02	9.8	45	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
TP229-2	<PQL	<PQL	12	71	14	0.01	12	78	<PQL	<0.2	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
TP230-1	<PQL	<PQL	15	49	16	0.03	17	65	<PQL	<0.2	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
ST1	<PQL	<PQL	11	22	19	0.01	13	150	<1.6	<0.4	<PQL	<PQL	15000	4000	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
ST2	<PQL	<PQL	11	40	19	<PQL	15	100	<4.0	<1.0	<PQL	410	26000	16000	<PQL	<PQL	<PQL	<PQL	0.1	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
HIL D	3000	900	3600	240000	1500	180	6000	400000	4000	40	250[1]	NL[1]	27000[1]	38000[1]	3[1]	NL[1]	NL[1]	NL[1]	NL[1]	3600	45	530	2000	100	50	80	2500	2000	7
	-	-	-	-	-	-	-	-	-	-	26000[2]	20000[2]	-	-	430[2]	99000[2]	27000[2]	81000[2]	11000[2]	-	-	-	-	-	-	-	-	-	-

Adapted from SGS Australia Pty Ltd, Analytical Report SE123728 (Appendix C) *Notes: NT – Not tested, Bolded & Shaded = exceeds the assessment criterion, NL = No Limit*

1. *Most Stringent Investigation Level for HILs D Vapour Intrusion (wether sand, silt or clay 0m to <1m).*
2. *Investigation Level for Direct Contact.*

9 Conclusions & Recommendations

Based on the conducted assessment, CSTS drew the following conclusions:

- The material under assessment previously covered an area of approximately 2 Ha within the site known as 65-73A Dunheved Circuit, St Marys NSW. At the time of this investigation, some of this material along the western side of the property had been stockpiled.
- Stained material in one area observed in the previous investigation could no longer be located as the material had been pushed into a stockpile. The other area of stained material and a new stain not previously identified was observed and sampled during the investigation.
- The material under investigation consists of imported recycled crushed concrete product consisting of concrete, brick, tile and PVC plastic pipes. Limited evidence of foam, rubber and fabric was observed,
- The material was approximately 50-100mm thick on average,
- No material suspected of containing Asbestos was observed during this or the previous investigation,
- No Asbestos fines were detected within any of the samples within the previous investigation conducted. TRH (F3) and TRH (F4) were detected within the samples of the stained material recovered in the previous investigation, the concentrations of which were below the HILs for Commercial / Industrial land use,
- The laboratory analysis of this investigation detected concentrations of Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Zinc, PAH, B(a)P TEQ, TRH (F2), TRH (F3), TRH (F4), Toluene, Naphthalene and PCBs.
- Spikes in concentrations of TRH (F3) and TRH (F4) were detected within the stained material.
- All detected concentrations of tested analytes were within the HILs for Commercial/Industrial sites.
- No concentrations of TRH (F1), Benzene, Ethyl-benzene, Xylene, OCP or OPP were detected within any samples.

Therefore, CSTS concluded the recycled crushed concrete product placed upon the site known as 65-73A Dunheved Circuit, St Marys NSW is of a suitable condition for ongoing Commercial / Industrial land use, from a contamination perspective, in accordance with the *National Environment Protection (Assessment of Site Contamination) Measure 1999 (Amended 2013)* and the WA DOH *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia; May 2009.*

Should you have any queries about the methodology, findings or recommendations of this investigation, please do not hesitate to contact our office on (02) 9675 7522.

10 Limitations

This classification covers **ONLY** the crushed recycled concrete product placed upon the surface of the property known as 65-73A Dunheved Circuit, St Marys NSW. No other material is covered under this classification.

This report covers the site at the time of sampling. Should there be any variations in site conditions since the above mentioned date such as importation of fill, chemical spillage, illegal dumping, the detection of suspected ACM etc, further assessment will be required. Should any suspect materials be encountered, we recommend that this office be contacted immediately for further assessment. Neither Compaction & Soil Testing Services Pty Ltd nor any other reputable firm can give unqualified warranties on the conditions of the site and subsurface conditions.

While Compaction & Soil Testing Services Pty Ltd takes all reasonable due care and diligence, we offer no absolute warranty for the material between the locations sampled and investigated. In addition, Compaction & Soil Testing Services Pty Ltd does not assume any liability for site conditions unobserved or inaccessible at the time of the investigation.

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If you have any queries about this investigation please do not hesitate to contact our office on (02) 9675 7522.

11 References

National Environment Protection Council, 2013, *National Environment Protection (Assessment of Site Contamination) Measure 1999*

New South Wales Environment Protection Authority, 1995, Sampling Design Guidelines 1995

SGS Australia Pty Ltd, 16 January 2014, *Analytical Report SE123728*, prepared for Compaction & Soil Testing Services Pty Ltd

Standards Australia, 2005, AS 4482.1 – 2005 – Guide to the investigation and sampling of sites with potentially contaminated soil – Part 1: Non-volatile and semi-volatile compounds

Standards Australia, 1999, AS 4482.2 – 1999 – Guide to the sampling and investigation of potentially contaminated soil – Part 2: Volatile substances and current industry guidelines

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Appendix A

Site Location

Sourced: www.nearmap.com under licence to Compaction & Soil Testing Services Pty Ltd 2014, imagery date, 02 September 2013

Compaction and Soil Testing Services Pty Ltd

CSTS

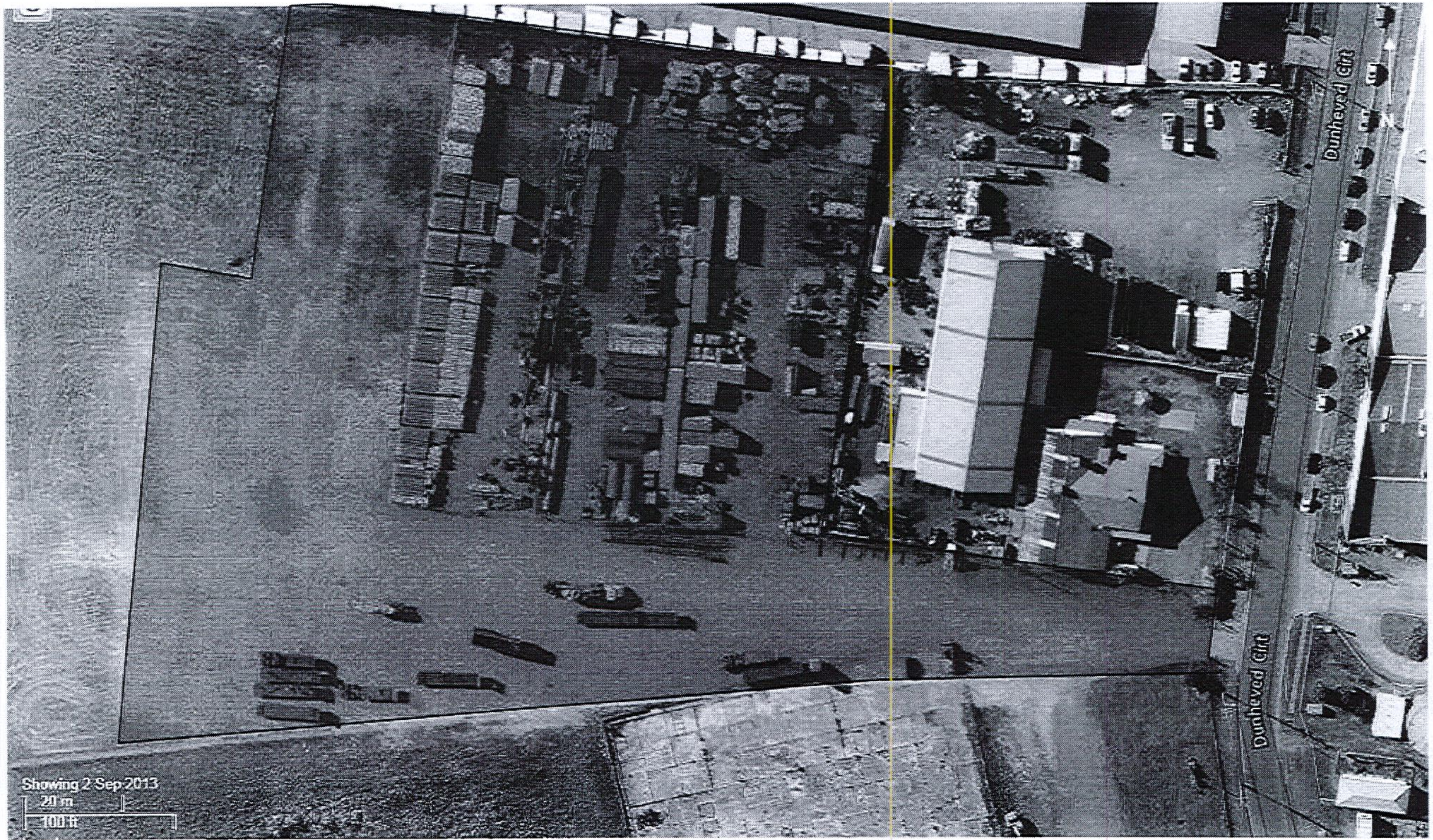
Notes: *This drawing has been produced using a base plan provided by others to which additional information e.g. density test, DCP and Test Pit locations or notes have been added. Some or all the information shown on the plan may not be relevant at the time of producing this drawing.*

Drawn	CM
Approved	CR
Date	14/01/2014
Scale	NTS

Site Location
65-73A Dunheved Circuit
St Marys NSW

Job No.	MAG 1930
Drawing No.	ENV AB001

Form No.WS 014 01/06/2010 Issued No.1.1 Issued By.PC

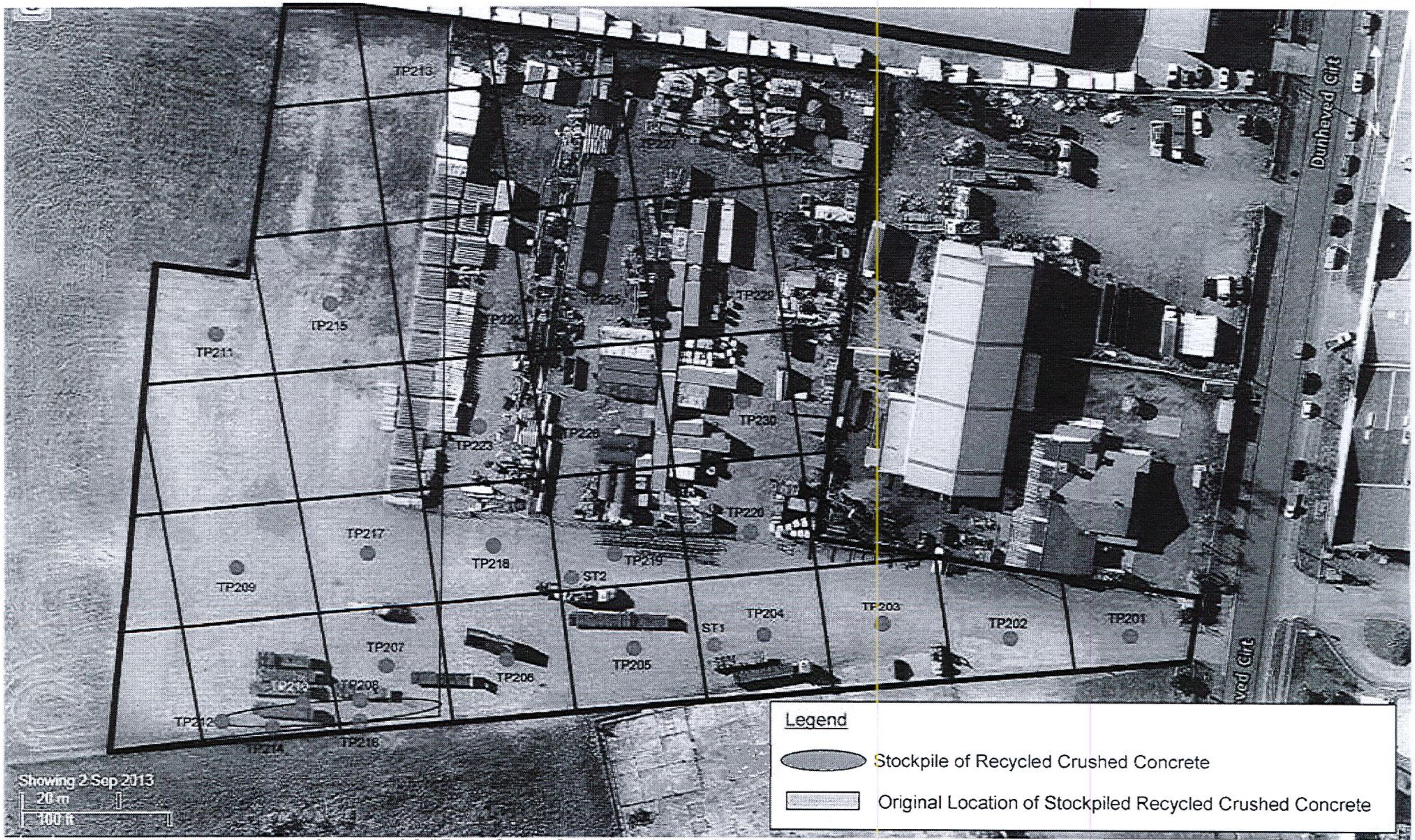


Sourced: www.nearmap.com under licence to Compaction & Soil Testing Services Pty Ltd 2014, imagery date, 02 September 2013

Compaction and Soil Testing Services Pty Ltd

CSTS	**Notes:** *This drawing has been produced using a base plan provided by others to which additional information e.g.: density test, DCP and Test Pit locations or notes have been added. Some or all the information shown on the plan may not be relevant at the time of producing this drawing.*	Drawn:	CM	**Assessment Area** 65-73A Dunheved Circuit St Marys NSW	Job No:	MAG 1930
		Approved:	CR			
		Date:	14/01/2014		Drawing No:	**ENV AB002**
		Scale:	As Shown			

Form No.WS 014 01/06/2010 Issued No.1.1 Issued By:PC



Sourced: www.nearmap.com under licence to Compaction & Soil Testing Services Pty Ltd 2014, imagery date, 02 September 2013

Compaction and Soil Testing Services Pty Ltd

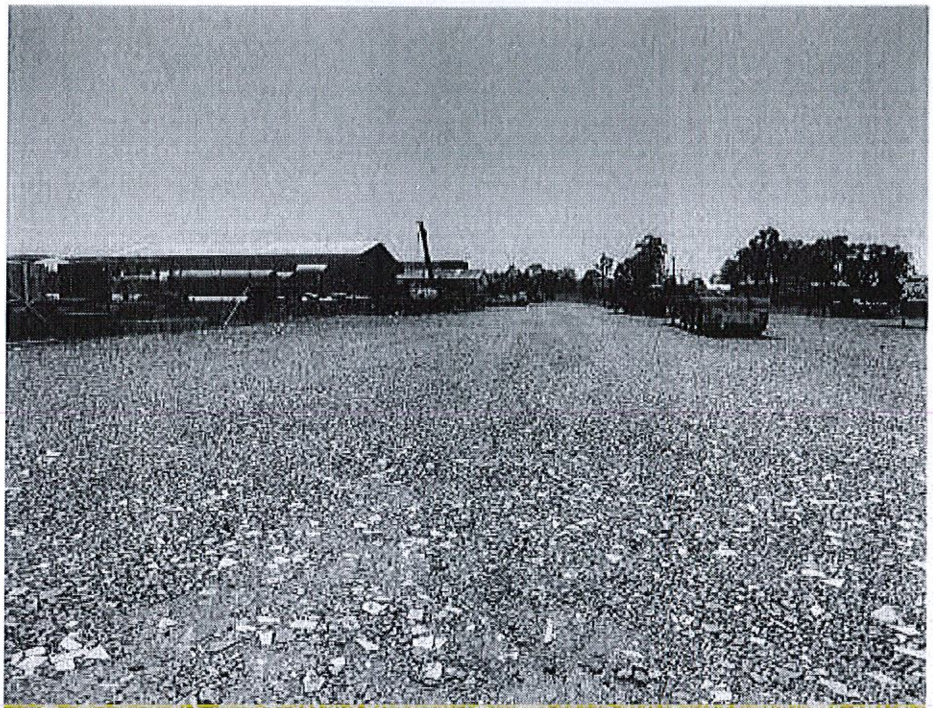
CSTS	**Notes:** *This drawing has been produced using a base plan provided by others to which additional information e.g.: density test, DCP and Test Pit locations or notes have been added. Some or all the information shown on the plan may not be relevant at the time of producing this drawing.*	Drawn: CM Approved: CR Date: 14/01/2014 Scale: As Shown	**Sampling Locations** 65-73A Dunheved Circuit St Marys NSW	Job No: MAG 1930 Drawing No: **ENV AB003**

Form No.WS 014 01/06/2010 Issued No.1.1 Issued By:PC

1/78 Owen Street, GLENDENNING NSW 2761 • ABN 44 106 976 738
Phone: (02) 9675 7522 Fax: (02) 9675 7544
Email: office@comsoiltest.com.au Web: www.comsoiltest.com.au

Appendix B

Site Photographs



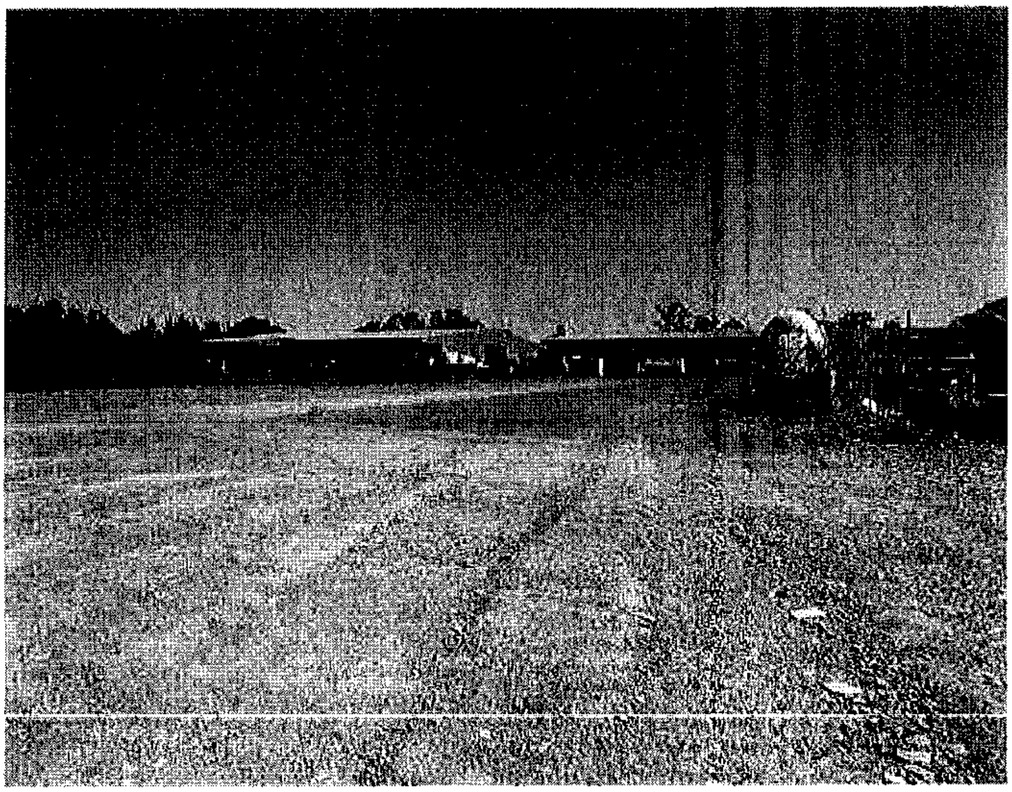
A: Site Condition – taken within south western portion of the site, looking east

B: Recycled Crushed Concrete & Interface of Recycled Crushed Concrete and Underlying Material.

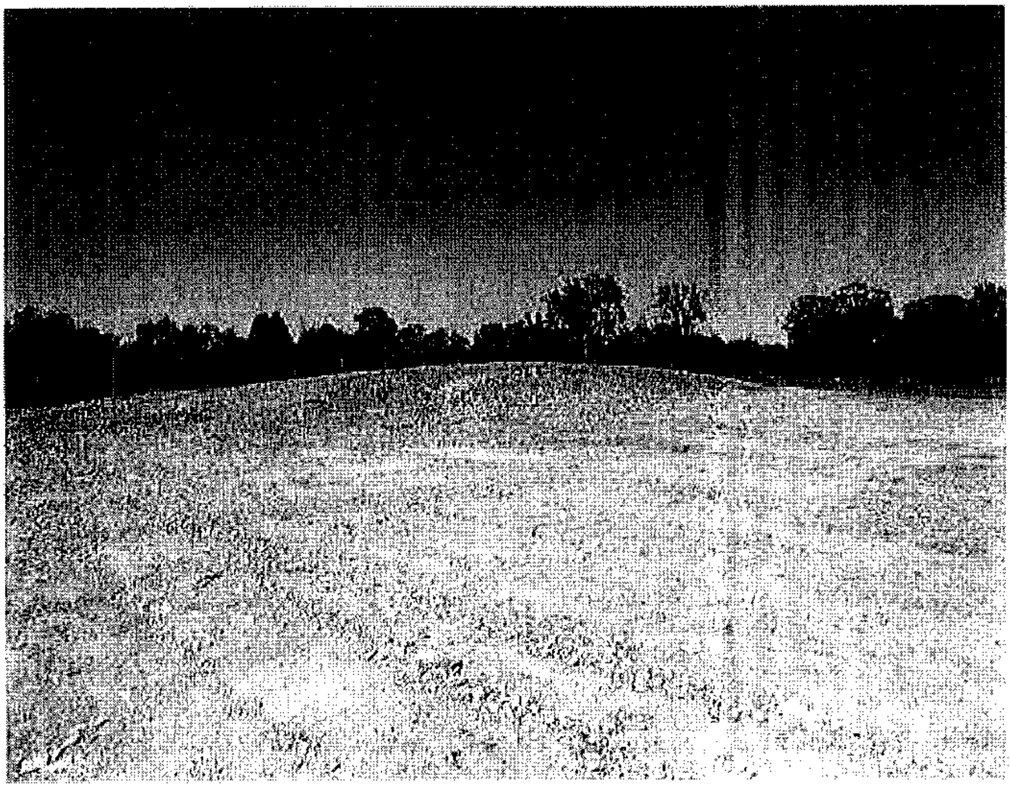
Photographs Taken by CSTS Environmental Consultant 06/01/2014

Compaction and Soil Testing Services Pty Ltd

CSTS	**Notes:** *This drawing has been produced using a base plan provided by others to which additional information e.g.: density test, DCP and Test Pit locations or notes have been added. Some or all the information shown on the plan may not be relevant at the time of producing this drawing.*	Drawn:	CM	**Site Photographs**	Drawing No:	ENV AB004
		Approved:	GR			
		Date:	14/01/2014	65-73A Dunheved Circuit St Marys NSW	Job No:	**MAG 1930**
		Scale:	Not to scale			



C: Landscape Photo of Area Cleared of Recycled Crushed Concrete



D: Stockpile of Recycled Crushed Concrete from Cleared Area

Photographs Taken by CSTS Environmental Consultant 06/01/2014

Compaction and Soil Testing Services Pty Ltd

CSTS	**Notes:** *This drawing has been produced using a base plan provided by others to which additional information e.g.: density test, DCP and Test Pit locations or notes have been added. Some or all the information shown on the plan may not be relevant at the time of producing this drawing.*	Drawn:	AB	**Site Photographs**	Drawing No:	ENV AB005
		Approved:	CR			
		Date:	14/01/2014	65-73A Dunheved Circuit St Marys NSW	Job No	**MAG 1930**
		Scale	Not to scale			


E: Material Condition – Close Up


F: Material Condition – Close Up

Photographs Taken by CSTS Environmental Consultant 06/01/2014

Compaction and Soil Testing Services Pty Ltd

CSTS	**Notes:** *This drawing has been produced using a base plan provided by others to which additional information e.g.: density test, DCP and Test Pit locations or notes have been added. Some or all the information shown on the plan may not be relevent at the time of producing this drawing.*	Drawn:	CM	Site Photographs 65-73A Dunheved Circuit St Marys NSW	Drawing No.	ENV AB006
		Approved:	CR			
		Date:	14/01/2014		Job No:	**MAG 1930**
		Scale:	Not to scale			

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Email: office@comsoiltest.com.au Web: www.comsoiltest.com.au

Appendix C

Laboratory Documentation

SAMPLE RECEIPT ADVICE

SE123728

CLIENT DETAILS		LABORATORY DETAILS	
Contact	Celia Moloney	Manager	Huong Crawford
Client	Compaction and Soil Testing Services Pty Ltd	Laboratory	SGS Alexandria Environmental
Address	Unit 1 / 78 Owen St GLENDENNING NSW 2761	Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	02 9675 7522	Telephone	+61 2 8594 0400
Facsimile	02 9675 7544	Facsimile	+61 2 8594 0499
Email	celia@comsoiltest.com.au	Email	au.environmental.sydney@sgs.com
Project	**MAG1930 - ENVI-27CSRE-v3**	Samples Received	Mon 6/1/2014
Order Number	(Not specified)	Report Due	Tue 14/1/2014
Samples	32	SGS Reference	**SE123728**

SUBMISSION DETAILS

This is to confirm that 32 samples were received on Monday 6/1/2014. Results are expected to be ready by Tuesday 14/1/2014. Please quote SGS reference SE123728 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	32 Soils	Type of documentation received	COC
Date documentation received	6/1/2014	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	4°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes	Number of eskies/boxes received	

Samples will be held for one month for water samples and two months for soil samples from date of report, unless otherwise instructed.

COMMENTS

Samples received at SGS on 6/1/2014@5.10pm. Samples were not registered until the next working day.

SAMPLE RECEIPT ADVICE

SE123728

Compaction and Soil Testing Services Pty Ltd

MAG1930 - ENVI-27CSRE-v3

No	Sample ID	OC Pesticides in Soil	OP Pesticides in So	PAH (Polynuclear Aromatic Hydrocarbons) in	PCBs in Soil	Total Recoverable Metals in Soil by ICPOES from	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	TP201-2	28	13	23	11	7	9	12	8
002	TP202-1	28	13	23	11	7	9	12	8
003	TP203-2	28	13	23	11	7	9	12	8
004	TP204-1	28	13	23	11	7	9	12	8
005	TP205-2	28	13	23	11	7	9	12	8
006	TP206-1	28	13	23	11	7	9	12	8
007	TP207-2	28	13	23	11	7	9	12	8
008	TP208-1	28	13	23	11	7	9	12	8
009	TP209-2	28	13	23	11	7	9	12	8
010	TP210-1	28	13	23	11	7	9	12	8
011	TP211-2	28	13	23	11	7	9	12	8
012	TP212-1	28	13	23	11	7	9	12	8
013	TP213-2	28	13	23	11	7	9	12	8
014	TP214-1	28	13	23	11	7	9	12	8
015	TP215-2	28	13	23	11	7	9	12	8
016	TP216-1	28	13	23	11	7	9	12	8
017	TP217-2	28	13	23	11	7	9	12	8
018	TP218-1	28	13	23	11	7	9	12	8
019	TP219-2	28	13	23	11	7	9	12	8
020	TP220-1	28	13	23	11	7	9	12	8
021	TP221-2	28	13	23	11	7	9	12	8
022	TP222-1	28	13	23	11	7	9	12	8
023	TP223-2	28	13	23	11	7	9	12	8
024	TP224-1	28	13	23	11	7	9	12	8

The above table represents SGS Environmental Services' interpretation of the client supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details.
Testing as per this table shall commence immediately unless the client intervenes with a correction.

SAMPLE RECEIPT ADVICE

SE123728

Compaction and Soil Testing Services Pty Ltd

MAG1930 - ENVI-27CSRE-v3

No	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in	PCBs in Soil	Total Recoverable Metals in Soil by ICPOES from	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
025	TP225-2	28	13	23	11	7	9	12	8
026	TP226-1	28	13	23	11	7	9	12	8
027	TP227-2	28	13	23	11	7	9	12	8
028	TP228-1	28	13	23	11	7	9	12	8
029	TP229-2	28	13	23	11	7	9	12	8
030	TP230-1	28	13	23	11	7	9	12	8
031	ST1	28	13	23	11	7	9	12	8
032	ST2	28	13	23	11	7	9	12	8

The above table represents SGS Environmental Services' interpretation of the client-supplied Chain Of Custody document
The numbers shown in the table indicate the number of results requested in each package
Please indicate as soon as possible should your request differ from these details
Testing as per this table shall commence immediately unless the client intervenes with a correction

SAMPLE RECEIPT ADVICE

SE123728

Compaction and Soil Testing Services Pty Ltd

MAG1930 - ENVI-27CSRE-v3

No.	Sample ID	Mercury in Soil	Moisture Content
001	TP201-2	1	1
002	TP202-1	1	1
003	TP203-2	1	1
004	TP204-1	1	1
005	TP205-2	1	1
006	TP206-1	1	1
007	TP207-2	1	1
008	TP208-1	1	1
009	TP209-2	1	1
010	TP210-1	1	1
011	TP211-2	1	1
012	TP212-1	1	1
013	TP213-2	1	1
014	TP214-1	1	1
015	TP215-2	1	1
016	TP216-1	1	1
017	TP217-2	1	1
018	TP218-1	1	1
019	TP219-2	1	1
020	TP220-1	1	1
021	TP221-2	1	1
022	TP222-1	1	1
023	TP223-2	1	1
024	TP224-1	1	1

The above table represents SGS Environmental Services' interpretation of the client-supplied Chain Of Custody document
The numbers shown in the table indicate the number of results requested in each package
Please indicate as soon as possible should your request differ from these details.
Testing as per this table shall commence immediately unless the client intervenes with a correction.

SAMPLE RECEIPT ADVICE

SE123728

Compaction and Soil Testing Services Pty Ltd

MAG1930 - ENVI-2/CSRE-v3

No	Sample ID	Mercury in Soil	Moisture Content
025	TP225-2	1	1
026	TP226-1	1	1
027	TP227-2	1	1
028	TP228-1	1	1
029	TP228-2	1	1
030	TP230-1	1	1
031	ST1	1	1
032	ST2	1	1

The above table represents SGS Environmental Services' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details.
Testing as per this table shall commence immediately unless the client intervenes with a correction.

SGS

CHAIN OF CUSTODY & ANALYSIS REQUEST

Page 1 of 4

SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Company Name:	Compaction & Soil Testing Services	Project Name/No:	MAG49.5
Address:	1178 Evan Street Glendenning	Purchase Order No:	
		Results Required By:	STD
		Telephone:	0420 813 524
Contact Name:	Celia Moloney & Ashleigh Bace	Facsimile:	
		Email Results:	celia@compsoiltest.com.au, ashleigh@compsoiltest.com.au

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	TPH	BTEX	PAH	OC / OP / PCB	TOTAL PHENOLICS	METALS	Waste Class 1
TP201-2	6/1/2014	1		X									X
TP202-1		2		X									X
TP203-2		3		X									X
TP204-1		4		X									X
TP205-2		5		X									X
TP206-1		6		X									X
TP207-2		7		X									X
TP208-1		8		X									X
TP209-2		9		X									X

SGS
Received 6/1/14
By: [illegible]
Time 5:00 am/pm
Samples intact Yes/No
Ice/Cooler Pack Yes/No
Temperature on Receipt [illegible] °C
Storage Location [illegible]
SGS REF No SE123728

Relinquished By: CSTS	Date/Time: 5:10 6/1/2014	Received By: [illegible]	Date/Time 6/1/14 [illegible]
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: Yes/ No	Temperature: Ambient / Chilled	Sample Cooler Sealed: Yes/No	Laboratory Quotation No: SE123728
	Comments: Waste Classification 1 8 heavy metals, BTEX, PAH, TPH, OCP, OPP & PCB		

Uncontrolled template when printed
1 of 1

Ref. BLANK_COC_PF-(AU)-[ENV]-[ALX]101.doc/ver.2/16.08.2007/Page

Document Set ID: 8591280
Version: 1, Version Date: 26/02/2019

SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

CHAIN OF COUSTODY & ANALYSIS REQUEST

Company Name:		Project Name/No:	
Address:		Purchase Order No:	
		Results Required By:	
		Telephone:	
Contact Name:		Facsimile:	
		Email Results:	

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	TPH	BTEX	PAH	OC / OP / PCB	TOTAL PHENOLICS	METALS	Waste Class
[illegible]	6/11/2014	10		X									X
[illegible]		11		X									X
[illegible]		12		X									X
[illegible]		13		X									X
[illegible]		14		X									X
[illegible]		15		X									X
[illegible]		16		X									X
[illegible]		17		X									X
[illegible]		18		X									X

Relinquished By:	Date/Time: 3:10 6/11/2014	Received By:	Date/Time
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: Yes/ No	Temperature: Ambient / Chilled	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No: SE12[illegible]
	Comments:		

SGS

CHAIN OF CUSTODY & ANALYSIS REQUEST

SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Company Name:
Address:

Contact Name:

Project Name/No:
Purchase Order No:
Results Required By:
Telephone:
Facsimile:
Email Results:

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	TPH	BTEX	PAH	OC / OP / PCB	TOTAL PHENOLICS	METALS	Waste (ASS)									
TP219-2	6/11/2014	19		X									X									
TP220-1		20		X									X									
TP221-2		21		X									X									
TP222-1		22		X									X									
TP223-2		23		X									X									
TP224-1		24		X									X									
TP225-2		25		X									X									
TP226-1		26		X									X									
TP227-2		27		X									X									

Relinquished By:	Date/Time: 5:10 6/11/2014	Received By:	Date/Time 6/11/14 5:10
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: Yes/ No	Temperature: Ambient / Chilled	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No: SE123728
	Comments:		

CHAIN OF CUSTODY & ANALYSIS REQUEST

Page [illegible] of [illegible]

SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Company Name: [illegible]
Address: [illegible]

Contact Name: [illegible]

Project Name/No: [illegible]
Purchase Order No:
Results Required By: [illegible]
Telephone: [illegible]
Facsimile:
Email Results: [illegible]

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	TPH	BTEX	PAH	OC / OP / PCB	TOTAL PHENOLICS	METALS	[illegible]
[illegible]	6/1/2014	28		X									X
[illegible]		29		X									X
[illegible]		30		✓									X
[illegible]		31		[illegible]									X
[illegible]		32		[illegible]									X

Relinquished By:	Date/Time: [illegible] 6/1/2014	Received By:	Date/Time
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: Yes/ No	Temperature: Ambient / Chilled	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No: [illegible]
	Comments:		SE[illegible]

AU.SampleReceipt.Sydney (Sydney)

From:	Celia Moloney [Celia@comsoiltest.com.au]
Sent:	Tuesday, 7 January 2014 9:57 AM
To:	AU.SampleReceipt.Sydney (Sydney)
Subject:	COC
Attachments:	2013-06-01 COC Compaction and Soil Testing Services.pdf

Hello,

As I only put the Quote number on page 4 of the COC I dropped off yesterday, I just want to clarify that the Laboratory Quotation Number for this COC (attached) is ENVI-27CSRE-v3

(Thanks for your help)

Celia Moloney
Environmental Consultant
Compaction & Soil Testing Services Pty Ltd
1/78 Owen Street, Glendenning, NSW
Ph: (02) 9675 7522
Fax: (02) 9675 7544
Email: celia@comsoiltest.com.au

SGS

AUSTRALIA – ENVIRONMENTAL SERVICES SYDNEY – PROFORMA FORM
SAMPLE INFORMATION

Approved: D. Liang

JOB No. SE183728

Sample No.	P 100ml UP	P 250ml UP	P 500ml UP	P 1L UP	G 100 Amber UP	G 200 Amber UP	G 500 Amber UP	G 1L Amber UP	G 40ml vial Up	G 40ml Vial HCl	P 100ml HCl	G 40ml Vial H2SO4	P 100ml H2SO4	P 250ml H2SO4	G 500ml Amber H2SO4	G 1L H2SO4	P 100/250ml HN03 Total	P 100ml HN03 Filtered	P 250ml NaOH	P 250ml Zn Acetate	Plastic Bag	G 250ml Soil Jar			Sample Matrix	Lab Bottles Supplied By	Comments
1-32																						1			Soil	SGS	Pull

ANALYTICAL REPORT

NATA

WORLD RECOGNISED ACCREDITATION

	Celia Moloney	Manager	Huong Crawford
	Compaction and Soil Testing Services Pty Ltd	Laboratory	SGS Alexandria Environmental
Address	Unit 1 / 78 Owen St GLENDENNING NSW 2761	Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	02 9675 7522	Telephone	+61 2 8594 0400
Facsimile	02 9675 7544	Facsimile	+61 2 8594 0499
Email	celia@comsoiltest.com.au	Email	au.environmental.sydney@sgs.com
Project	**MAG1930 - ENVI-27CSRE-v3**	SGS Reference	**SE123728 R0**
Order Number	(Not specified)	Report Number	0000073440
Samples	32	Date Reported	16 Jan 2014
		Date Received	06 Jan 2014

Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(4354).

PAH - The Limit of Reporting (LOR) has been raised due to interferences from the sample matrix.
TRH - Sample # 32 results based on dilution of sample

Andy Sutton
Senior Organic Chemist

Dong Liang
Metals/Inorganics Team Leader

Ly Kim Ha
Organic Section Head

ANALYTICAL REPORT

SE123728 R0

		Sample Number	SE123728.001	SE123728.002	SE123728.003	SE123728.004
		Sample Matrix	Soil	Soil	Soil	Soil
		Sample Date	06 Jan 2014	08 Jan 2014	06 Jan 2014	06 Jan 2014
		Sample Name	TP201-2	TP202-1	TP203-2	TP204-1
	Units	LOR				
VOC's in Soil Method: AN433/AN434						
Monocyclic Aromatic Hydrocarbons						
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	0.2	0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Polycyclic VOCs						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	0.2
Surrogates						
Dibromofluoromethane (Surrogate)	%		81	94	89	87
d4-1,2-dichloroethane (Surrogate)	%		70	92	91	82
d8-toluene (Surrogate)	%	-	97	89	103	104
Bromofluorobenzene (Surrogate)	%	-	103	99	109	101
Totals						
Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6
Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410						
TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C9	mg/kg	20	<20	<20	<20	<20
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	81	94	89	87
d4-1,2-dichloroethane (Surrogate)	%		70	92	91	82
d8-toluene (Surrogate)	%	-	97	89	103	104
Bromofluorobenzene (Surrogate)	%		103	99	109	101

Parameter	Units	LOR	[illegible]	[illegible]	[illegible]	[illegible]
Sample Number			[illegible]	[illegible]	[illegible]	[illegible]
Sample Matrix			Soil	Soil	Soil	Soil
Sample Date			[illegible]	[illegible]	[illegible]	[illegible]
Sample Name			[illegible]	[illegible]	[illegible]	[illegible]

Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410 (continued)

[illegible]

Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403

TRH C10-C14	mg/kg	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	130	48	59
TRH C29-C36	mg/kg	45	<45	220	100	110
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	<110	350	150	170
TRH C10-C40 Total	mg/kg	910	<210	350	<210	<210

[illegible]

TRH >C10-C16 (F2)	mg/kg	25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	260	110	130
TRH >C34-C40 (F4)	mg/kg	120	<120	130	<120	<120

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420

Naphthalene	mg/kg	0.1	<0.1	0.1	<0.1	1.3
2-methylnaphthalene	mg/kg	0.1	<0.1	0.1	<0.1	0.2
1-methylnaphthalene	mg/kg	0.1	<0.1	0.2	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	0.7	<0.1	0.1
Acenaphthene	mg/kg	0.1	<0.1	0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	0.4	<0.1	<0.1
Phenanthrene	mg/kg	0.1	0.5	2.9	<0.1	0.4
Anthracene	mg/kg	0.1	0.1	0.7	<0.1	0.1
Fluoranthene	mg/kg	0.1	0.8	3.3	0.2	0.8
Pyrene	mg/kg	0.1	0.8	2.6	0.2	0.7
Benzo(a)anthracene	mg/kg	0.1	0.6	1.5	0.1	0.5
Chrysene	mg/kg	0.1	0.4	1.6	0.1	0.3
Benzo(b&j)fluoranthene	mg/kg	0.1	0.5	1.7	0.2	0.5
Benzo(k)fluoranthene	mg/kg	0.1	0.2	0.7	<0.1	0.2
Benzo(a)pyrene	mg/kg	0.1	0.4	1.3	0.1	0.3
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.3	0.7	<0.1	0.2
Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	0.2	0.5	<0.1	0.2
Total PAH	mg/kg	0.8	4.0	19	0.8	5.7
Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.2	0.5	1.8	<0.2	0.5

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Parameter	Units	LOR	[illegible]	[illegible]	[illegible]	[illegible]
Sample Number			[illegible]	[illegible]	[illegible]	[illegible]
Sample Matrix			Soil	Soil	Soil	Soil
Sample Date			06 Jan 2014	06 Jan 2014	06 Jan 2014	06 Jan 2014
Sample Name			TP201/3	TP202/1	TP203	TP204/1

PAH (Polynuclear Aromatic Hydrocarbons) in Soil   Method: AN420 (continued)

Surrogates

d5-nitrobenzene (Surrogate)	%	-	98	88	100	100
2-fluorobiphenyl (Surrogate)	%	-	94	90	94	94
d14-p-terphenyl (Surrogate)	%	-	88	90	96	90

OC Pesticides in Soil   Method: AN400/AN420

Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1

		Sample Number	[illegible]	[illegible]	[illegible]	[illegible]
		Sample Matrix	Soil	Soil	Soil	Soil
		Sample Date	[illegible]	[illegible]	[illegible]	[illegible]
		Sample Name	[illegible]	[illegible]	[illegible]	[illegible]
Parameter	Units	LOR				

OC Pesticides in Soil Method: AN400/AN420 (continued)

Parameter	Units	LOR				
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	123	110	123	124

OP Pesticides in Soil Method: AN400/AN420

Parameter	Units	LOR				
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2

Surrogates

Parameter	Units	LOR				
2-fluorobiphenyl (Surrogate)	%		94	[illegible]	94	84
d14-p-terphenyl (Surrogate)	%		80	[illegible]	98	90

PCBs in Soil Method: AN400/AN420

Parameter	Units	LOR				
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1

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Parameter	Units	LOR	[illegible]	[illegible]	[illegible]	[illegible]

PCBs in Soil   Method: AN400/AN420 (continued)

Parameter	Units	LOR				
Tetrachloro-m-xylene (TCMX) (Surrogate)	%		123	110	123	174

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest   Method: AN040/AN320

Parameter	Units	LOR				
Arsenic, As	mg/kg	3	<3	<3	<3	3
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	12	40	16	14
Copper, Cu	mg/kg	0.5	110	27	25	34
Lead, Pb	mg/kg	1	22	18	16	40
Nickel, Ni	mg/kg	0.5	21	34	18	23
Zinc, Zn	mg/kg	0.5	78	81	60	90

Mercury in Soil   Method: AN312

Parameter	Units	LOR				
Mercury	mg/kg	0.01	0.01	0.02	0.01	0.03

Moisture Content   Method: AN002

Parameter	Units	LOR				
% Moisture	%	0.5	1.8	2.8	3.8	1.1

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		Sample Number	[illegible]	[illegible]	[illegible]	[illegible]
		Sample Matrix	Soil	Soil	Soil	Soil
		Sample Date	[illegible] 2014	06 Jun 2014	[illegible] 2014	[illegible]
		Sample Name	[illegible]	[illegible]	[illegible]	[illegible]
Parameter	Units	LOR				

VOC's in Soil Method: AN433/AN434

Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	0.1	0.2	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dibromofluoromethane (Surrogate)	%	-	95	86	91	85
d4-1,2-dichloroethane (Surrogate)	%	-	90	81	85	79
d8-toluene (Surrogate)	%	-	94	97	100	89
Bromofluorobenzene (Surrogate)	%	-	96	101	105	92
Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410

TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C9	mg/kg	20	<20	<20	<20	<20
Dibromofluoromethane (Surrogate)	%		95	86	91	85
d4-1,2-dichloroethane (Surrogate)	%		90	81	85	79
d8-toluene (Surrogate)	%		94	97	100	89
Bromofluorobenzene (Surrogate)	%		96	101	105	92

			[illegible]	[illegible]	[illegible]	[illegible]

Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410 (continued)

Surrogates

Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403

TRH C10-C14	mg/kg	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	74	<45	46	53
TRH C29-C36	mg/kg	45	220	<45	61	90
TRH C37-C40	mg/kg	100	110	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	290	<110	<110	140
TRH C10-C40 Total	mg/kg	210	400	<210	<210	<210

TRH F Bands

TRH >C10-C16 (F2)	mg/kg	25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	190	<90	92	110
TRH >C34-C40 (F4)	mg/kg	120	210	<120	<120	<120

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420

Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	0.2	<0.1	0.5	0.3
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	0.6	<0.1	0.3	0.7
Pyrene	mg/kg	0.1	0.6	<0.1	0.3	0.8
Benzo(a)anthracene	mg/kg	0.1	0.3	<0.1	0.2	0.4
Chrysene	mg/kg	0.1	0.3	<0.1	0.1	0.3
Benzo(b&j)fluoranthene	mg/kg	0.1	0.4	<0.1	0.2	0.4
Benzo(k)fluoranthene	mg/kg	0.1	0.2	<0.1	<0.1	0.2
Benzo(a)pyrene	mg/kg	0.1	0.3	<0.1	0.1	0.3
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.2	<0.1	<0.1	0.2
Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	0.1	<0.1	<0.1	0.1
Total PAH	mg/kg	0.8	2.8	<0.8	1.3	3.4
Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.2	0.4	<0.2	<0.2	0.4

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PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 (continued)

d5-nitrobenzene (Surrogate)	%		95	98	98	98
2-fluorobiphenyl (Surrogate)	%		92	90	92	92
d14-p-terphenyl (Surrogate)	%	-	94	90	90	92

OC Pesticides in Soil Method: AN400/AN420

Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1

OC Pesticides in Soil Method: AN400/AN420 (continued)

Tetrachloro-m-xylene (TCMX) (Surrogate)	%		116	114	113	117

OP Pesticides in Soil Method: AN400/AN420

Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
2-fluorobiphenyl (Surrogate)	%		82	90	92	92
d14-p-terphenyl (Surrogate)	%		84	90	86	92

PCBs in Soil Method: AN400/AN420

Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1

PCBs in Soil Method: AN400/AN420 (continued)

Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	118	114	113	117

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: AN040/AN320

Arsenic, As	mg/kg	3	5	3	4	3
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	17	9.2	14	10
Copper, Cu	mg/kg	0.5	42	25	36	81
Lead, Pb	mg/kg	1	48	7	25	20
Nickel, Ni	mg/kg	0.5	39	6.6	10	7.1
Zinc, Zn	mg/kg	0.5	98	42	86	61

Mercury in Soil Method: AN312

Mercury	mg/kg	0.01	0.03	<0.01	0.04	0.03

Moisture Content Method: AN002

% Moisture	%	0.5	4.1	2.0	2.8	5.0

VOC's in Soil Method: AN433/AN434

Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dibromofluoromethane (Surrogate)	%	-	88	85	83	111
d4-1,2-dichloroethane (Surrogate)	%	-	81	79	83	111
d8-toluene (Surrogate)	%	-	85	79	77	98
Bromofluorobenzene (Surrogate)	%	-	87	77	83	103
Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410

TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C9	mg/kg	20	<20	<20	<20	<20
Dibromofluoromethane (Surrogate)	%	-	88	85	83	111
d4-1,2-dichloroethane (Surrogate)	%	-	81	79	83	111
d8-toluene (Surrogate)	%	-	85	79	77	98
Bromofluorobenzene (Surrogate)	%	-	87	77	83	103

Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410 (continued)

Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403

TRH C10-C14	mg/kg	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	45	<45	<45	<45
TRH C29-C36	mg/kg	45	60	<45	46	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110
TRH C10-C40 Total	mg/kg	210	<210	<210	<210	<210
TRH >C10-C16 (F2)	mg/kg	25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420

Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	0.3	<0.1	<0.1	0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	0.3	0.2	<0.1	0.3
Pyrene	mg/kg	0.1	0.3	0.2	<0.1	0.3
Benzo(a)anthracene	mg/kg	0.1	0.2	0.1	<0.1	0.2
Chrysene	mg/kg	0.1	0.1	0.1	<0.1	0.2
Benzo(b&j)fluoranthene	mg/kg	0.1	0.2	0.2	<0.1	0.2
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	0.1
Benzo(a)pyrene	mg/kg	0.1	0.1	0.1	<0.1	0.2
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Total PAHs	mg/kg	0.8	1.4	1.0	<0.8	1.6
Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.2	<0.2	<0.2	<0.2	<0.2

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 (continued)

d5-nitrobenzene (Surrogate)	%		94	88	94	92
2-fluorobiphenyl (Surrogate)	%		90	92	90	92
d14-p-terphenyl (Surrogate)	%		88	94	94	92

OC Pesticides in Soil Method: AN400/AN420

Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1

OC Pesticides in Soil – Method: AN400/AN420 (continued)						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%		117	113	113	113
OP Pesticides in Soil – Method: AN400/AN420						
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Surrogates						
2-fluorobiphenyl (Surrogate)	%		90	92	90	92
d14-p-terphenyl (Surrogate)	%		90	94	94	92
PCBs in Soil – Method: AN400/AN420						
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1

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PCBs in Soil Method: AN400/AN420 (continued)

Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	117	113	113	113

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: AN040/AN320

Arsenic, As	mg/kg	3	5	6	7	5
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	16	14	15	13
Copper, Cu	mg/kg	0.5	23	21	26	26
Lead, Pb	mg/kg	1	25	28	25	24
Nickel, Ni	mg/kg	0.5	11	9.1	11	7.4
Zinc, Zn	mg/kg	0.5	66	70	73	55

Mercury in Soil Method: AN312

Mercury	mg/kg	0.01	0.05	0.05	0.06	0.03

Moisture Content Method: AN002

% Moisture	%	0.5	4.2	11	12	7.5

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

VOC's in Soil Method: AN433/AN434

Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dibromofluoromethane (Surrogate)	%	-	94	93	106	92
d4-1,2-dichloroethane (Surrogate)	%	-	97	96	104	97
d8-toluene (Surrogate)	%	-	88	83	87	78
Bromofluorobenzene (Surrogate)	%	-	92	81	88	75
Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410

TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C9	mg/kg	20	<20	<20	<20	<20
Dibromofluoromethane (Surrogate)	%	-	94	93	105	92
d4-1,2-dichloroethane (Surrogate)	%	-	97	96	104	97
d8-toluene (Surrogate)	%	-	88	83	87	78
Bromofluorobenzene (Surrogate)	%	-	92	81	88	75

			[illegible]	[illegible]	[illegible]	[illegible]
Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410 (continued)						
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403						
TRH C10-C14	mg/kg	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	61
TRH C29-C36	mg/kg	45	<45	<45	<45	[illegible]
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	120
TRH C10-C40 Total	mg/kg	210	<210	<210	<210	<210
TRH >C10-C16 (F2)	mg/kg	25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	[illegible]
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	0.2	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	0.3	0.2
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	0.2	0.2	0.4	0.3
Pyrene	mg/kg	0.1	0.6	0.2	0.4	0.3
Benzo(a)anthracene	mg/kg	0.1	0.3	0.1	0.2	0.2
Chrysene	mg/kg	0.1	0.6	0.1	0.2	0.2
Benzo(b&j)fluoranthene	mg/kg	0.1	0.4	0.1	0.3	0.2
Benzo(k)fluoranthene	mg/kg	0.1	0.1	<0.1	0.2	<0.1
Benzo(a)pyrene	mg/kg	0.1	0.3	<0.1	0.2	0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.2	<0.1	0.1	<0.1
Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	0.1	<0.1	<0.1	<0.1
Total PAH	mg/kg	0.8	2.9	<0.8	2.3	1.4
Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.2	0.4	<0.2	0.3	<0.2

	Units	LOR				
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 (continued)						
d5-nitrobenzene (Surrogate)	%		80	82	92	87
2-fluorobiphenyl (Surrogate)	%		94	92	90	90
d14-p-terphenyl (Surrogate)	%		80	97	96	90
OC Pesticides in Soil Method: AN400/AN420						
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1

OC Pesticides in Soil Method: AN400/AN420 (continued)

Tetrachloro-m-xylene (TCMX) (Surrogate)	%		112	117	117	110

OP Pesticides in Soil Method: AN400/AN420

Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
[illegible]	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
[illegible]	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2

2-fluorobiphenyl (Surrogate)	%		84	92	90	90
d14-p-terphenyl (Surrogate)	%		90	92	98	90

PCBs in Soil Method: AN400/AN420

Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1

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PCBs in Soil Method: AN400/AN420 (continued)

Tetrachloro-m-xylene (TCMX) (Surrogate)	%		112	117	117	110

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: AN040/AN320

Arsenic, As	mg/kg	3	6	5	6	4
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	14	18	12	13
Copper, Cu	mg/kg	0.5	22	26	22	36
Lead, Pb	mg/kg	1	21	28	23	27
Nickel, Ni	mg/kg	0.5	11	12	9.4	6.7
Zinc, Zn	mg/kg	0.5	110	76	66	92

Mercury in Soil Method: AN312

Mercury	mg/kg	0.01	0.05	0.05	0.03	<0.01

Moisture Content Method: AN002

% Moisture	%	0.5	6.5	9.2	5.1	6.7

VOC's in Soil Method: AN433/AN434

[illegible]						
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
[illegible]						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
[illegible]						
Dibromofluoromethane (Surrogate)	%		100	116	77	70
d4-1,2-dichloroethane (Surrogate)	%	-	103	116	81	76
d8-toluene (Surrogate)	%	-	84	98	96	98
Bromofluorobenzene (Surrogate)	%		88	89	84	80
[illegible]						
Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410

TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C9	mg/kg	20	<20	<20	<20	<20
[illegible]						
Dibromofluoromethane (Surrogate)	%	-	100	118	77	70
d4-1,2-dichloroethane (Surrogate)	%	-	103	119	81	76
d8-toluene (Surrogate)	%	-	84	98	98	98
Bromofluorobenzene (Surrogate)	%	-	88	89	84	80

Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410 (continued)

Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403

TRH C10-C14	mg/kg	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110
TRH C10-C40 Total	mg/kg	210	<210	<210	<210	<210
TRH >C10-C16 (F2)	mg/kg	25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420

Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	0.2	0.2
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	0.1	0.1	0.4	0.3
Pyrene	mg/kg	0.1	0.1	0.1	0.5	0.3
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	0.3	0.2
Chrysene	mg/kg	0.1	<0.1	<0.1	0.3	0.2
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	0.3	0.2
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	0.1	0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	0.2	0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	0.1	<0.1
Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	0.1	<0.1
Total PAH	mg/kg	0.8	<0.8	<0.8	2.0	1.7
Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.2	<0.2	<0.2	0.3	<0.2

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PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 (continued)

d5-nitrobenzene (Surrogate)	%		94	92	104	102
2-fluorobiphenyl (Surrogate)	%		92	92	98	92
d14-p-terphenyl (Surrogate)	%		92	96	92	98

OC Pesticides in Soil Method: AN400/AN420

Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1

OC Pesticides in Soil Method: AN400/AN420 (continued)

Tetrachloro-m-xylene (TCMX) (Surrogate)	%		106	111	95	86

OP Pesticides in Soil Method: AN400/AN420

Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2

2-fluorobiphenyl (Surrogate)	%		92	92	88	92
d14-p-terphenyl (Surrogate)	%		92	96	97	90

PCBs in Soil Method: AN400/AN420

Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1

PCBs in Soil Method: AN400/AN420 (continued)

Tetrachloro-m-xylene (TCMX) (Surrogate)	%		105	113	65	96

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: AN040/AN320

Arsenic, As	mg/kg	3	4	<3	6	3
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	0.3	<0.3
Chromium, Cr	mg/kg	0.3	11	10	21	12
Copper, Cu	mg/kg	0.5	24	49	37	69
Lead, Pb	mg/kg	1	23	9	42	27
Nickel, Ni	mg/kg	0.5	7.1	11	33	19
Zinc, Zn	mg/kg	0.5	64	61	100	100

Mercury in Soil Method: AN312

Mercury	mg/kg	0.01	0.03	0.01	0.03	<0.01

Moisture Content Method: AN002

% Moisture	%	0.5	23	2.0	3.3	1.6

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VOC's in Soil Method: AN433/AN434

Parameter	Units	LOR	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]						
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
[illegible]						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
[illegible]						
Dibromofluoromethane (Surrogate)	%		107	108	113	72
d4-1,2-dichloroethane (Surrogate)	%	-	98	112	117	76
d8-toluene (Surrogate)	%	-	90	89	87	98
Bromofluorobenzene (Surrogate)	%		83	86	89	83
[illegible]						
Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410

Parameter	Units	LOR	[illegible]	[illegible]	[illegible]	[illegible]
TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C9	mg/kg	20	<20	<20	<20	<20
[illegible]						
Dibromofluoromethane (Surrogate)	%		107	108	113	72
d4-1,2-dichloroethane (Surrogate)	%	-	98	112	117	76
d8-toluene (Surrogate)	%		90	89	87	98
Bromofluorobenzene (Surrogate)	%	-	83	86	89	83

[illegible]			[illegible]	[illegible]	[illegible]	[illegible]

Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410 (continued)

F Bands

Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403

TRH C10-C14	mg/kg	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110
TRH C10-C40 Total	mg/kg	210	<210	<210	<210	<210

TRH F Bands

TRH >C10-C16 (F2)	mg/kg	25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420

Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	0.2
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Total PAH	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8
Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.2	<0.2	<0.2	<0.2	<0.2

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 (continued)

d5-nitrobenzene (Surrogate)	%		86	[illegible]	92	94
2-fluorobiphenyl (Surrogate)	%		90	92	[illegible]	92
d14-p-terphenyl (Surrogate)	%		92	92	92	94

OC Pesticides in Soil Method: AN420/AN420

Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1

OC Pesticides in Soil Method: AN400/AN420 (continued)

Surrogates

Tetrachloro-m-xylene (TCMX) (Surrogate)	%		117	85	113	126

OP Pesticides in Soil Method: AN400/AN420

Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Azinphos methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2

Surrogates

2-fluorobiphenyl (Surrogate)	%		90	82	80	92
d14-p-terphenyl (Surrogate)	%		92	82	92	94

PCBs in Soil Method: AN400/AN420

Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	1.3	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	1	<1	<1

PCBs in Soil Method: AN400/AN420 (continued)

Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	117	95	113	129

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: AN040/AN320

Arsenic, As	mg/kg	3	6	3	4	4
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	0.3
Chromium, Cr	mg/kg	0.3	11	12	13	18
Copper, Cu	mg/kg	0.5	100	180	140	130
Lead, Pb	mg/kg	1	16	9	13	19
Nickel, Ni	mg/kg	0.5	12	16	12	41
Zinc, Zn	mg/kg	0.5	67	66	49	91

Mercury in Soil Method: AN312

Mercury	mg/kg	0.01	0.02	0.02	0.01	0.03

Moisture Content Method: AN002

% Moisture	%	0.5	10	7.9	8.6	5.8

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VOC's in Soil Method: AN433/AN434

Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
m/p xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dibromofluoromethane (Surrogate)	%		73	77	100	73
d4-1,2-dichloroethane (Surrogate)	%	-	78	83	85	77
d8-toluene (Surrogate)	%		85	105	98	101
Bromofluorobenzene (Surrogate)	%		70	89	97	93
Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410

TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C9	mg/kg	20	<20	<20	<20	<20
Dibromofluoromethane (Surrogate)	%		73	77	100	73
d4-1,2-dichloroethane (Surrogate)	%	-	78	83	85	77
d8-toluene (Surrogate)	%	-	85	105	98	101
Bromofluorobenzene (Surrogate)	%		70	89	97	93

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Volatile Petroleum Hydrocarbons in Soil   Method: AN433/AN434/AN410 (continued)

Parameter	Units	LOR	[illegible]	[illegible]	[illegible]	[illegible]
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil   Method: AN403

Parameter	Units	LOR				
TRH C10-C14	mg/kg	20	<20	<20	88	<20
TRH C15-C28	mg/kg	45	<45	<45	1600	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	<110	<110	1600	<110
TRH C10-C40 Total	mg/kg	210	<210	<210	1600	<210
TRH >C10-C16 (F2)	mg/kg	25	<25	<25	300	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	1400	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120

PAH (Polynuclear Aromatic Hydrocarbons) in Soil   Method: AN420

Parameter	Units	LOR				
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	0.2	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	0.2	0.4	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Total PAH	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8
Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.2	<0.2	<0.2	<0.2	<0.2

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 (continued)

d5-nitrobenzene (Surrogate)	%		88	92	94	90
2-fluorobiphenyl (Surrogate)	%		88	95	88	92
d14-p-terphenyl (Surrogate)	%		88	92	104	92

OC Pesticides in Soil Method: AN400/AN420

Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p' DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p' DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o,p' DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p' DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1

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OC Pesticides in Soil Method: AN400/AN420 (continued)

Tetrachloro-m-xylene (TCMX) (Surrogate)	%		114	115	104	117

OP Pesticides in Soil Method: AN400/AN420

Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
2-fluorobiphenyl (Surrogate)	%		88	89	88	90
d14-p-terphenyl (Surrogate)	%		88	92	104	92

PCBs in Soil Method: AN400/AN420

Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1

PCBs in Soil Method: AN400/AN420 (continued)

Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	114	116	104	117

Total Recoverable Metals in Soil by ICP-OES from EPA 200.8 Digest Method: AN040/AN320

Arsenic, As	mg/kg	3	5	3	3	6
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	0.3
Chromium, Cr	mg/kg	0.3	14	15	13	22
Copper, Cu	mg/kg	0.5	120	30	160	110
Lead, Pb	mg/kg	1	14	19	12	26
Nickel, Ni	mg/kg	0.5	13	18	16	9.8
Zinc, Zn	mg/kg	0.5	76	62	77	45

Mercury in Soil Method: AN312

Mercury	mg/kg	0.01	0.02	0.01	0.02	0.02

Moisture Content Method: AN002

% Moisture	%	0.5	13	4.5	9.5	8.5

VOC's in Soil Method: AN433/AN434

Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	0.1
Dibromofluoromethane (Surrogate)	%		105	94	115	97
d4-1,2-dichloroethane (Surrogate)	%		108	97	118	101
d8-toluene (Surrogate)	%		79	93	93	77
Bromofluorobenzene (Surrogate)	%		87	83	99	94
Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410

TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C9	mg/kg	20	<20	<20	<20	<20
Dibromofluoromethane (Surrogate)	%		105	94	115	97
d4-1,2-dichloroethane (Surrogate)	%		108	97	119	101
d8-toluene (Surrogate)	%		79	93	93	77
Bromofluorobenzene (Surrogate)	%		87	83	99	94

Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410 (continued)

Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403

TRH C10-C14	mg/kg	20	<20	<20	<20	260
TRH C15-C28	mg/kg	45	<45	<45	8500	12000
TRH C29-C36	mg/kg	45	<45	<45	9300	21000
TRH C37-C40	mg/kg	100	<100	<100	1600	9000
TRH C10-C36 Total	mg/kg	110	<110	<110	18000	34000
TRH C10-C40 Total	mg/kg	210	<210	<210	19000	43000
TRH >C10-C16 (F2)	mg/kg	25	<25	<25	<25	410
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	15000	26000
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	4000	16000

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420

Naphthalene	mg/kg	0.1	0.1	<0.1	<0.2↑	<0.5↑
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.2↑	1.3
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.2↑	1.0
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.2↑	<0.5↑
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.2↑	<0.5↑
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.2↑	<0.5↑
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.2↑	<0.5↑
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.2↑	<0.5↑
Fluoranthene	mg/kg	0.1	<0.1	0.2	0.2	<0.5↑
Pyrene	mg/kg	0.1	0.1	0.2	0.5	0.6
Benzo(a)anthracene	mg/kg	0.1	<0.1	0.1	<0.2↑	<0.5↑
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.2↑	<0.5↑
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	0.1	<0.2↑	<0.5↑
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.2↑	<0.5↑
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.2↑	<0.5↑
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.2↑	<0.5↑
Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	<0.2↑	<0.5↑
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.2↑	<0.5↑
Total PAH	mg/kg	0.8	<0.8	<0.8	<1.6↑	<4.0↑
Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.2	<0.2	<0.2	<0.4↑	<1.0↑

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PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 (continued)

d5-nitrobenzene (Surrogate)	%		94	94	92	112
2-fluorobiphenyl (Surrogate)	%		92	92	92	92
d14-p-terphenyl (Surrogate)	%		94	96	84	80

OC Pesticides in Soil Method: AN450/AN420

Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1

Parameter	Units	LOR	[illegible]	[illegible]	[illegible]	[illegible]

OC Pesticides in Soil Method: AN400/AN420 (continued)

Tetrachloro-m-xylene (TCMX) (Surrogate)	%		110	110	120	119

OP Pesticides in Soil Method: AN400/AN420

Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
2-fluorobiphenyl (Surrogate)	%	-	92	92	92	92
d14-p-terphenyl (Surrogate)	%	-	84	86	84	80

PCBs in Soil Method: AN400/AN420

Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1

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[illegible]						
PCBs in Soil Method: AN400/AN420 (continued)						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%		119	110	126	115
Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: AN040/AN320						
Arsenic, As	mg/kg	3	<3	<3	<3	<3
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	12	16	11	11
Copper, Cu	mg/kg	0.5	71	49	21	40
Lead, Pb	mg/kg	1	14	18	19	19
Nickel, Ni	mg/kg	0.5	12	17	13	15
Zinc, Zn	mg/kg	0.5	78	65	130	100
Mercury in Soil Method: AN312						
Mercury	mg/kg	0.01	0.01	0.03	0.01	<0.01
Moisture Content Method: AN002						
% Moisture	%	0.5	4.3	3.0	1.9	1.1

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QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula *the absolute difference of the two results divided by the average of the two results as a percentage* Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable

Mercury	LB050713	mg/kg	0.01	<0.01	2 - 3%	106%	94%
	LB050714	mg/kg	0.01	<0.01	3 - 9%	100%	12%

Hexachlorobenzene (HCB)	LB050632	mg/kg	0.1	<0.1	0%	NA	NA
	LB050633	mg/kg	0.1	<0.1	0%	NA	NA
Alpha BHC	LB050632	mg/kg	0.1	<0.1	0%	NA	NA
	LB050633	mg/kg	0.1	<0.1	0%	NA	NA
Lindane	LB050632	mg/kg	0.1	<0.1	0%	NA	NA
	LB050633	mg/kg	0.1	<0.1	0%	NA	NA
Heptachlor	LB050632	mg/kg	0.1	<0.1	0%	80%	90%
	LB050633	mg/kg	0.1	<0.1	0%	90%	85%
Aldrin	LB050632	mg/kg	0.1	<0.1	0%	80%	90%
	LB050633	mg/kg	0.1	<0.1	0%	90%	85%
Beta BHC	LB050632	mg/kg	0.1	<0.1	0%	NA	NA
	LB050633	mg/kg	0.1	<0.1	0%	NA	NA
Delta BHC	LB050632	mg/kg	0.1	<0.1	0%	85%	80%
	LB050633	mg/kg	0.1	<0.1	0%	75%	70%
Heptachlor epoxide	LB050632	mg/kg	0.1	<0.1	0%	NA	NA
	LB050633	mg/kg	0.1	<0.1	0%	NA	NA
o,p'-DDE	LB050632	mg/kg	0.1	<0.1	0%	NA	NA
	LB050633	mg/kg	0.1	<0.1	0%	NA	NA
Alpha Endosulfan	LB050632	mg/kg	0.2	<0.2	0%	NA	NA
	LB050633	mg/kg	0.2	<0.2	0%	NA	NA
Gamma Chlordane	LB050632	mg/kg	0.1	<0.1	0%	NA	NA
	LB050633	mg/kg	0.1	<0.1	0%	NA	NA
Alpha Chlordane	LB050632	mg/kg	0.1	<0.1	0%	NA	NA
	LB050633	mg/kg	0.1	<0.1	0%	NA	NA
trans-Nonachlor	LB050632	mg/kg	0.1	<0.1	0%	NA	NA
	LB050633	mg/kg	0.1	<0.1	0%	NA	NA
p,p'-DDE	LB050632	mg/kg	0.1	<0.1	0%	NA	NA
	LB050633	mg/kg	0.1	<0.1	0%	NA	NA
Dieldrin	LB050632	mg/kg	0.2	<0.2	0%	70%	80%
	LB050633	mg/kg	0.2	<0.2	0%	80%	80%
Endrin	LB050632	mg/kg	0.2	<0.2	0%	75%	85%
	LB050633	mg/kg	0.2	<0.2	0%	80%	85%
o,p'-DDD	LB050632	mg/kg	0.1	<0.1	0%	NA	NA
	LB050633	mg/kg	0.1	<0.1	0%	NA	NA
o,p'-DDT	LB050632	mg/kg	0.1	<0.1	0%	NA	NA
	LB050633	mg/kg	0.1	<0.1	0%	NA	NA
Beta Endosulfan	LB050632	mg/kg	0.2	<0.2	0%	NA	NA
	LB050633	mg/kg	0.2	<0.2	0%	NA	NA
p,p'-DDD	LB050632	mg/kg	0.1	<0.1	0%	NA	NA
	LB050633	mg/kg	0.1	<0.1	0%	NA	NA
p,p'-DDT	LB050632	mg/kg	0.1	<0.1	0%	70%	75%
	LB050633	mg/kg	0.1	<0.1	0%	65%	80%
Endosulfan sulphate	LB050632	mg/kg	0.1	<0.1	0%	NA	NA
	LB050633	mg/kg	0.1	<0.1	0%	NA	NA
Endrin Aldehyde	LB050632	mg/kg	0.1	<0.1	0%	NA	NA
	LB050633	mg/kg	0.1	<0.1	0%	NA	NA
Methoxychlor	LB050632	mg/kg	0.1	<0.1	0%	NA	NA
	LB050633	mg/kg	0.1	<0.1	0%	NA	NA
Endrin Ketone	LB050632	mg/kg	0.1	<0.1	0%	NA	NA
	LB050633	mg/kg	0.1	<0.1	0%	NA	NA
Isodrin	LB050632	mg/kg	0.1	<0.1	0%	NA	NA

QC SUMMARY

SE123728 R0

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage.* Where the DUP RPD is 'NA', the results are less than the LOR and thus the RPD is not applicable

[illegible]

[illegible]	LB050633	mg/kg	0.1	<0.1	0%	NA	NA
Mirex	LB050632	mg/kg	0.1	<0.1	0%	NA	NA
	LB050633	mg/kg	0.1	<0.1	0%	NA	NA

Surrogates

Tetrachloro-m-xylene (TCMX) (Surrogate)	LB050632	%		100%	7 - 12%	103%	115%
	LB050633	%		117%	9%	117%	101%

QC SUMMARY

SE123728 R0

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage* Where the DUP RPD is 'NA', the results are less than the LOR and thus the RPD is not applicable

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Dichlorvos	LB050632	mg/kg	0.5	<0.5	0%	108%	106%
	LB050633	mg/kg	0.5	<0.5	0%	105%	93%
Dimethoate	LB050632	mg/kg	0.5	<0.5	0%	NA	NA
	LB050633	mg/kg	0.5	<0.5	0%	NA	NA
Diazinon (Dimpylate)	LB050632	mg/kg	0.5	<0.5	0%	114%	112%
	LB050633	mg/kg	0.5	<0.5	0%	105%	118%
Fenitrothion	LB050632	mg/kg	0.2	<0.2	0%	NA	NA
	LB050633	mg/kg	0.2	<0.2	0%	NA	NA
Malathion	LB050632	mg/kg	0.2	<0.2	0%	NA	NA
	LB050633	mg/kg	0.2	<0.2	0%	NA	NA
Chlorpyrifos (Chlorpyrifos Ethyl)	LB050632	mg/kg	0.2	<0.2	0%	118%	129%
	LB050633	mg/kg	0.2	<0.2	0%	128%	123%
Parathion-ethyl (Parathion)	LB050632	mg/kg	0.2	<0.2	0%	NA	NA
	LB050633	mg/kg	0.2	<0.2	0%	NA	NA
Bromophos Ethyl	LB050632	mg/kg	0.2	<0.2	0%	NA	NA
	LB050633	mg/kg	0.2	<0.2	0%	NA	NA
Methidathion	LB050632	mg/kg	0.5	<0.5	0%	NA	NA
	LB050633	mg/kg	0.5	<0.5	0%	NA	NA
Ethion	LB050632	mg/kg	0.2	<0.2	0%	90%	110%
	LB050633	mg/kg	0.2	<0.2	0%	103%	109%
Azinphos-methyl (Guthion)	LB050632	mg/kg	0.2	<0.2	0%	NA	NA
	LB050633	mg/kg	0.2	<0.2	0%	NA	NA

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2-fluorobiphenyl (Surrogate)	LB050632	%	-	86%	2%	92%	94%
	LB050633	%		90%	0 - 4%	90%	92%
d14-p-terphenyl (Surrogate)	LB050632	%		86%	2%	80%	88%
	LB050633	%		96%	4 - 5%	86%	86%

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA', the results are less than the LOR and thus the RPD is not applicable.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil — Method: [illegible] AN420

Naphthalene	LB050632	mg/kg	0.1	<0.1	3%	114%	90%
	LB050633	mg/kg	0.1	<0.1	3%	67%	88%
2-methylnaphthalene	LB050632	mg/kg	0.1	<0.1	5%	NA	NA
	LB050633	mg/kg	0.1	<0.1	0%	NA	NA
1-methylnaphthalene	LB050632	mg/kg	0.1	<0.1	0%	NA	NA
	LB050633	mg/kg	0.1	<0.1	0%	NA	NA
Acenaphthylene	LB050632	mg/kg	0.1	<0.1	0%	113%	85%
	LB050633	mg/kg	0.1	<0.1	0%	85%	89%
Acenaphthene	LB050632	mg/kg	0.1	<0.1	0%	117%	91%
	LB050633	mg/kg	0.1	<0.1	0%	87%	69%
Fluorene	LB050632	mg/kg	0.1	<0.1	0%	NA	NA
	LB050633	mg/kg	0.1	<0.1	0%	NA	NA
Phenanthrene	LB050632	mg/kg	0.1	<0.1	0 - 47%	117%	89%
	LB050633	mg/kg	0.1	<0.1	0 - 33%	88%	87%
Anthracene	LB050632	mg/kg	0.1	<0.1	0%	112%	84%
	LB050633	mg/kg	0.1	<0.1	0%	85%	83%
Fluoranthene	LB050632	mg/kg	0.1	<0.1	20 - 55%	110%	91%
	LB050633	mg/kg	0.1	<0.1	18 - 46%	92%	91%
Pyrene	LB050632	mg/kg	0.1	<0.1	23 - 35%	109%	71%
	LB050633	mg/kg	0.1	<0.1	10 - 33%	83%	81%
Benzo(a)anthracene	LB050632	mg/kg	0.1	<0.1	23 - 35%	NA	NA
	LB050633	mg/kg	0.1	<0.1	9 - 10%	NA	NA
Chrysene	LB050632	mg/kg	0.1	<0.1	18 - 22%	NA	NA
	LB050633	mg/kg	0.1	<0.1	0%	NA	NA
Benzo(b&j)fluoranthene	LB050632	mg/kg	0.1	<0.1	14 - 43%	NA	NA
	LB050633	mg/kg	0.1	<0.1	0 - 0%	NA	NA
Benzo(k)fluoranthene	LB050632	mg/kg	0.1	<0.1	0 - 9%	NA	NA
	LB050633	mg/kg	0.1	<0.1	0%	NA	NA
Benzo(a)pyrene	LB050632	mg/kg	0.1	<0.1	0 - 10%	1?3%	73%
	LB050633	mg/kg	0.1	<0.1	0%	75%	72%
Indeno(1,2,3-cd)pyrene	LB050632	mg/kg	0.1	<0.1	0%	NA	NA
	LB050633	mg/kg	0.1	<0.1	0%	NA	NA
Dibenzo(a&h)anthracene	LB050632	mg/kg	0.1	<0.1	0%	NA	NA
	LB050633	mg/kg	0.1	<0.1	0%	NA	NA
Benzo(ghi)perylene	LB050632	mg/kg	0.1	<0.1	0%	NA	NA
	LB050633	mg/kg	0.1	<0.1	0%	NA	NA
Total PAH	LB050632	mg/kg	0.8	<0.8	15 - 20%	NA	NA
	LB050633	mg/kg	0.8	<0.8	0%	NA	NA
Carcinogenic PAHs (as BaP TEQ)*	LB050632	TEQ	0.2	<0.2	0 - 14%	NA	NA
	LB050633	TEQ	0.2	<0.2	0%	NA	NA

d5-nitrobenzene (Surrogate)	LB050632	%	-	88%	3%	90%	96%
	LB050633	%	-	94%	3 - 4%	92%	94%
2-fluorobiphenyl (Surrogate)	LB050632	%	-	86%	2%	88%	94%
	LB050633	%	-	90%	0 - 4%	93%	92%
d14-p-terphenyl (Surrogate)	LB050632	%	-	85%	2%	84%	86%
	LB050633	%	-	85%	4 - 5%	65%	86%

SE123728 R0

QC SUMMARY

MB blank results are compared to the Limit of Reporting

LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample

DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage.* Where the DUP RPD is 'NA', the results are less than the LOR and thus the RPD is not applicable

PCBs in Soil Method: ME-(AU)-[ENV]AN400/AN420

Arochlor 1016	LB050632	mg/kg	0.2	<0.2	0%	NA	NA
	LB050633	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1221	LB050632	mg/kg	0.2	<0.2	0%	NA	NA
	LB050633	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1232	LB050632	mg/kg	0.2	<0.2	0%	NA	NA
	LB050633	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1242	LB050632	mg/kg	0.2	<0.2	0%	NA	NA
	LB050633	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1248	LB050632	mg/kg	0.2	<0.2	0%	NA	NA
	LB050633	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1254	LB050632	mg/kg	0.2	<0.2	0%	NA	NA
	LB050633	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1260	LB050632	mg/kg	0.2	<0.2	0%	95%	105%
	LB050633	mg/kg	0.2	<0.2	0%	101%	124%
Arochlor 1262	LB050632	mg/kg	0.2	<0.2	0%	NA	NA
	LB050633	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1268	LB050632	mg/kg	0.2	<0.2	0%	NA	NA
	LB050633	mg/kg	0.2	<0.2	0%	NA	NA
Total PCBs (Arochlors)	LB050632	mg/kg	1	<1	0%	NA	NA
	LB050633	mg/kg	1	<1	0%	NA	NA

Tetrachloro-m-xylene (TCMX) (Surrogate)	LB050632	%	-	100%	2 - 12%	93%	117%
	LB050633	%	-	117%	0%	109%	114%

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: ME-(AU)-[ENV]AN040/AN320

Arsenic, As	LB050708	mg/kg	3	<3	4 - 23%	98%	75%
	LB050710	mg/kg	3	<3	15 - 35%	97%	78%
Cadmium, Cd	LB050708	mg/kg	0.3	<0.3	2 - 11%	103%	79%
	LB050710	mg/kg	0.3	<0.3	0 - 2%	99%	73%
Chromium, Cr	LB050708	mg/kg	0.3	<0.3	13 - 32%	104%	83%
	LB050710	mg/kg	0.3	<0.3	15 - 26%	100%	69%
Copper, Cu	LB050708	mg/kg	0.5	<0.5	2 - 6%	99%	100%
	LB050710	mg/kg	0.5	<0.5	8 - 35%	98%	77%
Lead, Pb	LB050708	mg/kg	1	<1	2 - 8%	101%	80%
	LB050710	mg/kg	1	<1	10 - 35%	98%	72%
Nickel, Ni	LB050708	mg/kg	0.5	<0.5	1 - 6%	103%	86%
	LB050710	mg/kg	0.5	<0.5	9 - 22%	100%	77%
Zinc, Zn	LB050708	mg/kg	0.5	<0.5	5 - 15%	104%	124%
	LB050710	mg/kg	0.5	<0.5	13 - 30%	100%	88%

SE123728 R0

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage.* Where the DUP RPD is 'NA', the results are less than the LOR and thus the RPD is not applicable.

TRH (Total Recoverable Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN403

TRH C10-C14	LB050632	mg/kg	20	<20	0%	95%	115%
	LB050633	mg/kg	20	<20	0%	103%	90%
TRH C15-C28	LB050632	mg/kg	45	<45	0%	93%	98%
	LB050633	mg/kg	45	<45	0%	100%	113%
TRH C29-C36	LB050632	mg/kg	45	<45	0%	70%	78%
	LB050633	mg/kg	45	<45	0%	84%	80%
TRH C37-C40	LB050632	mg/kg	100	<100	0%	NA	NA
	LB050633	mg/kg	100	<100	0%	NA	NA
TRH C10-C36 Total	LB050632	mg/kg	110	<110	0%	NA	NA
	LB050633	mg/kg	110	<110	0%	NA	NA
TRH C10-C40 Total	LB050632	mg/kg	210	<210	0%	NA	NA
	LB050633	mg/kg	210	<210	0%	NA	NA

TRH >C10-C16 (F2)	LB050632	mg/kg	25	<25	0%	95%	90%
	LB050633	mg/kg	25	<25	0%	100%	90%
TRH >C16-C34 (F3)	LB050632	mg/kg	90	<90	0%	90%	103%
	LB050633	mg/kg	90	<90	0%	100%	110%
TRH >C34-C40 (F4)	LB050632	mg/kg	120	<120	0%	60%	NA
	LB050633	mg/kg	120	<120	0%	50%	NA

VOCs in Soil Method: ME-(AU)-[ENV]AN433/AN434

Benzene	LB050635	mg/kg	0.1	<0.1	0%	78%	81%
	LB050636	mg/kg	0.1	<0.1	0%	78%	94%
	LB050637	mg/kg	0.1	<0.1	0%	100%	92%
Toluene	LB050635	mg/kg	0.1	<0.1	0%	82%	91%
	LB050636	mg/kg	0.1	<0.1	0%	97%	84%
	LB050637	mg/kg	0.1	<0.1	0%	85%	84%
Ethylbenzene	LB050635	mg/kg	0.1	<0.1	0%	73%	81%
	LB050636	mg/kg	0.1	<0.1	0%	73%	75%
	LB050637	mg/kg	0.1	<0.1	0%	75%	73%
m/p-xylene	LB050635	mg/kg	0.2	<0.2	0%	70%	75%
	LB050636	mg/kg	0.2	<0.2	0%	70%	80%
	LB050637	mg/kg	0.2	<0.2	0%	82%	81%
o-xylene	LB050635	mg/kg	0.1	<0.1	0%	69%	76%
	LB050636	mg/kg	0.1	<0.1	0%	60%	76%
	LB050637	mg/kg	0.1	<0.1	0%	81%	75%

Naphthalene	LB050635	mg/kg	0.1	<0.1	0%	NA	NA
	LB050636	mg/kg	0.1	<0.1	0%	NA	NA
	LB050637	mg/kg	0.1	<0.1	0%	NA	NA

Dibromofluoromethane (Surrogate)	LB050635	%	79%	1 - 6%	86%	102%
	LB050636	%	79%	11 - 16%	88%	91%
	LB050637	%	104%	12%	107%	95%
d4-1,2-dichloroethane (Surrogate)	LB050635	%	77%	8 - 35%	82%	107%
	LB050636	%	77%	1 - 41%	80%	95%
	LB050637	%	108%	1%	109%	94%

QC SUMMARY

SE123726 R0

[illegible]

[illegible]	[illegible]	%		[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	%		[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	%		[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	%		[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	%		[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	%		[illegible]	[illegible]	[illegible]	[illegible]

[illegible]	[illegible]	mg/kg	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	mg/kg	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	mg/kg	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	mg/kg	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	mg/kg	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	mg/kg	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]	[illegible]	mg/kg	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	mg/kg	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	mg/kg	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	mg/kg	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	mg/kg	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	mg/kg	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]	[illegible]	%		[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	%		[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	%		[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	%		[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	%		[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	%		[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	%		[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	%		[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	%		[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	%		[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	%		[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	%		[illegible]	[illegible]	[illegible]	[illegible]

[illegible]	[illegible]	mg/kg	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	mg/kg	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	mg/kg	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	mg/kg	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	mg/kg	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	mg/kg	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After drying the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.2.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN005	Orbital rolling for Organic pollutants are extracted from soil/sediment by transferring an appropriate mass of sample to a cleaned jar and extracting with 1:1 Dichloromethane/Acetone. Orbital Rolling method is intended for the extraction of semi-volatile organic compounds from soil/sediment samples, and is based on USEPA method 3570 (Micro Organic extraction and sample preparation), Method 3550.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN420	OC and OP Pesticides by GC-ECD: The determination of organochlorine (OC) and organophosphorus (OP) pesticides and polychlorinated biphenyls (PCBs) in soils, sludges and groundwater. (Based on USEPA methods 3510, 3550, 8140 and 8080.)
AN403	Total Recoverable Hydrocarbons: Determination of hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 2013, >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is not corrected for Naphthalene.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Petroleum Hydrocarbons (TPH) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the elution solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care is taken to prevent volatility losses. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433/AN434	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOCs are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

METHOD SUMMARY

AN433/AN434/AN410	VOCs and C6-C9/C6-C10 Hydrocarbons by GC-MS P&T. VOC's are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260

IS	Insufficient sample for analysis	LOR	Limit of Reporting
LNR	Sample listed, but not received.	↑↓	Raised or Lowered Limit of Reporting
*	This analysis is not covered by the scope of accreditation.	QFH	QC result is above the upper tolerance
**	Indicative data, theoretical holding time exceeded	QFL	QC result is below the lower tolerance
^	Performed by outside laboratory.	-	The sample was not analysed for this analyte
		NVL	Not Validated

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here:
http://www.sgs.com.au.pv.sgsv3/~/media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf

Appendix D

Curriculum Vitae

Celia Moloney – Curriculum Vitae

Tertiary Education

Royal Melbourne Institute of Technology – Bachelor of Engineering (Environmental), 2005-2009

Professional Experience

Compaction & Soil Testing Services Pty Ltd

Environmental Consultant, AUG2012-Current

- Conducted Waste Classification Assessment for: WA Brown Building (Caltex - Ingleburn) Jeffsann Excavations (Bunning Warehouse – Wallsend), Ford Civil (Pitt St & Curtin Place - Sydney), Mainland Civil (Wollongong Hospital – Wollongong)
- Conducted Site Validation Assessment for : Mainland Civil (Habitat Apartments – Braddon)
- Contributed to Detailed Site Investigation for: All Star Real Estate (Beverly Hills)

John Holland – Glenfield to Leppington Rail Line, Environment Coordinator, OCT2011-AUG2012

John Holland – Mardi to Mangrove, Environment Coordinator, AUG2010-OCT2011

- Management of soil including waste tracking and disposal management.

John Holland – Head Office, Environment and Quality Coordinator, JAN2010-AUG2010

John Holland – Sugarloaf Pipeline Alliance, Environment Student, DEC 2008-DEC2009

Craig Ridley - Curriculum Vitae

Tertiary Education

University of Western Sydney, Hawkesbury - *Bachelor of Applied Science (Environmental Health), Feb 2007 – Apr 2013*

Major: Environmental Health Management

Professional Experience

Compaction & Soil Testing Services Pty Ltd

Environmental Consultant, FEB 2011 - Current

Roles;

- Waste Classification Assessments
- Preliminary and Detailed Site Investigations
- Site Validation Assessments
- Acid Sulphate Soil Assessments
- Salinity Investigations

Major Projects;

- Great Western Highway Upgrade, Woodford to Hazelbrook NSW
- Tempo Apartments Development, Mascot NSW
- Centre for Obesity, Diabetes and Cardiovascular Disease, University of Sydney, Camperdown NSW
- Bunning's Warehouse, Wallsend NSW
- Habitat Apartments, Braddon ACT
- Wollongong Private Hospital NSW
- ERKO Apartments, Erskineville NSW
- Greenway, Marsden Park NSW

APPENDIX C – PHOTO LOGS

65 Dunheved Circuit, St Marys – ANTQIP diesel AST – 2017 & 2019

65 Dunheved Circuit, St Marys – ANTQIP drum storage - 2017

Dunheved Circuit, St Marys – Oily Residue ANTQIP - 2017

65 Dunheved Circuit – Jaybro storage yard looking south to sandstone supplies - 2017

65 Dunheved Circuit, St Marys – Jaybro concrete fabrication yard looking south - 2017

65 Dunheved Circuit, St Marys – RCA Trucks diesel AST and oil drum storage - 2017

DRC ENVIRONMENTAL

65 Dunheved Circuit, St Marys – RCA Trucks parking (back left) and Sandstone Supplies (right hand side) - 2017

65 Dunheved Circuit, St Marys – RCA Trucks parking looking east towards Dunheved Circuit - 2017

65 Dunheved Circuit, St Marys – ANTQIP truck parking along southern site boundary- 2017

65 Dunheved Circuit, St Marys – TP01

65 Dunheved Circuit, St Marys – TP02

65 Dunheved Circuit, St Marys – TP03

65 Dunheved Circuit, St Marys – TP04

65 Dunheved Circuit, St Marys – TP05

65 Dunheved Circuit, St Marys – TP06

65 Dunheved Circuit, St Marys – TP06 Spoils – note surface staining

65 Dunheved Circuit, St Marys – TP08

65 Dunheved Circuit, St Marys – TP09

65 Dunheved Circuit, St Marys – TP10

65 Dunheved Circuit, St Marys – TP11

65 Dunheved Circuit, St Marys – TP12

65 Dunheved Circuit, St Marys – TP13

65 Dunheved Circuit, St Marys – TP14

65 Dunheved Circuit, St Marys – TP15

<u>**65 Dunheved Circuit, St Marys – TP16**</u>

<u>**65 Dunheved Circuit, St Marys – TP17**</u>

65 Dunheved Circuit, St Marys – TP18

65 Dunheved Circuit, St Marys – TP19

65 Dunheved Circuit, St Marys – Rembrandt Dutch Club - 2019

65 Dunheved Circuit, St Marys – Jaybro Yard - 2019

65 Dunheved Circuit, St Marys – Jaybro AST - 2019

65 Dunheved Circuit, St Marys – Jaybro Yard looking towards Dunheved Circuit - 2019

65 Dunheved Circuit, St Marys – Ventia Yard – 2019 (no access available)

APPENDIX D – LABORATORY CERTIFICATES OF ANALYSIS

539755

CHAIN OF COUSTODY DOCUMENTATION

CLIENT: DRC Environmental Pty Ltd	SAMPLER: R. Prochazka
ADDRESS / OFFICE: G6 / 79-109 Manningham Road, Bulleen VIC 3105	MOBILE: 0400 659 192
PROJECT MANAGER (PM): Patrick Baldwin	PHONE
PROJECT ID: St Marys	EMAIL REPORT TO: patrick@drcenviro.com.au ~~[illegible]~~ Kace@drcenviro.com.au
SITE: Dunheved Circuit P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): Standard TR QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

DRC ENVIRONMENTAL

DRC Environmental Pty Ltd

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No N/A
SAMPLE TEMPERATURE
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	R12	R16	R17	Asbestos NEPM									HOLD	Notes
	TP01 - 0.1	S	24/3		J, Asb, Bag			1		1										
	TP01 - 0.7	↓	↓		J				1											
	TP01 - 1.6				J														X	
	TP02 - 0.05				J, Asb, Bag		1			1										
	TP02 - 1.2				J				1											
	TP03 - 0.1				J, Asb, Bag				1	1										
	TP03 - 1.0				J															
	TP03 - 1.2				J				1											
	TP04 - 0.6				J				1											
	TP05 - 0.1				J, Asb, Bag			1		1										
	TP05 - 0.2				J														X	
	TP05 - 0.6	↓	↓		J				1											

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name: REP	Date: 27/3/17	Name: AB	Date: 27/3	Con' Note No:
Of: DRC	Time: Courier	Of: Eurofins	Time: 11:20AM	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

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CHAIN OF CUSTODY DOCUMENTATION

DRC ENVIRONMENTAL

DRC Environmental Pty Ltd

CLIENT: DRC Environmental Pty Ltd	SAMPLER:
ADDRESS / OFFICE: G6 / 79-109 Manningham Road, Bulleen VIC 3105	MOBILE:
PROJECT MANAGER (PM): Patrick Baldwin	PHONE
PROJECT ID:	EMAIL REPORT TO: patrick@drcenviro.com.au poppy@drcenviro.com.au
SITE: P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No N/A

SAMPLE TEMPERATURE

CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water) — CONTAINER INFORMATION

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	P12	P16	P17	Asbestos NEPM	HOLD
	TP06_0.1	S	24/3		J, Asb, Bag		1			1	
	TP06-0.6				J				1		
	TP07_0.1				J, Asb, Bag			1		1	
	TP07_0.6				J				1		
	TP08-0.1				J, Asb, Bag				1	1	
	TP08-0.5				J						X
	TP08-1.5				J				1		
	TP08-3.9				J				1		
	TP09-0.1				J, Asb, Bag			1		1	
	TP09-2.5				J				1		
	TP10-0.1				J, Asb, Bag				1		
	TP10-2.8	↓	↓		J						X

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name:	Date:	Name: AB	Date: 27/3	Con' Note No:
Of:	Time:	Of: Eurofins	Time: 11:20AM	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

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CHAIN OF CUSTODY DOCUMENTATION

CLIENT: DRC Environmental Pty Ltd		SAMPLER:	DRC ENVIRONMENTAL
ADDRESS / OFFICE: G6 / 79-109 Manningham Road, Bulleen VIC 3105		MOBILE:	DRC Environmental Pty Ltd
PROJECT MANAGER (PM): Patrick Baldwin		PHONE	
PROJECT ID:		EMAIL REPORT TO: patrick@drcenviro.com.au poppy@drcenviro.com.au	
SITE:	P.O. NO.:	EMAIL INVOICE TO: (if different to report)	
RESULTS REQUIRED (Date):	QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

FOR LABORATORY USE ONLY	COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:
COOLER SEAL (circle appropriate)	
Intact: Yes No N/A	
SAMPLE TEMPERATURE	
CHILLED: Yes No	

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION														
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	R12	R16	R17	NEPM Asbestos								HOLD	Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.
	SS01	S	24/3		J				1										OILY – CONTAMINATED
	TP11-0.2				J, Asb				1	1									
	TP11-0.7				J				1										
	TP11-2.9				J													X	
	TP12-0.1				J, Asb		1			1									
	TP12-2.2				J				1										
	TP12-3.2				J													X	
	TP13-0.1				J, Asb				1	1									
	TP13-1.2				J				1										
	TP13-2.9				J													X	
	TP14-0.2				J, Asb				1	1									
	TP14-1.4				J				1										

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name:	Date:	Name: [signature]	Date: 27/3	Con' Note No:
Of:	Time:	Of: Eurofins	Time: 11:20AM	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved, V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass, Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

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CHAIN OF CUSTODY DOCUMENTATION

DRC ENVIRONMENTAL

DRC Environmental Pty Ltd

CLIENT: DRC Environmental Pty Ltd
ADDRESS / OFFICE: G6 / 79-109 Manningham Road, Bulleen VIC 3105
PROJECT MANAGER (PM): Patrick Baldwin
PROJECT ID: St marys
SITE: P.O. NO.:
RESULTS REQUIRED (Date): Standard TR   QUOTE NO.:

SAMPLER: R.Prochazka
MOBILE: 0400 659, 452
PHONE
EMAIL REPORT TO: patrick@drcenviro.com.au ~~[illegible]~~ rprochazka@drcenviro.com.au
EMAIL INVOICE TO: (if different to report)

ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No N/A
SAMPLE TEMPERATURE
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION														
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	R12	R16	R17	Asbestos NEPM	TPHC-Cu								HOLD
	TP14-2a	S	24/3		J														X
	TB01	W	24/3		2xvials						1								
	TB02	W	24/3		2xvials						1								
	~~TB~~TP16_0.1	S	25/3		J + Asb.		1			1									
	TP15_2.0	↓	↓		J				1										
	TP15-3.5				J				1										
	TP16_0.2				J + Asb				1	1									
	TP16_1.0				J				1										
	TP16-3.0				J														X
	TP17-0.2				J + Asb				1	1									
	TP17_1.5				J														X
	TP17_3.5	↓	↓		J				1										

RELINQUISHED BY:		RECEIVED BY:		METHOD OF SHIPMENT
Name:	Date:	Name: AB	Date: 27/3	Con' Note No:
Of:	Time:	Of: Gellofin	Time: 11.20Am	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass. Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

DRC ENVIRONMENTAL

DRC Environmental Pty Ltd

CLIENT: DRC Environmental Pty Ltd	SAMPLER:
ADDRESS / OFFICE: G6 / 79-109 Manningham Road, Bulleen VIC 3105	MOBILE:
PROJECT MANAGER (PM): Patrick Baldwin	PHONE
PROJECT ID:	EMAIL REPORT TO: patrick@drcenviro.com.au poppy@drcenviro.com.au
SITE: P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No N/A
SAMPLE TEMPERATURE
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	R12	R16	R17	Asbestos HBM	TRH C6-C9								Hold	Notes
	TP18 - 0.2	S	25/3		J + Asb.				1	1										
	TP18 - 2.5				J				1											
	QC01-250317				J + Asb				1	1										
	QC02-250317				J + Asb				1	1										Please fwd to ALS
	QC03-250317				J				1											
	QC04-250317				J				1											Please fwd to ALS
	TP19 - 0.2				J				1											
	TP19 - 3.5				J				1											
	TB03 - 250317	W			2x vial						1									
	TB04-250317				2x vials.						1									
	TP19				Asb.					1										

SAMPLE INFORMATION (note: S = Soil, W=Water) — CONTAINER INFORMATION

RELINQUISHED BY:		RECEIVED BY:		METHOD OF SHIPMENT
Name:	Date:	Name: AB	Date: 27/3	Con' Note No:
Of:	Time:	Of: [illegible]	Time: 11:20 am	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved, V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Rupan 28/03

14:48.

Rupan Virk

From: Renee Prochazka <renee@drcenviro.com.au>
Sent: Tuesday, 28 March 2017 2:48 PM
To: Rupan Virk
Subject: RE: Eurofins | mgt Sample Receipt Advice - Report 539755 : Site DUNHEVED CIRCUIT (ST MARYS)

Ah,
I see. Please do the asbestos absence/presence analysis if not enough sample was provided. As for Foreign Materials – please change the analysis to no-FM where sample volume is not enough.
Regards
Renee

From: RupanVirk@eurofins.com [mailto:RupanVirk@eurofins.com]
Sent: Tuesday, 28 March 2017 2:31 PM
To: Renee Prochazka <renee@drcenviro.com.au>; EnviroSampleNSW@eurofins.com
Subject: RE: Eurofins | mgt Sample Receipt Advice - Report 539755 : Site DUNHEVED CIRCUIT (ST MARYS)

Hi Renee

As per COC analysis asked for asbestos is Asbestos-WA analysis which requires approx. 500ml of sample(i.e. 700-800 gms) for which zip-lock bags were used, whereas for Foreign Materials about 4-6 kgs of sample is required. Small Asbestos bags can just be used for Asbestos Absence/Presence analysis. Please provide further instructions.
Thanks

Rupan Virk
Sample Receipt | NSW

Phone : +61 2 9900 8400

Email : RupanVirk@eurofins.com

From: Renee Prochazka [mailto:renee@drcenviro.com.au]
Sent: Tuesday, 28 March 2017 7:54 AM
To: !AU04_CAU001_EnviroSampleNSW
Subject: RE: Eurofins | mgt Sample Receipt Advice - Report 539755 : Site DUNHEVED CIRCUIT (ST MARYS)

There should have been asbestos (small) bags provided for all those samples listed.
As for FM bags, I just used zip lock bags for that analysis.... They should have been double bagged in the esky.

Regards
Renee

From: envirosamplensw@eurofins.com [mailto:envirosamplensw@eurofins.com]
Sent: Monday, 27 March 2017 8:38 PM
To: Patrick Baldwin <patrick@drcenviro.com.au>
Cc: Renee Prochazka <renee@drcenviro.com.au>
Subject: Eurofins | mgt Sample Receipt Advice - Report 539755 : Site DUNHEVED CIRCUIT (ST MARYS)

Alena Bounkeua

To:	Mary Makarios
Subject:	RE: Eurofins | mgt Sample Receipt Advice - Report 539755 : Site DUNHEVED CIRCUIT (ST MARYS)

From: Mary Makarios
Sent: Thursday, 30 March 2017 11:38 AM
To: Charl Du Preez; Alena Bounkeua
Cc: Rupan Virk
Subject: RE: Eurofins | mgt Sample Receipt Advice - Report 539755 : Site DUNHEVED CIRCUIT (ST MARYS)

Anyway I spoke with the client and she said to remove the FM if we cannot do it and just do the R17 instead if she requested R16.thanks

Mary Makarios
Phone : +61 3 8564 5088
Email : MaryMakarios@eurofins.com

From: Alena Bounkeua
Sent: Thursday, 30 March 2017 11:12 AM
To: Mary Makarios
Cc: Charl Du Preez; Rupan Virk
Subject: RE: Eurofins | mgt Sample Receipt Advice - Report 539755 : Site DUNHEVED CIRCUIT (ST MARYS)

Hi Mary,

How are we going about this job with foreign materials as only small bags were received.

Thanks

Alena Bounkeua
Sample Receipt | NSW

Phone : +61 2 9900 8400

Email : AlenaBounkeua@eurofins.com

From: Charl Du Preez
Sent: Tuesday, 28 March 2017 11:01 AM
To: Alena Bounkeua
Cc: Mary Makarios
Subject: FW: Eurofins | mgt Sample Receipt Advice - Report 539755 : Site DUNHEVED CIRCUIT (ST MARYS)

Can you please sort in collaboration with Mary?

Charl DuPreez
Phone : +61 2 9900 8460
Email : CharlDuPreez@eurofins.com

From: Renee Prochazka [mailto:renee@drcenviro.com.au]
Sent: Tuesday, March 28, 2017 7:54 AM
To: !AU04_CAU001_EnviroSampleNSW
Subject: RE: Eurofins | mgt Sample Receipt Advice - Report 539755 : Site DUNHEVED CIRCUIT (ST MARYS)

There should have been asbestos (small) bags provided for all those samples listed.
As for FM bags, I just used zip lock bags for that analysis…. They should have been double bagged in the esky.

Regards
Renee

From: envirosamplensw@eurofins.com [mailto:envirosamplensw@eurofins.com]
Sent: Monday, 27 March 2017 8:38 PM
To: Patrick Baldwin <patrick@drcenviro.com.au>
Cc: Renee Prochazka <renee@drcenviro.com.au>
Subject: Eurofins | mgt Sample Receipt Advice - Report 539755 : Site DUNHEVED CIRCUIT (ST MARYS)

No Foreign Material Bags Provided hence analysis changed to R17. No asbestos WA bags(500ml) provided for TP11_0.2, TP12_0.1, TP13_0.1, TP15_0.1, TP16_0.2, TP17_0.2, TP18_0.2, QC01_250317, TP19 hence WA analysis cancelled. TB02_250317 not received hence analysis cancelled. Sample TP11_2.9 received as broken jar, cannot be salvaged, hence cancelled.

Dear Valued Client,

Please find attached a Sample Receipt Advice (SRA), a Summary Sheet and a scanned copy of your Chain-of-Custody (COC). It is important that you check this documentation to ensure that the details are correct such as the Client Job Number, Turn Around Time, any comments in the Notes section and sample numbers as well as the requested analysis. If there are any irregularities then please contact your Eurofins | mgt Analytical Services Manager as soon as possible to make certain that they get changed.

Regards

Rupar Virk
Sample Receipt

Eurofins | mgt
Unit F3, Parkview Building
16 Mars Road
LANE COVE WEST NSW 2066
AUSTRALIA
Phone: +61 299 008 400
Email: EnviroSampleNSW@eurofins.com
Website:environment.eurofins.com.au
EnviroNote 1068 - Eurofins Perth Laboratory
EnviroNote 1069 - Eurofins Overnight TAT

[EnviroNote 1071 - QSM 5.1]
[EnviroNote 1069 - Eurofins Overnight TAT]

Click [here] to report this email as spam.

ScannedByWebsenseForEurofins

Sample Receipt Advice

Company name:	**DRC Environmental Pty Ltd**
Contact name:	Patrick Baldwin
Project name:	DUNHEVED CIRCUIT
Project ID:	ST MARYS
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Mar 27, 2017 11:20 AM
Eurofins | mgt reference:	**539755**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☑ Sample containers for volatile analysis received with zero headspace.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Notes

No Foreign Material Bags Provided hence analysis changed to R17. TB02_250317 not received hence analysis cancelled. Sample TP11_2.9 received as broken jar, cannot be salvaged, hence cancelled.

Contact notes

If you have any questions with respect to these samples please contact:

Mary Makarios on Phone : +61 3 8564 5000 or by e.mail: MaryMakarios@eurofins.com

Results will be delivered electronically via e.mail to Patrick Baldwin - patrick@drcenviro.com.au.

Note: A copy of these results will also be delivered to the general DRC Environmental Pty Ltd email address.

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NATA # 1261 Site # 20794

Perth
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NATA # 1261
Site # 18217

Company Name:	DRC Environmental Pty Ltd	**Order No.:**		**Received:**	Mar 27, 2017 11:20 AM
Address:	Suite G6/79-109 Manningham Rd	**Report #:**	539755	**Due:**	Apr 3, 2017
	Bulleen	**Phone:**	0402 455 638	**Priority:**	5 Day
	VIC 3105	**Fax:**		**Contact Name:**	Patrick Baldwin
Project Name:	DUNHEVED CIRCUIT				
Project ID:	ST MARYS				

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						Asbestos - AS4964	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	Moisture Set	ENM Exemption Suite - The excavated natural material order 2014 NSW	NSW DECC - Waste Classification Table 1	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271													X	
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 18217														
External Laboratory														
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**									
1	TP01_0.1	Mar 24, 2017		Soil	S17-Ma29521		X				X	X		
2	TP01_0.7	Mar 24, 2017		Soil	S17-Ma29522						X	X		
3	TP01_1.6	Mar 24, 2017		Soil	S17-Ma29523					X				
4	TP02_0.05	Mar 24, 2017		Soil	S17-Ma29524	X					X		X	
5	TP02_1.2	Mar 24, 2017		Soil	S17-Ma29527						X	X		
6	TP03_0.1	Mar 24, 2017		Soil	S17-Ma29528		X				X	X		
7	TP03_1.0	Mar 24, 2017		Soil	S17-Ma29529					X				
8	TP03_1.2	Mar 24, 2017		Soil	S17-Ma29530						X	X		
9	TP04_0.6	Mar 24, 2017		Soil	S17-Ma29531						X	X		

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Company Name:	DRC Environmental Pty Ltd	**Order No.:**	
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		Phone:	0402 455 638
		Fax:	
Project Name:	DUNHEVED CIRCUIT	**Received:**	Mar 27, 2017 11:20 AM
Project ID:	ST MARYS	**Due:**	Apr 3, 2017
		Priority:	5 Day
		Contact Name:	Patrick Baldwin

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						Asbestos - AS4964	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	Moisture Set	ENM Exemption Suite - The excavated natural material order 2014 NSW	NSW DECC - Waste Classification Table 1	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271													X	
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 18217														
10	TP05_0.1	Mar 24, 2017		Soil	S17-Ma29532	X					X	X		
11	TP05_0.2	Mar 24, 2017		Soil	S17-Ma29533					X				
12	TP05_0.6	Mar 24, 2017		Soil	S17-Ma29534						X	X		
13	TP06_0.1	Mar 24, 2017		Soil	S17-Ma29535	X					X		X	
14	TP06_0.6	Mar 24, 2017		Soil	S17-Ma29536						X	X		
15	TP07_0.1	Mar 24, 2017		Soil	S17-Ma29537	X					X	X		
16	TP07_0.6	Mar 24, 2017		Soil	S17-Ma29538						X	X		
17	TP08_0.1	Mar 24, 2017		Soil	S17-Ma29539		X				X	X		
18	TP08_0.5	Mar 24, 2017		Soil	S17-Ma29540					X				
19	TP08_1.5	Mar 24, 2017		Soil	S17-Ma29541						X	X		
20	TP08_3.9	Mar 24, 2017		Soil	S17-Ma29542						X	X		
21	TP09_0.1	Mar 24, 2017		Soil	S17-Ma29543	X					X	X		

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Company Name: DRC Environmental Pty Ltd
Address: Suite G6/79-109 Manningham Rd
Bulleen
VIC 3105

Project Name: DUNHEVED CIRCUIT
Project ID: ST MARYS

Order No.:
Report #: 539755
Phone: 0402 455 638
Fax:

Received: Mar 27, 2017 11:20 AM
Due: Apr 3, 2017
Priority: 5 Day
Contact Name: Patrick Baldwin

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						Asbestos - AS4964	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	Moisture Set	ENM Exemption Suite - The excavated natural material order 2014 NSW	NSW DECC - Waste Classification Table 1	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271													X	
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 18217														
22	TP09_2.5	Mar 24, 2017		Soil	S17-Ma29544						X	X		
23	TP10_0.1	Mar 24, 2017		Soil	S17-Ma29545						X	X		
24	TP10_2.8	Mar 24, 2017		Soil	S17-Ma29546					X				
25	SS01	Mar 24, 2017		Soil	S17-Ma29547						X	X		
26	TP11_0.2	Mar 24, 2017		Soil	S17-Ma29548			X			X	X		
27	TP11_0.7	Mar 24, 2017		Soil	S17-Ma29549						X	X		
28	TP11_2.9	Mar 24, 2017		Soil	S17-Ma29550				X					
29	TP12_0.1	Mar 24, 2017		Soil	S17-Ma29551			X			X		X	
30	TP12_2.2	Mar 24, 2017		Soil	S17-Ma29552						X	X		
31	TP12_3.2	Mar 24, 2017		Soil	S17-Ma29553					X				
32	TP13_0.1	Mar 24, 2017		Soil	S17-Ma29554			X			X	X		
33	TP13_1.2	Mar 24, 2017		Soil	S17-Ma29555						X	X		

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	Bulleen	**Phone:**	0402 455 638	**Priority:**	5 Day
	VIC 3105	**Fax:**		**Contact Name:**	Patrick Baldwin
Project Name:	DUNHEVED CIRCUIT				
Project ID:	ST MARYS				

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						Asbestos - AS4964	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	Moisture Set	ENM Exemption Suite - The excavated natural material order 2014 NSW	NSW DECC - Waste Classification Table 1	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271													X	
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 18217														
34	TP13_2.9	Mar 24, 2017		Soil	S17-Ma29556					X				
35	TP14_0.2	Mar 24, 2017		Soil	S17-Ma29557	X					X	X		
36	TP14_1.4	Mar 24, 2017		Soil	S17-Ma29558						X	X		
37	TP14_2.9	Mar 24, 2017		Soil	S17-Ma29559					X				
38	TB01	Mar 24, 2017		Water	S17-Ma29560									X
39	TP15_0.1	Mar 25, 2017		Soil	S17-Ma29562			X			X		X	
40	TP15_2.0	Mar 25, 2017		Soil	S17-Ma29563						X	X		
41	TP15_3.5	Mar 25, 2017		Soil	S17-Ma29564						X	X		
42	TP16_0.2	Mar 25, 2017		Soil	S17-Ma29565			X			X	X		
43	TP16_1.0	Mar 25, 2017		Soil	S17-Ma29566						X	X		
44	TP17_0.2	Mar 25, 2017		Soil	S17-Ma29567			X			X	X		
45	TP17_1.5	Mar 25, 2017		Soil	S17-Ma29568					X				

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	Bulleen	**Phone:**	0402 455 638	**Priority:**	5 Day
	VIC 3105	**Fax:**		**Contact Name:**	Patrick Baldwin
Project Name:	DUNHEVED CIRCUIT				
Project ID:	ST MARYS				

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						Asbestos - AS4964	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	Moisture Set	ENM Exemption Suite - The excavated natural material order 2014 NSW	NSW DECC - Waste Classification Table 1	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271													X	
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 18217														
46	TP17_3.5	Mar 25, 2017		Soil	S17-Ma29569						X	X		
47	TP16_3.0	Mar 25, 2017		Soil	S17-Ma29570					X				
48	TP18_0.2	Mar 25, 2017		Soil	S17-Ma29571			X			X	X		
49	TP18_2.5	Mar 25, 2017		Soil	S17-Ma29572						X	X		
50	QC01_250317	Mar 25, 2017		Soil	S17-Ma29573			X			X	X		
51	QC03_250317	Mar 25, 2017		Soil	S17-Ma29574						X	X		
52	TP19_0.2	Mar 25, 2017		Soil	S17-Ma29575						X	X		
53	TP19_3.5	Mar 25, 2017		Soil	S17-Ma29576						X	X		
54	TB03_250317	Mar 25, 2017		Water	S17-Ma29577									X
55	TB04_250317	Mar 25, 2017		Water	S17-Ma29578									X
56	TP19	Mar 25, 2017		Other	S17-Ma29579			X						
Test Counts						6	3	9	1	10	41	37	4	3

Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 18217

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.

DRC Environmental Pty Ltd
Suite G6/79-109 Manningham Rd
Bulleen
VIC 3105

Attention:	Patrick Baldwin
Report	539755-AID
Project Name	DUNHEVED CIRCUIT
Project ID	ST MARYS
Received Date	Mar 27, 2017
Date Reported	Apr 04, 2017

Methodology:

Asbestos ID	Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques. Bulk samples include building materials, soils and ores.
Subsampling Soil Samples	The whole sample submitted is first dried and then sieved through a 10mm sieve followed by a 2mm sieve. All fibrous matter viz greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) Iron ores - Sampling and Sample preparation procedures is employed. Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis in accordance with AS 4964-2004.
Bonded asbestos-containing material (ACM)	The material is first examined and any fibres isolated and where required interfering organic fibres or matter may be removed by treating the sample for several hours at a temperature not exceeding 400 ± 30°C. The resultant material is then ground and examined in accordance with AS 4964-2004.
Limit of Reporting	The nominal detection limit of the AS4964 method is around 0.01%. The examination of large sample sizes (at least 500 ml is recommended) may improve the likelihood of identifying asbestos material in the greater than 2 mm fraction. The NEPM screening level of 0.001% w/w asbestos in soil for FA and AF (i.e. non-bonded/friable asbestos) only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. NOTE: NATA News, September 2011 – page 34, states, "Weighing of fibres is problematic and can lead to loss of fibres and potential exposure for laboratory analysts. To request laboratories to report information which is outside the scope of AS 4964-2004 and the scope of their accreditation is misleading and is most unwise" therefore such values reported are outside the scope of Eurofins | mgt NATA accreditation as designated by an asterisk.

Project Name	DUNHEVED CIRCUIT
Project ID	ST MARYS
Date Sampled	Mar 24, 2017 to Mar 25, 2017
Report	539755-AID

Client Sample ID	Eurofins | mgt Sample No.	Date Sampled	Sample Description	Result
TP01_0.1	17-Ma29521	Mar 24, 2017	Approximate Sample 299g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.M11
TP02_0.05	17-Ma29524	Mar 24, 2017	Approximate Sample 246g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w.* Organic fibre detected. No respirable fibres detected.
TP03_0.1	17-Ma29528	Mar 24, 2017	Approximate Sample 261g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.M11
TP05_0.1	17-Ma29532	Mar 24, 2017	Approximate Sample 242g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w.* Organic fibre detected. No respirable fibres detected.
TP06_0.1	17-Ma29535	Mar 24, 2017	Approximate Sample 234g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w.* Organic fibre detected. No respirable fibres detected.
TP07_0.1	17-Ma29537	Mar 24, 2017	Approximate Sample 212g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w.* Organic fibre detected. No respirable fibres detected.
TP08_0.1	17-Ma29539	Mar 24, 2017	Approximate Sample 303g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.M11
TP09_0.1	17-Ma29543	Mar 24, 2017	Approximate Sample 180g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w.* Organic fibre detected. No respirable fibres detected.
TP11_0.2	17-Ma29548	Mar 24, 2017	Approximate Sample 217g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected. Organic fibre detected. No respirable fibres detected.
TP12_0.1	17-Ma29551	Mar 24, 2017	Approximate Sample 220g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected. Organic fibre detected. No respirable fibres detected.

Client Sample ID	Eurofins | mgt Sample No.	Date Sampled	Sample Description	Result
TP13_0.1	17-Ma29554	Mar 24, 2017	Approximate Sample 179g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected. Organic fibre detected. No respirable fibres detected.
TP14_0.2	17-Ma29557	Mar 24, 2017	Approximate Sample 219g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w.* Organic fibre detected. No respirable fibres detected.
TP15_0.1	17-Ma29562	Mar 25, 2017	Approximate Sample 244g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected. Organic fibre detected. No respirable fibres detected.
TP16_0.2	17-Ma29565	Mar 25, 2017	Approximate Sample 210g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected. Organic fibre detected. No respirable fibres detected.
TP17_0.2	17-Ma29567	Mar 25, 2017	Approximate Sample 58/ 80x40x4mm Sample consisted of: Grey compressed cement material	No asbestos detected.
TP18_0.2	17-Ma29571	Mar 25, 2017	Approximate Sample 265g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected. Organic fibre detected. No respirable fibres detected.
QC01_250317	17-Ma29573	Mar 25, 2017	Approximate Sample 228g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected. Organic fibre detected. No respirable fibres detected.
TP19	17-Ma29579	Mar 25, 2017	Approximate Sample 53g / 70x65x3mm Sample consisted of: Grey compressed fibre cement material	Chrysotile asbestos detected. Organic fibre detected.

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
Asbestos - LTM-ASB-8020	Sydney	Apr 03, 2017	Indefinite
Asbestos - LTM-ASB-8020	Sydney	Apr 03, 2017	Indefinite
Asbestos - LTM-ASB-8020	Sydney	Apr 03, 2017	Indefinite

Company Name: DRC Environmental Pty Ltd
Address: Suite G6/79-109 Manningham Rd
Bulleen
VIC 3105

Project Name: DUNHEVED CIRCUIT
Project ID: ST MARYS

Order No.:
Report #: 539755
Phone: 0402 455 638
Fax:

Received: Mar 27, 2017 11:20 AM
Due: Apr 3, 2017
Priority: 5 Day
Contact Name: Patrick Baldwin

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						Asbestos - AS4964	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	Moisture Set	ENM Exemption Suite - The excavated natural material order 2014 NSW	NSW DECC - Waste Classification Table 1	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271													X	
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 18217														
External Laboratory														
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**									
1	TP01_0.1	Mar 24, 2017		Soil	S17-Ma29521		X				X	X		
2	TP01_0.7	Mar 24, 2017		Soil	S17-Ma29522						X	X		
3	TP01_1.6	Mar 24, 2017		Soil	S17-Ma29523					X				
4	TP02_0.05	Mar 24, 2017		Soil	S17-Ma29524	X					X		X	
5	TP02_1.2	Mar 24, 2017		Soil	S17-Ma29527						X	X		
6	TP03_0.1	Mar 24, 2017		Soil	S17-Ma29528		X				X	X		
7	TP03_1.0	Mar 24, 2017		Soil	S17-Ma29529					X				
8	TP03_1.2	Mar 24, 2017		Soil	S17-Ma29530						X	X		
9	TP04_0.6	Mar 24, 2017		Soil	S17-Ma29531						X	X		

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Melbourne Laboratory - NATA Site # 1254 & 14271													X	
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 18217														
10	TP05_0.1	Mar 24, 2017		Soil	S17-Ma29532	X					X	X		
11	TP05_0.2	Mar 24, 2017		Soil	S17-Ma29533					X				
12	TP05_0.6	Mar 24, 2017		Soil	S17-Ma29534						X	X		
13	TP06_0.1	Mar 24, 2017		Soil	S17-Ma29535	X					X		X	
14	TP06_0.6	Mar 24, 2017		Soil	S17-Ma29536						X	X		
15	TP07_0.1	Mar 24, 2017		Soil	S17-Ma29537	X					X	X		
16	TP07_0.6	Mar 24, 2017		Soil	S17-Ma29538						X	X		
17	TP08_0.1	Mar 24, 2017		Soil	S17-Ma29539		X				X	X		
18	TP08_0.5	Mar 24, 2017		Soil	S17-Ma29540					X				
19	TP08_1.5	Mar 24, 2017		Soil	S17-Ma29541						X	X		
20	TP08_3.9	Mar 24, 2017		Soil	S17-Ma29542						X	X		
21	TP09_0.1	Mar 24, 2017		Soil	S17-Ma29543	X					X	X		

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Melbourne Laboratory - NATA Site # 1254 & 14271													X	
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 18217														
22	TP09_2.5	Mar 24, 2017		Soil	S17-Ma29544						X	X		
23	TP10_0.1	Mar 24, 2017		Soil	S17-Ma29545						X	X		
24	TP10_2.8	Mar 24, 2017		Soil	S17-Ma29546					X				
25	SS01	Mar 24, 2017		Soil	S17-Ma29547						X	X		
26	TP11_0.2	Mar 24, 2017		Soil	S17-Ma29548			X			X	X		
27	TP11_0.7	Mar 24, 2017		Soil	S17-Ma29549						X	X		
28	TP11_2.9	Mar 24, 2017		Soil	S17-Ma29550				X					
29	TP12_0.1	Mar 24, 2017		Soil	S17-Ma29551			X			X		X	
30	TP12_2.2	Mar 24, 2017		Soil	S17-Ma29552						X	X		
31	TP12_3.2	Mar 24, 2017		Soil	S17-Ma29553					X				
32	TP13_0.1	Mar 24, 2017		Soil	S17-Ma29554			X			X	X		
33	TP13_1.2	Mar 24, 2017		Soil	S17-Ma29555						X	X		

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Site # 18217

Company Name:	DRC Environmental Pty Ltd	**Order No.:**		**Received:**	Mar 27, 2017 11:20 AM
Address:	Suite G6/79-109 Manningham Rd Bulleen VIC 3105	**Report #:**	539755	**Due:**	Apr 3, 2017
		Phone:	0402 455 638	**Priority:**	5 Day
		Fax:		**Contact Name:**	Patrick Baldwin
Project Name:	DUNHEVED CIRCUIT				
Project ID:	ST MARYS				

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						Asbestos - AS4964	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	Moisture Set	ENM Exemption Suite - The excavated natural material order 2014 NSW	NSW DECC - Waste Classification Table 1	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271													X	
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 18217														
34	TP13_2.9	Mar 24, 2017		Soil	S17-Ma29556					X				
35	TP14_0.2	Mar 24, 2017		Soil	S17-Ma29557	X					X	X		
36	TP14_1.4	Mar 24, 2017		Soil	S17-Ma29558						X	X		
37	TP14_2.9	Mar 24, 2017		Soil	S17-Ma29559					X				
38	TB01	Mar 24, 2017		Water	S17-Ma29560									X
39	TP15_0.1	Mar 25, 2017		Soil	S17-Ma29562			X			X		X	
40	TP15_2.0	Mar 25, 2017		Soil	S17-Ma29563						X	X		
41	TP15_3.5	Mar 25, 2017		Soil	S17-Ma29564						X	X		
42	TP16_0.2	Mar 25, 2017		Soil	S17-Ma29565			X			X	X		
43	TP16_1.0	Mar 25, 2017		Soil	S17-Ma29566						X	X		
44	TP17_0.2	Mar 25, 2017		Soil	S17-Ma29567			X			X	X		
45	TP17_1.5	Mar 25, 2017		Soil	S17-Ma29568					X				

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Site # 18217

Company Name: DRC Environmental Pty Ltd
Address: Suite G6/79-109 Manningham Rd
Bulleen
VIC 3105

Project Name: DUNHEVED CIRCUIT
Project ID: ST MARYS

Order No.:
Report #: 539755
Phone: 0402 455 638
Fax:

Received: Mar 27, 2017 11:20 AM
Due: Apr 3, 2017
Priority: 5 Day
Contact Name: Patrick Baldwin

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						Asbestos - AS4964	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	Moisture Set	ENM Exemption Suite - The excavated natural material order 2014 NSW	NSW DECC - Waste Classification Table 1	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271													X	
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 18217														
46	TP17_3.5	Mar 25, 2017		Soil	S17-Ma29569						X	X		
47	TP16_3.0	Mar 25, 2017		Soil	S17-Ma29570					X				
48	TP18_0.2	Mar 25, 2017		Soil	S17-Ma29571			X			X	X		
49	TP18_2.5	Mar 25, 2017		Soil	S17-Ma29572						X	X		
50	QC01_250317	Mar 25, 2017		Soil	S17-Ma29573			X			X	X		
51	QC03_250317	Mar 25, 2017		Soil	S17-Ma29574						X	X		
52	TP19_0.2	Mar 25, 2017		Soil	S17-Ma29575						X	X		
53	TP19_3.5	Mar 25, 2017		Soil	S17-Ma29576						X	X		
54	TB03_250317	Mar 25, 2017		Water	S17-Ma29577									X
55	TB04_250317	Mar 25, 2017		Water	S17-Ma29578									X
56	TP19	Mar 25, 2017		Other	S17-Ma29579			X						
Test Counts						6	3	9	1	10	41	37	4	3

Internal Quality Control Review and Glossary

General

1. QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Samples were analysed on an 'as received' basis.
4. 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 Sample Receipt Advice.

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.

Units

% w/w: weight for weight basis	grams per kilogram
Filter loading:	fibres/100 graticule areas
Reported Concentration:	fibres/mL
Flowrate:	L/min

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
COC	Chain of custody
SRA	Sample Receipt Advice
ISO	International Standards Organisation
AS	Australian Standards
WA DOH	Western Australia Department of Health
NOHSC	National Occupational Health and Safety Commission
ACM	Bonded asbestos-containing material means any material containing more than 1% asbestos and comprises asbestos-containing-material which is in sound condition, although possibly broken or fragmented, and where the asbestos is bound in a matrix such as cement or resin. Common examples of ACM include but are not limited to: pipe and boiler insulation, sprayed-on fireproofing, troweled-on acoustical plaster, floor tile and mastic, floor linoleum, transite shingles, roofing materials, wall and ceiling plaster, ceiling tiles, and gasket materials. This term is restricted to material that cannot pass a 7 mm x 7 mm sieve. This sieve size is selected because it approximates the thickness of common asbestos cement sheeting and for fragments to be smaller than this would imply a high degree of damage and hence potential for fibre release.
FA	FA comprises friable asbestos material and includes severely weathered cement sheet, insulation products and woven asbestos material. This type of friable asbestos is defined here as asbestos material that is in a degraded condition such that it can be broken or crumbled by hand pressure. This material is typically unbonded or was previously bonded and is now significantly degraded (crumbling).
PACM	Presumed Asbestos-Containing Material means thermal system insulation and surfacing material found in buildings, vessels, and vessel sections constructed no later than 1980 that are assumed to contain greater than one percent asbestos but have not been sampled or analyzed to verify or negate the presence of asbestos.
AF	Asbestos fines (AF) are defined as free fibres, or fibre bundles, smaller than 7mm. It is the free fibres which present the greatest risk to human health, although very small fibres (< 5 microns in length) are not considered to be such a risk. AF also includes small fragments of bonded ACM that pass through a 7 mm x 7 mm sieve. (Note that for bonded ACM fragments to pass through a 7 mm x 7 mm sieve implies a substatntial degree of damage which increases the potential for fibre release.)
AC	Asbestos cement means a mixture of cement and asbestos fibres (typically 90:10 ratios).

Comments

Ma29521, 29528 and 29539: Sample received was less than the nominal 500mL as recommended in Section 4.10 of the NEPM Schedule B1 - Guideline on Investigation Levels for Soil and Groundwater.

Ma29521, 29528 and 29539: Sample received was less than the nominal 500mL as recommended in Section 4.10 of the NEPM Schedule B1 - Guideline on Investigation Levels for Soil and Groundwater.

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
N/A	Not applicable
M11	NATA accreditation does not cover the performance of this service.

Authorised by:

Nibha Vaidya Senior Analyst - Asbestos (NSW)

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

Uncertainty data is available on request

Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 18217

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.

DRC Environmental Pty Ltd
Suite G6/79-109 Manningham Rd
Bulleen
VIC 3105

Attention:	**Patrick Baldwin**
Report	**539755-S**
Project name	DUNHEVED CIRCUIT
Project ID	ST MARYS
Received Date	Mar 27, 2017

Client Sample ID			**TP01_0.1**	**TP01_0.7**	**TP02_0.05**	**TP02_1.2**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S17-Ma29521**	**S17-Ma29522**	**S17-Ma29524**	**S17-Ma29527**
Date Sampled			**Mar 24, 2017**	**Mar 24, 2017**	**Mar 24, 2017**	**Mar 24, 2017**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	24	< 20	23
TRH C15-C28	50	mg/kg	120	< 50	110	< 50
TRH C29-C36	50	mg/kg	120	< 50	110	< 50
TRH C10-36 (Total)	50	mg/kg	240	< 50	220	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	-	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	73	76	-	73
Volatile Organics						
1.1-Dichloroethane	0.5	mg/kg	-	-	< 0.5	-
1.1-Dichloroethene	0.5	mg/kg	-	-	< 0.5	-
1.1.1-Trichloroethane	0.5	mg/kg	-	-	< 0.5	-
1.1.1.2-Tetrachloroethane	0.5	mg/kg	-	-	< 0.5	-
1.1.2-Trichloroethane	0.5	mg/kg	-	-	< 0.5	-
1.1.2.2-Tetrachloroethane	0.5	mg/kg	-	-	< 0.5	-
1.2-Dibromoethane	0.5	mg/kg	-	-	< 0.5	-
1.2-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1.2-Dichloroethane	0.5	mg/kg	-	-	< 0.5	-
1.2-Dichloropropane	0.5	mg/kg	-	-	< 0.5	-
1.2.3-Trichloropropane	0.5	mg/kg	-	-	< 0.5	-
1.2.4-Trimethylbenzene	0.5	mg/kg	-	-	< 0.5	-
1.3-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1.3-Dichloropropane	0.5	mg/kg	-	-	< 0.5	-
1.3.5-Trimethylbenzene	0.5	mg/kg	-	-	< 0.5	-
1.4-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
2-Butanone (MEK)	0.5	mg/kg	-	-	< 0.5	-
2-Propanone (Acetone)	0.5	mg/kg	-	-	< 0.5	-
4-Chlorotoluene	0.5	mg/kg	-	-	< 0.5	-
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	-	-	< 0.5	-
Allyl chloride	0.5	mg/kg	-	-	< 0.5	-

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Client Sample ID			TP01_0.1	TP01_0.7	TP02_0.05	TP02_1.2
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S17-Ma29521**	**S17-Ma29522**	**S17-Ma29524**	**S17-Ma29527**
Date Sampled			**Mar 24, 2017**	**Mar 24, 2017**	**Mar 24, 2017**	**Mar 24, 2017**
Test/Reference	LOR	Unit				
Volatile Organics						
Benzene	0.1	mg/kg	-	-	< 0.1	-
Bromobenzene	0.5	mg/kg	-	-	< 0.5	-
Bromochloromethane	0.5	mg/kg	-	-	< 0.5	-
Bromodichloromethane	0.5	mg/kg	-	-	< 0.5	-
Bromoform	0.5	mg/kg	-	-	< 0.5	-
Bromomethane	0.5	mg/kg	-	-	< 0.5	-
Carbon disulfide	0.5	mg/kg	-	-	< 0.5	-
Carbon Tetrachloride	0.5	mg/kg	-	-	< 0.5	-
Chlorobenzene	0.5	mg/kg	-	-	< 0.5	-
Chloroethane	0.5	mg/kg	-	-	< 0.5	-
Chloroform	0.5	mg/kg	-	-	< 0.5	-
Chloromethane	0.5	mg/kg	-	-	< 0.5	-
cis-1.2-Dichloroethene	0.5	mg/kg	-	-	< 0.5	-
cis-1.3-Dichloropropene	0.5	mg/kg	-	-	< 0.5	-
Dibromochloromethane	0.5	mg/kg	-	-	< 0.5	-
Dibromomethane	0.5	mg/kg	-	-	< 0.5	-
Dichlorodifluoromethane	0.5	mg/kg	-	-	< 0.5	-
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	-
Iodomethane	0.5	mg/kg	-	-	< 0.5	-
Isopropyl benzene (Cumene)	0.5	mg/kg	-	-	< 0.5	-
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	-
Methylene Chloride	0.5	mg/kg	-	-	< 0.5	-
o-Xylene	0.1	mg/kg	-	-	< 0.1	-
Styrene	0.5	mg/kg	-	-	< 0.5	-
Tetrachloroethene	0.5	mg/kg	-	-	< 0.5	-
Toluene	0.1	mg/kg	-	-	< 0.1	-
trans-1.2-Dichloroethene	0.5	mg/kg	-	-	< 0.5	-
trans-1.3-Dichloropropene	0.5	mg/kg	-	-	< 0.5	-
Trichloroethene	0.5	mg/kg	-	-	< 0.5	-
Trichlorofluoromethane	0.5	mg/kg	-	-	< 0.5	-
Vinyl chloride	0.5	mg/kg	-	-	< 0.5	-
Xylenes - Total	0.3	mg/kg	-	-	< 0.3	-
Fluorobenzene (surr.)	1	%	-	-	98	-
4-Bromofluorobenzene (surr.)	1	%	-	-	100	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	1.1	< 0.5	2.9	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	1.4	0.6	3.1	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.6	1.2	3.4	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	0.8	< 0.5
Benz(a)anthracene	0.5	mg/kg	0.7	< 0.5	1.8	< 0.5
Benzo(a)pyrene	0.5	mg/kg	0.8	< 0.5	2.1	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	1.2	< 0.5	2.6	< 0.5

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled			TP01_0.1 Soil S17-Ma29521 Mar 24, 2017	TP01_0.7 Soil S17-Ma29522 Mar 24, 2017	TP02_0.05 Soil S17-Ma29524 Mar 24, 2017	TP02_1.2 Soil S17-Ma29527 Mar 24, 2017
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(g.h.i)perylene	0.5	mg/kg	0.9	< 0.5	2.4	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	0.7	< 0.5	1.4	< 0.5
Chrysene	0.5	mg/kg	0.9	< 0.5	1.8	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	1.9	< 0.5	5.4	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	0.7	< 0.5	1.7	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	0.7	< 0.5	2.5	< 0.5
Pyrene	0.5	mg/kg	1.8	< 0.5	4.9	< 0.5
Total PAH*	0.5	mg/kg	10.3	< 0.5	27.4	< 0.5
2-Fluorobiphenyl (surr.)	1	%	86	87	92	79
p-Terphenyl-d14 (surr.)	1	%	89	133	99	133
Organochlorine Pesticides						
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	0.2	mg/kg	-	-	< 0.2	-
Toxaphene	1	mg/kg	-	-	< 1	-
Dibutylchlorendate (surr.)	1	%	-	-	133	-
Tetrachloro-m-xylene (surr.)	1	%	-	-	122	-
Nitrobenzene	0.5	mg/kg	-	-	< 0.5	-
Organophosphorus Pesticides						
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	-

Client Sample ID			TP01_0.1	TP01_0.7	TP02_0.05	TP02_1.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Ma29521	S17-Ma29522	S17-Ma29524	S17-Ma29527
Date Sampled			Mar 24, 2017	Mar 24, 2017	Mar 24, 2017	Mar 24, 2017
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
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	-
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	%	-	-	116	-
Acid Herbicides						
2.4-D	0.5	mg/kg	-	-	< 0.5	-
2.4-DB	0.5	mg/kg	-	-	< 0.5	-
2.4.5-T	0.5	mg/kg	-	-	< 0.5	-
2.4.5-TP	0.5	mg/kg	-	-	< 0.5	-
Actril (loxynil)	0.5	mg/kg	-	-	< 0.5	-
Dicamba	0.5	mg/kg	-	-	< 0.5	-
Dichlorprop	0.5	mg/kg	-	-	< 0.5	-
Dinitro-o-cresol	0.5	mg/kg	-	-	< 0.5	-
Dinoseb	0.5	mg/kg	-	-	< 0.5	-
MCPA	0.5	mg/kg	-	-	< 0.5	-
MCPB	0.5	mg/kg	-	-	< 0.5	-
Mecoprop	0.5	mg/kg	-	-	< 0.5	-
Warfarin (surr.)	1	%	-	-	82	-
Phenols (Halogenated)						
2-Chlorophenol	0.5	mg/kg	-	-	< 0.5	-
2.4-Dichlorophenol	0.5	mg/kg	-	-	< 0.5	-
2.4.5-Trichlorophenol	1	mg/kg	-	-	< 1	-
2.4.6-Trichlorophenol	1.0	mg/kg	-	-	< 1	-
2.6-Dichlorophenol	0.5	mg/kg	-	-	< 0.5	-
4-Chloro-3-methylphenol	1.0	mg/kg	-	-	< 1	-
Pentachlorophenol	1.0	mg/kg	-	-	< 1	-
Tetrachlorophenols - Total	1.0	mg/kg	-	-	< 1	-
Total Halogenated Phenol*	1	mg/kg	-	-	< 1	-

Client Sample ID			TP01_0.1	TP01_0.7	TP02_0.05	TP02_1.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Ma29521	S17-Ma29522	S17-Ma29524	S17-Ma29527
Date Sampled			Mar 24, 2017	Mar 24, 2017	Mar 24, 2017	Mar 24, 2017
Test/Reference	LOR	Unit				
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	20	mg/kg	-	-	< 20	-
2-Methyl-4.6-dinitrophenol	5	mg/kg	-	-	< 5	-
2-Methylphenol (o-Cresol)	0.2	mg/kg	-	-	< 0.2	-
2-Nitrophenol	1	mg/kg	-	-	< 1	-
2.4-Dimethylphenol	0.5	mg/kg	-	-	< 0.5	-
2.4-Dinitrophenol	5	mg/kg	-	-	< 5	-
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	-	-	< 0.4	-
4-Nitrophenol	5	mg/kg	-	-	< 5	-
Dinoseb	20	mg/kg	-	-	< 20	-
Phenol	0.5	mg/kg	-	-	< 0.5	-
Total Non-Halogenated Phenol*	20	mg/kg	-	-	< 20	-
Phthalates						
Bis(2-ethylhexyl)phthalate	5	mg/kg	-	-	< 5	-
Butyl benzyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Di-n-butyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Di-n-octyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Diethyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Dimethyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Nitrobenzene-d5 (surr.)	1	%	-	-	86	-
p-Terphenyl-d14 (surr.)	1	%	-	-	99	-
2-Fluorobiphenyl (surr.)	1	%	-	-	92	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	190	< 100	160	< 100
TRH >C34-C40	100	mg/kg	100	< 100	100	< 100
Semivolatile Organic Compounds (SVOC)						
2.4-Dinitrotoluene	1	mg/kg	-	-	< 2.5	-
Chromium (hexavalent)	1	mg/kg	-	-	< 1	-
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	65	220	-	290
Cyanide (free)	5	mg/kg	-	-	< 5	-
Cyanide (total)	5	mg/kg	-	-	< 5	-
Fluoride	100	mg/kg	-	-	130	-
pH (1:5 Aqueous extract)	0.1	pH Units	7.8	5.3	-	5.1
% Moisture	1	%	11	18	15	21
Heavy Metals						
Arsenic	2	mg/kg	4.4	7.4	3.7	< 2
Beryllium	2	mg/kg	-	-	< 2	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	13	12	-	< 5
Copper	5	mg/kg	100	8.3	-	< 5
Lead	5	mg/kg	39	7.9	27	< 5
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Molybdenum	5	mg/kg	-	-	< 5	-
Nickel	5	mg/kg	9.6	< 5	27	< 5
Selenium	2	mg/kg	-	-	< 2	-
Silver	0.2	mg/kg	-	-	< 0.2	-
Zinc	5	mg/kg	190	< 5	-	< 5

Client Sample ID			TP03_0.1	TP03_1.2	TP04_0.6	TP05_0.1
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S17-Ma29528**	**S17-Ma29530**	**S17-Ma29531**	**S17-Ma29532**
Date Sampled			**Mar 24, 2017**	**Mar 24, 2017**	**Mar 24, 2017**	**Mar 24, 2017**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	26	< 20	31
TRH C15-C28	50	mg/kg	68	< 50	< 50	330
TRH C29-C36	50	mg/kg	97	< 50	< 50	370
TRH C10-36 (Total)	50	mg/kg	165	< 50	< 50	731
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	74	69	73	73
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	91	82	97	87
p-Terphenyl-d14 (surr.)	1	%	103	132	104	92
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	120	< 100	< 100	570
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	260
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	110	27	320	200
pH (1:5 Aqueous extract)	0.1	pH Units	9.1	6.0	4.9	8.2
% Moisture	1	%	9.8	16	19	11

Client Sample ID			TP03_0.1	TP03_1.2	TP04_0.6	TP05_0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Ma29528	S17-Ma29530	S17-Ma29531	S17-Ma29532
Date Sampled			Mar 24, 2017	Mar 24, 2017	Mar 24, 2017	Mar 24, 2017
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	2.9	< 2	< 2	4.8
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	24	6.2	< 5	12
Copper	5	mg/kg	70	6.0	< 5	32
Lead	5	mg/kg	65	5.6	< 5	17
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	19	< 5	< 5	15
Zinc	5	mg/kg	120	< 5	< 5	51

Client Sample ID			TP05_0.6	TP06_0.1	TP06_0.6	TP07_0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Ma29534	S17-Ma29535	S17-Ma29536	S17-Ma29537
Date Sampled			Mar 24, 2017	Mar 24, 2017	Mar 24, 2017	Mar 24, 2017
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	63	< 20	30
TRH C15-C28	50	mg/kg	< 50	13000	< 50	69
TRH C29-C36	50	mg/kg	< 50	13000	< 50	110
TRH C10-36 (Total)	50	mg/kg	< 50	26063	< 50	209
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	-	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	73	-	92	71
Volatile Organics						
1.1-Dichloroethane	0.5	mg/kg	-	< 0.5	-	-
1.1-Dichloroethene	0.5	mg/kg	-	< 0.5	-	-
1.1.1-Trichloroethane	0.5	mg/kg	-	< 0.5	-	-
1.1.1.2-Tetrachloroethane	0.5	mg/kg	-	< 0.5	-	-
1.1.2-Trichloroethane	0.5	mg/kg	-	< 0.5	-	-
1.1.2.2-Tetrachloroethane	0.5	mg/kg	-	< 0.5	-	-
1.2-Dibromoethane	0.5	mg/kg	-	< 0.5	-	-
1.2-Dichlorobenzene	0.5	mg/kg	-	< 0.5	-	-
1.2-Dichloroethane	0.5	mg/kg	-	< 0.5	-	-
1.2-Dichloropropane	0.5	mg/kg	-	< 0.5	-	-
1.2.3-Trichloropropane	0.5	mg/kg	-	< 0.5	-	-
1.2.4-Trimethylbenzene	0.5	mg/kg	-	< 0.5	-	-
1.3-Dichlorobenzene	0.5	mg/kg	-	< 0.5	-	-
1.3-Dichloropropane	0.5	mg/kg	-	< 0.5	-	-
1.3.5-Trimethylbenzene	0.5	mg/kg	-	< 0.5	-	-
1.4-Dichlorobenzene	0.5	mg/kg	-	< 0.5	-	-
2-Butanone (MEK)	0.5	mg/kg	-	< 0.5	-	-
2-Propanone (Acetone)	0.5	mg/kg	-	< 0.5	-	-
4-Chlorotoluene	0.5	mg/kg	-	< 0.5	-	-

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	TP05_0.6 Soil S17-Ma29534 Mar 24, 2017	TP06_0.1 Soil S17-Ma29535 Mar 24, 2017	TP06_0.6 Soil S17-Ma29536 Mar 24, 2017	TP07_0.1 Soil S17-Ma29537 Mar 24, 2017
Volatile Organics						
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	-	< 0.5	-	-
Allyl chloride	0.5	mg/kg	-	< 0.5	-	-
Benzene	0.1	mg/kg	-	< 0.1	-	-
Bromobenzene	0.5	mg/kg	-	< 0.5	-	-
Bromochloromethane	0.5	mg/kg	-	< 0.5	-	-
Bromodichloromethane	0.5	mg/kg	-	< 0.5	-	-
Bromoform	0.5	mg/kg	-	< 0.5	-	-
Bromomethane	0.5	mg/kg	-	< 0.5	-	-
Carbon disulfide	0.5	mg/kg	-	< 0.5	-	-
Carbon Tetrachloride	0.5	mg/kg	-	< 0.5	-	-
Chlorobenzene	0.5	mg/kg	-	< 0.5	-	-
Chloroethane	0.5	mg/kg	-	< 0.5	-	-
Chloroform	0.5	mg/kg	-	< 0.5	-	-
Chloromethane	0.5	mg/kg	-	< 0.5	-	-
cis-1.2-Dichloroethene	0.5	mg/kg	-	< 0.5	-	-
cis-1.3-Dichloropropene	0.5	mg/kg	-	< 0.5	-	-
Dibromochloromethane	0.5	mg/kg	-	< 0.5	-	-
Dibromomethane	0.5	mg/kg	-	< 0.5	-	-
Dichlorodifluoromethane	0.5	mg/kg	-	< 0.5	-	-
Ethylbenzene	0.1	mg/kg	-	< 0.1	-	-
Iodomethane	0.5	mg/kg	-	< 0.5	-	-
Isopropyl benzene (Cumene)	0.5	mg/kg	-	< 0.5	-	-
m&p-Xylenes	0.2	mg/kg	-	< 0.2	-	-
Methylene Chloride	0.5	mg/kg	-	< 0.5	-	-
o-Xylene	0.1	mg/kg	-	< 0.1	-	-
Styrene	0.5	mg/kg	-	< 0.5	-	-
Tetrachloroethene	0.5	mg/kg	-	< 0.5	-	-
Toluene	0.1	mg/kg	-	< 0.1	-	-
trans-1.2-Dichloroethene	0.5	mg/kg	-	< 0.5	-	-
trans-1.3-Dichloropropene	0.5	mg/kg	-	< 0.5	-	-
Trichloroethene	0.5	mg/kg	-	< 0.5	-	-
Trichlorofluoromethane	0.5	mg/kg	-	< 0.5	-	-
Vinyl chloride	0.5	mg/kg	-	< 0.5	-	-
Xylenes - Total	0.3	mg/kg	-	< 0.3	-	-
Fluorobenzene (surr.)	1	%	-	100	-	-
4-Bromofluorobenzene (surr.)	1	%	-	103	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	64	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			TP05_0.6	TP06_0.1	TP06_0.6	TP07_0.1
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S17-Ma29534**	**S17-Ma29535**	**S17-Ma29536**	**S17-Ma29537**
Date Sampled			**Mar 24, 2017**	**Mar 24, 2017**	**Mar 24, 2017**	**Mar 24, 2017**
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	98	85	65	69
p-Terphenyl-d14 (surr.)	1	%	110	105	102	99
Organochlorine Pesticides						
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	0.2	mg/kg	-	< 0.2	-	-
Toxaphene	1	mg/kg	-	< 1	-	-
Dibutylchlorendate (surr.)	1	%	-	125	-	-
Tetrachloro-m-xylene (surr.)	1	%	-	75	-	-
Nitrobenzene	0.5	mg/kg	-	< 0.5	-	-
Organophosphorus Pesticides						
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	-	-

Client Sample ID			TP05_0.6	TP06_0.1	TP06_0.6	TP07_0.1
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S17-Ma29534**	**S17-Ma29535**	**S17-Ma29536**	**S17-Ma29537**
Date Sampled			**Mar 24, 2017**	**Mar 24, 2017**	**Mar 24, 2017**	**Mar 24, 2017**
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
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	-	-
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	%	-	124	-	-
Acid Herbicides						
2.4-D	0.5	mg/kg	-	< 0.5	-	-
2.4-DB	0.5	mg/kg	-	< 0.5	-	-
2.4.5-T	0.5	mg/kg	-	< 0.5	-	-
2.4.5-TP	0.5	mg/kg	-	< 0.5	-	-
Actril (Ioxynil)	0.5	mg/kg	-	< 0.5	-	-
Dicamba	0.5	mg/kg	-	< 0.5	-	-
Dichlorprop	0.5	mg/kg	-	< 0.5	-	-
Dinitro-o-cresol	0.5	mg/kg	-	< 0.5	-	-
Dinoseb	0.5	mg/kg	-	< 0.5	-	-
MCPA	0.5	mg/kg	-	< 0.5	-	-
MCPB	0.5	mg/kg	-	< 0.5	-	-
Mecoprop	0.5	mg/kg	-	< 0.5	-	-
Warfarin (surr.)	1	%	-	100	-	-
Phenols (Halogenated)						
2-Chlorophenol	0.5	mg/kg	-	< 0.5	-	-
2.4-Dichlorophenol	0.5	mg/kg	-	< 0.5	-	-
2.4.5-Trichlorophenol	1	mg/kg	-	< 1	-	-
2.4.6-Trichlorophenol	1.0	mg/kg	-	< 1	-	-
2.6-Dichlorophenol	0.5	mg/kg	-	< 0.5	-	-
4-Chloro-3-methylphenol	1.0	mg/kg	-	< 1	-	-
Pentachlorophenol	1.0	mg/kg	-	< 1	-	-

Client Sample ID			TP05_0.6	TP06_0.1	TP06_0.6	TP07_0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Ma29534	S17-Ma29535	S17-Ma29536	S17-Ma29537
Date Sampled			Mar 24, 2017	Mar 24, 2017	Mar 24, 2017	Mar 24, 2017
Test/Reference	LOR	Unit				
Phenols (Halogenated)						
Tetrachlorophenols - Total	1.0	mg/kg	-	< 1	-	-
Total Halogenated Phenol*	1	mg/kg	-	< 1	-	-
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	20	mg/kg	-	< 20	-	-
2-Methyl-4.6-dinitrophenol	5	mg/kg	-	< 5	-	-
2-Methylphenol (o-Cresol)	0.2	mg/kg	-	< 0.2	-	-
2-Nitrophenol	1	mg/kg	-	< 1	-	-
2.4-Dimethylphenol	0.5	mg/kg	-	< 0.5	-	-
2.4-Dinitrophenol	5	mg/kg	-	< 5	-	-
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	-	< 0.4	-	-
4-Nitrophenol	5	mg/kg	-	< 5	-	-
Dinoseb	20	mg/kg	-	< 20	-	-
Phenol	0.5	mg/kg	-	< 0.5	-	-
Total Non-Halogenated Phenol*	20	mg/kg	-	< 20	-	-
Phthalates						
Bis(2-ethylhexyl)phthalate	5	mg/kg	-	< 5	-	-
Butyl benzyl phthalate	0.5	mg/kg	-	< 0.5	-	-
Di-n-butyl phthalate	0.5	mg/kg	-	< 0.5	-	-
Di-n-octyl phthalate	0.5	mg/kg	-	< 0.5	-	-
Diethyl phthalate	0.5	mg/kg	-	< 0.5	-	-
Dimethyl phthalate	0.5	mg/kg	-	< 0.5	-	-
Nitrobenzene-d5 (surr.)	1	%	-	83	-	-
p-Terphenyl-d14 (surr.)	1	%	-	105	-	-
2-Fluorobiphenyl (surr.)	1	%	-	85	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	64	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	22000	< 100	130
TRH >C34-C40	100	mg/kg	< 100	5500	< 100	160
Semivolatile Organic Compounds (SVOC)						
2.4-Dinitrotoluene	1	mg/kg	-	< 2.5	-	-
Chromium (hexavalent)	1	mg/kg	-	< 1	-	-
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	310	-	360	150
Cyanide (free)	5	mg/kg	-	< 5	-	-
Cyanide (total)	5	mg/kg	-	< 5	-	-
Fluoride	100	mg/kg	-	100	-	-
pH (1:5 Aqueous extract)	0.1	pH Units	4.6	-	4.5	9.8
% Moisture	1	%	23	5.8	23	24
Heavy Metals						
Arsenic	2	mg/kg	4.2	2.4	4.5	< 2
Beryllium	2	mg/kg	-	< 2	-	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	8.7	-	15	6.5
Copper	5	mg/kg	< 5	-	< 5	29
Lead	5	mg/kg	5.6	16	6.4	14
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Molybdenum	5	mg/kg	-	< 5	-	-
Nickel	5	mg/kg	< 5	17	< 5	5.2
Selenium	2	mg/kg	-	2.3	-	-

Client Sample ID			TP05_0.6	TP06_0.1	TP06_0.6	TP07_0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Ma29534	S17-Ma29535	S17-Ma29536	S17-Ma29537
Date Sampled			Mar 24, 2017	Mar 24, 2017	Mar 24, 2017	Mar 24, 2017
Test/Reference	LOR	Unit				
Heavy Metals						
Silver	0.2	mg/kg	-	< 0.2	-	-
Zinc	5	mg/kg	< 5	-	< 5	87

Client Sample ID			TP07_0.6	TP08_0.1	TP08_1.5	TP08_3.9
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Ma29538	S17-Ma29539	S17-Ma29541	S17-Ma29542
Date Sampled			Mar 24, 2017	Mar 24, 2017	Mar 24, 2017	Mar 24, 2017
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	26	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	170	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	310	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	480	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	72	72	73	72
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

eurofins | mgt

Client Sample ID			TP07_0.6	TP08_0.1	TP08_1.5	TP08_3.9
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S17-Ma29538**	**S17-Ma29539**	**S17-Ma29541**	**S17-Ma29542**
Date Sampled			**Mar 24, 2017**	**Mar 24, 2017**	**Mar 24, 2017**	**Mar 24, 2017**
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
2-Fluorobiphenyl (surr.)	1	%	76	80	66	93
p-Terphenyl-d14 (surr.)	1	%	117	94	103	115
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	330	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	300	< 100	< 100
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	65	78	340	140
pH (1:5 Aqueous extract)	0.1	pH Units	5.3	8.7	5.6	6.6
% Moisture	1	%	24	15	22	21
Heavy Metals						
Arsenic	2	mg/kg	6.6	2.5	9.2	3.5
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	20	34	12	11
Copper	5	mg/kg	< 5	20	21	20
Lead	5	mg/kg	8.7	5.9	22	25
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	40	8.3	7.9
Zinc	5	mg/kg	< 5	37	52	30

Client Sample ID			TP09_0.1	TP09_2.5	TP10_0.1	SS01
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S17-Ma29543**	**S17-Ma29544**	**S17-Ma29545**	**S17-Ma29547**
Date Sampled			**Mar 24, 2017**	**Mar 24, 2017**	**Mar 24, 2017**	**Mar 24, 2017**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	33	< 20	23	300
TRH C15-C28	50	mg/kg	210	< 50	56	5200
TRH C29-C36	50	mg/kg	500	< 50	88	2900
TRH C10-36 (Total)	50	mg/kg	743	< 50	167	8400
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	72	73	73	74
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	800
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20

eurofins | mgt

Client Sample ID			TP09_0.1	TP09_2.5	TP10_0.1	SS01
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S17-Ma29543**	**S17-Ma29544**	**S17-Ma29545**	**S17-Ma29547**
Date Sampled			**Mar 24, 2017**	**Mar 24, 2017**	**Mar 24, 2017**	**Mar 24, 2017**
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	0.6	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	1.1	< 0.5
2-Fluorobiphenyl (surr.)	1	%	115	93	102	102
p-Terphenyl-d14 (surr.)	1	%	106	112	112	73
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	800
TRH >C16-C34	100	mg/kg	500	< 100	110	6300
TRH >C34-C40	100	mg/kg	650	< 100	110	1200
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	94	200	210	120
pH (1:5 Aqueous extract)	0.1	pH Units	9.0	7.1	7.5	8.5
% Moisture	1	%	12	22	18	18
Heavy Metals						
Arsenic	2	mg/kg	< 2	8.0	9.2	5.2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	30	14	28	6.7
Copper	5	mg/kg	38	28	11	32
Lead	5	mg/kg	< 5	71	41	16
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	40	8.6	< 5	14
Zinc	5	mg/kg	37	67	86	110

Client Sample ID			TP11_0.2	TP11_0.7	TP12_0.1	TP12_2.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Ma29548	S17-Ma29549	S17-Ma29551	S17-Ma29552
Date Sampled			Mar 24, 2017	Mar 24, 2017	Mar 24, 2017	Mar 24, 2017
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	30	27	24	30
TRH C15-C28	50	mg/kg	240	170	< 50	160
TRH C29-C36	50	mg/kg	200	94	52	66
TRH C10-36 (Total)	50	mg/kg	470	291	76	256
BTEX						
Benzene	0.1	mg/kg	< 0.1	0.6	-	< 0.1
Toluene	0.1	mg/kg	< 0.1	0.5	-	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	0.1	-	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	-	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	0.1	-	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	68	75	-	73
Volatile Organics						
1.1-Dichloroethane	0.5	mg/kg	-	-	< 0.5	-
1.1-Dichloroethene	0.5	mg/kg	-	-	< 0.5	-
1.1.1-Trichloroethane	0.5	mg/kg	-	-	< 0.5	-
1.1.1.2-Tetrachloroethane	0.5	mg/kg	-	-	< 0.5	-
1.1.2-Trichloroethane	0.5	mg/kg	-	-	< 0.5	-
1.1.2.2-Tetrachloroethane	0.5	mg/kg	-	-	< 0.5	-
1.2-Dibromoethane	0.5	mg/kg	-	-	< 0.5	-
1.2-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1.2-Dichloroethane	0.5	mg/kg	-	-	< 0.5	-
1.2-Dichloropropane	0.5	mg/kg	-	-	< 0.5	-
1.2.3-Trichloropropane	0.5	mg/kg	-	-	< 0.5	-
1.2.4-Trimethylbenzene	0.5	mg/kg	-	-	< 0.5	-
1.3-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1.3-Dichloropropane	0.5	mg/kg	-	-	< 0.5	-
1.3.5-Trimethylbenzene	0.5	mg/kg	-	-	< 0.5	-
1.4-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
2-Butanone (MEK)	0.5	mg/kg	-	-	< 0.5	-
2-Propanone (Acetone)	0.5	mg/kg	-	-	< 0.5	-
4-Chlorotoluene	0.5	mg/kg	-	-	< 0.5	-
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	-	-	< 0.5	-
Allyl chloride	0.5	mg/kg	-	-	< 0.5	-
Benzene	0.1	mg/kg	-	-	< 0.1	-
Bromobenzene	0.5	mg/kg	-	-	< 0.5	-
Bromochloromethane	0.5	mg/kg	-	-	< 0.5	-
Bromodichloromethane	0.5	mg/kg	-	-	< 0.5	-
Bromoform	0.5	mg/kg	-	-	< 0.5	-
Bromomethane	0.5	mg/kg	-	-	< 0.5	-
Carbon disulfide	0.5	mg/kg	-	-	< 0.5	-
Carbon Tetrachloride	0.5	mg/kg	-	-	< 0.5	-
Chlorobenzene	0.5	mg/kg	-	-	< 0.5	-
Chloroethane	0.5	mg/kg	-	-	< 0.5	-
Chloroform	0.5	mg/kg	-	-	< 0.5	-
Chloromethane	0.5	mg/kg	-	-	< 0.5	-
cis-1.2-Dichloroethene	0.5	mg/kg	-	-	< 0.5	-
cis-1.3-Dichloropropene	0.5	mg/kg	-	-	< 0.5	-

Client Sample ID			TP11_0.2	TP11_0.7	TP12_0.1	TP12_2.2
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S17-Ma29548**	**S17-Ma29549**	**S17-Ma29551**	**S17-Ma29552**
Date Sampled			**Mar 24, 2017**	**Mar 24, 2017**	**Mar 24, 2017**	**Mar 24, 2017**
Test/Reference	LOR	Unit				
Volatile Organics						
Dibromochloromethane	0.5	mg/kg	-	-	< 0.5	-
Dibromomethane	0.5	mg/kg	-	-	< 0.5	-
Dichlorodifluoromethane	0.5	mg/kg	-	-	< 0.5	-
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	-
Iodomethane	0.5	mg/kg	-	-	< 0.5	-
Isopropyl benzene (Cumene)	0.5	mg/kg	-	-	< 0.5	-
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	-
Methylene Chloride	0.5	mg/kg	-	-	< 0.5	-
o-Xylene	0.1	mg/kg	-	-	< 0.1	-
Styrene	0.5	mg/kg	-	-	< 0.5	-
Tetrachloroethene	0.5	mg/kg	-	-	< 0.5	-
Toluene	0.1	mg/kg	-	-	< 0.1	-
trans-1.2-Dichloroethene	0.5	mg/kg	-	-	< 0.5	-
trans-1.3-Dichloropropene	0.5	mg/kg	-	-	< 0.5	-
Trichloroethene	0.5	mg/kg	-	-	< 0.5	-
Trichlorofluoromethane	0.5	mg/kg	-	-	< 0.5	-
Vinyl chloride	0.5	mg/kg	-	-	< 0.5	-
Xylenes - Total	0.3	mg/kg	-	-	< 0.3	-
Fluorobenzene (surr.)	1	%	-	-	100	-
4-Bromofluorobenzene (surr.)	1	%	-	-	100	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	0.9	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	54
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	1.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	1.7	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	2.0	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	2.0	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	1.1	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	1.1	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	1.1	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	0.8	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	0.7	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	0.9	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	2.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	0.6	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	1.2	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	2.1	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	14.6	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	112	92	97	116
p-Terphenyl-d14 (surr.)	1	%	93	98	117	108

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	TP11_0.2 Soil S17-Ma29548 Mar 24, 2017	TP11_0.7 Soil S17-Ma29549 Mar 24, 2017	TP12_0.1 Soil S17-Ma29551 Mar 24, 2017	TP12_2.2 Soil S17-Ma29552 Mar 24, 2017
Organochlorine Pesticides						
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	0.2	mg/kg	-	-	< 0.2	-
Toxaphene	1	mg/kg	-	-	< 1	-
Dibutylchlorendate (surr.)	1	%	-	-	106	-
Tetrachloro-m-xylene (surr.)	1	%	-	-	107	-
Nitrobenzene	0.5	mg/kg	-	-	< 0.5	-
Organophosphorus Pesticides						
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	-

Client Sample ID			TP11_0.2	TP11_0.7	TP12_0.1	TP12_2.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Ma29548	S17-Ma29549	S17-Ma29551	S17-Ma29552
Date Sampled			Mar 24, 2017	Mar 24, 2017	Mar 24, 2017	Mar 24, 2017
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Monocrotophos	2	mg/kg	-	-	< 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	%	-	-	135	-
Acid Herbicides						
2.4-D	0.5	mg/kg	-	-	< 0.5	-
2.4-DB	0.5	mg/kg	-	-	< 0.5	-
2.4.5-T	0.5	mg/kg	-	-	< 0.5	-
2.4.5-TP	0.5	mg/kg	-	-	< 0.5	-
Actril (loxynil)	0.5	mg/kg	-	-	< 0.5	-
Dicamba	0.5	mg/kg	-	-	< 0.5	-
Dichlorprop	0.5	mg/kg	-	-	< 0.5	-
Dinitro-o-cresol	0.5	mg/kg	-	-	< 0.5	-
Dinoseb	0.5	mg/kg	-	-	< 0.5	-
MCPA	0.5	mg/kg	-	-	< 0.5	-
MCPB	0.5	mg/kg	-	-	< 0.5	-
Mecoprop	0.5	mg/kg	-	-	< 0.5	-
Warfarin (surr.)	1	%	-	-	100	-
Phenols (Halogenated)						
2-Chlorophenol	0.5	mg/kg	-	-	< 0.5	-
2.4-Dichlorophenol	0.5	mg/kg	-	-	< 0.5	-
2.4.5-Trichlorophenol	1	mg/kg	-	-	< 1	-
2.4.6-Trichlorophenol	1.0	mg/kg	-	-	< 1	-
2.6-Dichlorophenol	0.5	mg/kg	-	-	< 0.5	-
4-Chloro-3-methylphenol	1.0	mg/kg	-	-	< 1	-
Pentachlorophenol	1.0	mg/kg	-	-	< 1	-
Tetrachlorophenols - Total	1.0	mg/kg	-	-	< 1	-
Total Halogenated Phenol*	1	mg/kg	-	-	< 1	-
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	20	mg/kg	-	-	< 20	-
2-Methyl-4.6-dinitrophenol	5	mg/kg	-	-	< 5	-
2-Methylphenol (o-Cresol)	0.2	mg/kg	-	-	< 0.2	-
2-Nitrophenol	1	mg/kg	-	-	< 1	-
2.4-Dimethylphenol	0.5	mg/kg	-	-	< 0.5	-
2.4-Dinitrophenol	5	mg/kg	-	-	< 5	-
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	-	-	< 0.4	-
4-Nitrophenol	5	mg/kg	-	-	< 5	-
Dinoseb	20	mg/kg	-	-	< 20	-
Phenol	0.5	mg/kg	-	-	< 0.5	-
Total Non-Halogenated Phenol*	20	mg/kg	-	-	< 20	-

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Client Sample ID			TP11_0.2	TP11_0.7	TP12_0.1	TP12_2.2
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S17-Ma29548**	**S17-Ma29549**	**S17-Ma29551**	**S17-Ma29552**
Date Sampled			**Mar 24, 2017**	**Mar 24, 2017**	**Mar 24, 2017**	**Mar 24, 2017**
Test/Reference	LOR	Unit				
Phthalates						
Bis(2-ethylhexyl)phthalate	5	mg/kg	-	-	< 5	-
Butyl benzyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Di-n-butyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Di-n-octyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Diethyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Dimethyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Nitrobenzene-d5 (surr.)	1	%	-	-	86	-
p-Terphenyl-d14 (surr.)	1	%	-	-	117	-
2-Fluorobiphenyl (surr.)	1	%	-	-	97	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	54
TRH >C16-C34	100	mg/kg	360	210	< 100	160
TRH >C34-C40	100	mg/kg	170	< 100	< 100	< 100
Semivolatile Organic Compounds (SVOC)						
2.4-Dinitrotoluene	1	mg/kg	-	-	< 2.5	-
Chromium (hexavalent)	1	mg/kg	-	-	< 1	-
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	23	270	-	220
Cyanide (free)	5	mg/kg	-	-	< 5	-
Cyanide (total)	5	mg/kg	-	-	< 5	-
Fluoride	100	mg/kg	-	-	210	-
pH (1:5 Aqueous extract)	0.1	pH Units	7.8	7.4	-	7.0
% Moisture	1	%	16	15	18	19
Heavy Metals						
Arsenic	2	mg/kg	2.3	2.7	6.7	< 2
Beryllium	2	mg/kg	-	-	< 2	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	6.6	7.7	-	< 5
Copper	5	mg/kg	< 5	28	-	14
Lead	5	mg/kg	9.1	120	19	13
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Molybdenum	5	mg/kg	-	-	< 5	-
Nickel	5	mg/kg	< 5	< 5	9.5	9.1
Selenium	2	mg/kg	-	-	4.0	-
Silver	0.2	mg/kg	-	-	< 0.2	-
Zinc	5	mg/kg	19	240	-	40

Client Sample ID			TP13_0.1	TP13_1.2	TP14_0.2	TP14_1.4
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S17-Ma29554**	**S17-Ma29555**	**S17-Ma29557**	**S17-Ma29558**
Date Sampled			**Mar 24, 2017**	**Mar 24, 2017**	**Mar 24, 2017**	**Mar 24, 2017**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	24	< 20	27	< 20
TRH C15-C28	50	mg/kg	< 50	73	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	61	62	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	134	89	< 50

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	TP13_0.1 Soil S17-Ma29554 Mar 24, 2017	TP13_1.2 Soil S17-Ma29555 Mar 24, 2017	TP14_0.2 Soil S17-Ma29557 Mar 24, 2017	TP14_1.4 Soil S17-Ma29558 Mar 24, 2017
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	72	72	75	60
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene N02	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2) N01	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) N04	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene N07	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	93	102	97	91
p-Terphenyl-d14 (surr.)	1	%	106	101	111	106
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	160	210	190	190
pH (1:5 Aqueous extract)	0.1	pH Units	7.8	6.5	8.7	6.9
% Moisture	1	%	18	17	14	15
Heavy Metals						
Arsenic	2	mg/kg	8.1	3.8	4.0	2.3
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	13	6.6	8.0	< 5
Copper	5	mg/kg	26	11	53	7.0
Lead	5	mg/kg	17	28	12	11

Client Sample ID			TP13_0.1	TP13_1.2	TP14_0.2	TP14_1.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Ma29554	S17-Ma29555	S17-Ma29557	S17-Ma29558
Date Sampled			Mar 24, 2017	Mar 24, 2017	Mar 24, 2017	Mar 24, 2017
Test/Reference	LOR	Unit				
Heavy Metals						
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	17	< 5	12	< 5
Zinc	5	mg/kg	55	93	37	< 5

Client Sample ID			TP15_0.1	TP15_2.0	TP15_3.5	TP16_0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Ma29562	S17-Ma29563	S17-Ma29564	S17-Ma29565
Date Sampled			Mar 25, 2017	Mar 25, 2017	Mar 25, 2017	Mar 25, 2017
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	35	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	66	100	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	120	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	101	220	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	-	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	-	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	57	73	76
Volatile Organics						
1.1-Dichloroethane	0.5	mg/kg	< 0.5	-	-	-
1.1-Dichloroethene	0.5	mg/kg	< 0.5	-	-	-
1.1.1-Trichloroethane	0.5	mg/kg	< 0.5	-	-	-
1.1.1.2-Tetrachloroethane	0.5	mg/kg	< 0.5	-	-	-
1.1.2-Trichloroethane	0.5	mg/kg	< 0.5	-	-	-
1.1.2.2-Tetrachloroethane	0.5	mg/kg	< 0.5	-	-	-
1.2-Dibromoethane	0.5	mg/kg	< 0.5	-	-	-
1.2-Dichlorobenzene	0.5	mg/kg	< 0.5	-	-	-
1.2-Dichloroethane	0.5	mg/kg	< 0.5	-	-	-
1.2-Dichloropropane	0.5	mg/kg	< 0.5	-	-	-
1.2.3-Trichloropropane	0.5	mg/kg	< 0.5	-	-	-
1.2.4-Trimethylbenzene	0.5	mg/kg	< 0.5	-	-	-
1.3-Dichlorobenzene	0.5	mg/kg	< 0.5	-	-	-
1.3-Dichloropropane	0.5	mg/kg	< 0.5	-	-	-
1.3.5-Trimethylbenzene	0.5	mg/kg	< 0.5	-	-	-
1.4-Dichlorobenzene	0.5	mg/kg	< 0.5	-	-	-
2-Butanone (MEK)	0.5	mg/kg	< 0.5	-	-	-
2-Propanone (Acetone)	0.5	mg/kg	< 0.5	-	-	-
4-Chlorotoluene	0.5	mg/kg	< 0.5	-	-	-
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	< 0.5	-	-	-
Allyl chloride	0.5	mg/kg	< 0.5	-	-	-
Benzene	0.1	mg/kg	< 0.1	-	-	-
Bromobenzene	0.5	mg/kg	< 0.5	-	-	-
Bromochloromethane	0.5	mg/kg	< 0.5	-	-	-

eurofins | mgt

Client Sample ID			TP15_0.1	TP15_2.0	TP15_3.5	TP16_0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Ma29562	S17-Ma29563	S17-Ma29564	S17-Ma29565
Date Sampled			Mar 25, 2017	Mar 25, 2017	Mar 25, 2017	Mar 25, 2017
Test/Reference	LOR	Unit				
Volatile Organics						
Bromodichloromethane	0.5	mg/kg	< 0.5	-	-	-
Bromoform	0.5	mg/kg	< 0.5	-	-	-
Bromomethane	0.5	mg/kg	< 0.5	-	-	-
Carbon disulfide	0.5	mg/kg	< 0.5	-	-	-
Carbon Tetrachloride	0.5	mg/kg	< 0.5	-	-	-
Chlorobenzene	0.5	mg/kg	< 0.5	-	-	-
Chloroethane	0.5	mg/kg	< 0.5	-	-	-
Chloroform	0.5	mg/kg	< 0.5	-	-	-
Chloromethane	0.5	mg/kg	< 0.5	-	-	-
cis-1.2-Dichloroethene	0.5	mg/kg	< 0.5	-	-	-
cis-1.3-Dichloropropene	0.5	mg/kg	< 0.5	-	-	-
Dibromochloromethane	0.5	mg/kg	< 0.5	-	-	-
Dibromomethane	0.5	mg/kg	< 0.5	-	-	-
Dichlorodifluoromethane	0.5	mg/kg	< 0.5	-	-	-
Ethylbenzene	0.1	mg/kg	< 0.1	-	-	-
Iodomethane	0.5	mg/kg	< 0.5	-	-	-
Isopropyl benzene (Cumene)	0.5	mg/kg	< 0.5	-	-	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-	-	-
Methylene Chloride	0.5	mg/kg	< 0.5	-	-	-
o-Xylene	0.1	mg/kg	< 0.1	-	-	-
Styrene	0.5	mg/kg	< 0.5	-	-	-
Tetrachloroethene	0.5	mg/kg	< 0.5	-	-	-
Toluene	0.1	mg/kg	< 0.1	-	-	-
trans-1.2-Dichloroethene	0.5	mg/kg	< 0.5	-	-	-
trans-1.3-Dichloropropene	0.5	mg/kg	< 0.5	-	-	-
Trichloroethene	0.5	mg/kg	< 0.5	-	-	-
Trichlorofluoromethane	0.5	mg/kg	< 0.5	-	-	-
Vinyl chloride	0.5	mg/kg	< 0.5	-	-	-
Xylenes - Total	0.3	mg/kg	< 0.3	-	-	-
Fluorobenzene (surr.)	1	%	100	-	-	-
4-Bromofluorobenzene (surr.)	1	%	103	-	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	1.9	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	2.2	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	2.4	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	1.3	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	1.4	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	1.7	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	1.2	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	0.8	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	1.1	< 0.5	< 0.5

Client Sample ID			TP15_0.1	TP15_2.0	TP15_3.5	TP16_0.2
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S17-Ma29562**	**S17-Ma29563**	**S17-Ma29564**	**S17-Ma29565**
Date Sampled			**Mar 25, 2017**	**Mar 25, 2017**	**Mar 25, 2017**	**Mar 25, 2017**
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	2.3	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	1.0	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	0.6	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	2.3	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	13.7	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	94	90	85	91
p-Terphenyl-d14 (surr.)	1	%	111	104	98	109
Organochlorine Pesticides						
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	0.2	mg/kg	< 0.2	-	-	-
Toxaphene	1	mg/kg	< 1	-	-	-
Dibutylchlorendate (surr.)	1	%	110	-	-	-
Tetrachloro-m-xylene (surr.)	1	%	118	-	-	-
Nitrobenzene	0.5	mg/kg	< 0.5	-	-	-
Organophosphorus Pesticides						
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	-	-	-

Client Sample ID			TP15_0.1	TP15_2.0	TP15_3.5	TP16_0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Ma29562	S17-Ma29563	S17-Ma29564	S17-Ma29565
Date Sampled			Mar 25, 2017	Mar 25, 2017	Mar 25, 2017	Mar 25, 2017
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
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	-	-	-
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	%	130	-	-	-
Acid Herbicides						
2.4-D	0.5	mg/kg	< 0.5	-	-	-
2.4-DB	0.5	mg/kg	< 0.5	-	-	-
2.4.5-T	0.5	mg/kg	< 0.5	-	-	-
2.4.5-TP	0.5	mg/kg	< 0.5	-	-	-
Actril (Ioxynil)	0.5	mg/kg	< 0.5	-	-	-
Dicamba	0.5	mg/kg	< 0.5	-	-	-
Dichlorprop	0.5	mg/kg	< 0.5	-	-	-
Dinitro-o-cresol	0.5	mg/kg	< 0.5	-	-	-
Dinoseb	0.5	mg/kg	< 0.5	-	-	-
MCPA	0.5	mg/kg	< 0.5	-	-	-
MCPB	0.5	mg/kg	< 0.5	-	-	-
Mecoprop	0.5	mg/kg	< 0.5	-	-	-
Warfarin (surr.)	1	%	106	-	-	-
Phenols (Halogenated)						
2-Chlorophenol	0.5	mg/kg	< 0.5	-	-	-
2.4-Dichlorophenol	0.5	mg/kg	< 0.5	-	-	-
2.4.5-Trichlorophenol	1	mg/kg	< 1	-	-	-
2.4.6-Trichlorophenol	1.0	mg/kg	< 1	-	-	-
2.6-Dichlorophenol	0.5	mg/kg	< 0.5	-	-	-
4-Chloro-3-methylphenol	1.0	mg/kg	< 1	-	-	-
Pentachlorophenol	1.0	mg/kg	< 1	-	-	-
Tetrachlorophenols - Total	1.0	mg/kg	< 1	-	-	-
Total Halogenated Phenol*	1	mg/kg	< 1	-	-	-

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	TP15_0.1 Soil S17-Ma29562 Mar 25, 2017	TP15_2.0 Soil S17-Ma29563 Mar 25, 2017	TP15_3.5 Soil S17-Ma29564 Mar 25, 2017	TP16_0.2 Soil S17-Ma29565 Mar 25, 2017
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	20	mg/kg	< 20	-	-	-
2-Methyl-4.6-dinitrophenol	5	mg/kg	< 5	-	-	-
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2	-	-	-
2-Nitrophenol	1	mg/kg	< 1	-	-	-
2.4-Dimethylphenol	0.5	mg/kg	< 0.5	-	-	-
2.4-Dinitrophenol	5	mg/kg	< 5	-	-	-
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4	-	-	-
4-Nitrophenol	5	mg/kg	< 5	-	-	-
Dinoseb	20	mg/kg	< 20	-	-	-
Phenol	0.5	mg/kg	< 0.5	-	-	-
Total Non-Halogenated Phenol*	20	mg/kg	< 20	-	-	-
Phthalates						
Bis(2-ethylhexyl)phthalate	5	mg/kg	< 5	-	-	-
Butyl benzyl phthalate	0.5	mg/kg	< 0.5	-	-	-
Di-n-butyl phthalate	0.5	mg/kg	< 0.5	-	-	-
Di-n-octyl phthalate	0.5	mg/kg	< 0.5	-	-	-
Diethyl phthalate	0.5	mg/kg	< 0.5	-	-	-
Dimethyl phthalate	0.5	mg/kg	< 0.5	-	-	-
Nitrobenzene-d5 (surr.)	1	%	87	-	-	-
p-Terphenyl-d14 (surr.)	1	%	111	-	-	-
2-Fluorobiphenyl (surr.)	1	%	94	-	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	170	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Semivolatile Organic Compounds (SVOC)						
2.4-Dinitrotoluene	1	mg/kg	< 2.5	-	-	-
Chromium (hexavalent)	1	mg/kg	< 1	-	-	-
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	-	74	110	230
Cyanide (free)	5	mg/kg	< 5	-	-	-
Cyanide (total)	5	mg/kg	< 5	-	-	-
Fluoride	100	mg/kg	140	-	-	-
pH (1:5 Aqueous extract)	0.1	pH Units	-	6.7	7.1	8.0
% Moisture	1	%	18	15	17	22
Heavy Metals						
Arsenic	2	mg/kg	7.7	13	5.8	5.4
Beryllium	2	mg/kg	< 2	-	-	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	-	10	9.8	18
Copper	5	mg/kg	-	30	15	25
Lead	5	mg/kg	20	270	16	21
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Molybdenum	5	mg/kg	< 5	-	-	-
Nickel	5	mg/kg	9.7	< 5	5.4	21
Selenium	2	mg/kg	< 2	-	-	-
Silver	0.2	mg/kg	< 0.2	-	-	-
Zinc	5	mg/kg	-	280	17	70

Client Sample ID			TP16_1.0	TP17_0.2	TP17_3.5	TP18_0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Ma29566	S17-Ma29567	S17-Ma29569	S17-Ma29571
Date Sampled			Mar 25, 2017	Mar 25, 2017	Mar 25, 2017	Mar 25, 2017
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	24	< 20	26	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	54	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	80	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	90	72	76	75
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	1.0	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	1.0	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	2	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	72	61	63	62
p-Terphenyl-d14 (surr.)	1	%	100	91	88	94
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	160	330	83	130
pH (1:5 Aqueous extract)	0.1	pH Units	4.9	8.1	6.6	8.4
% Moisture	1	%	23	19	18	8.9

Client Sample ID			TP16_1.0	TP17_0.2	TP17_3.5	TP18_0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Ma29566	S17-Ma29567	S17-Ma29569	S17-Ma29571
Date Sampled			Mar 25, 2017	Mar 25, 2017	Mar 25, 2017	Mar 25, 2017
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	5.1	4.6	4.8	2.3
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	8.9	15	10	7.1
Copper	5	mg/kg	10	19	26	6.4
Lead	5	mg/kg	9.6	20	35	17
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	16	10	< 5
Zinc	5	mg/kg	15	52	65	22

Client Sample ID			TP18_2.5	QC01_250317	QC03_250317	TP19_0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Ma29572	S17-Ma29573	S17-Ma29574	S17-Ma29575
Date Sampled			Mar 25, 2017	Mar 25, 2017	Mar 25, 2017	Mar 25, 2017
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	23	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	72	71	74	78
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	TP18_2.5 Soil S17-Ma29572 Mar 25, 2017	QC01_250317 Soil S17-Ma29573 Mar 25, 2017	QC03_250317 Soil S17-Ma29574 Mar 25, 2017	TP19_0.2 Soil S17-Ma29575 Mar 25, 2017
Polycyclic Aromatic Hydrocarbons						
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	66	67	72	70
p-Terphenyl-d14 (surr.)	1	%	95	101	97	111
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	320	160	170	300
pH (1:5 Aqueous extract)	0.1	pH Units	7.7	8.6	6.9	8.3
% Moisture	1	%	17	8.3	21	16
Heavy Metals						
Arsenic	2	mg/kg	5.3	2.8	7.4	9.3
Cadmium	0.4	mg/kg	< 0.4	< 0.4	0.6	< 0.4
Chromium	5	mg/kg	19	9.2	20	16
Copper	5	mg/kg	13	11	37	16
Lead	5	mg/kg	22	25	60	21
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	7.1	5.9	12	11
Zinc	5	mg/kg	26	35	87	35

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	TP19_3.5 Soil S17-Ma29576 Mar 25, 2017
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	28
TRH C15-C28	50	mg/kg	< 50
TRH C29-C36	50	mg/kg	< 50
TRH C10-36 (Total)	50	mg/kg	< 50
BTEX			
Benzene	0.1	mg/kg	< 0.1
Toluene	0.1	mg/kg	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2
o-Xylene	0.1	mg/kg	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3
4-Bromofluorobenzene (surr.)	1	%	72

Client Sample ID			TP19_3.5
Sample Matrix			**Soil**
Eurofins | mgt Sample No.			**S17-Ma29576**
Date Sampled			**Mar 25, 2017**
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene[N02]	0.5	mg/kg	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5
Chrysene	0.5	mg/kg	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5
Fluorene	0.5	mg/kg	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5
Pyrene	0.5	mg/kg	< 0.5
Total PAH*	0.5	mg/kg	< 0.5
2-Fluorobiphenyl (surr.)	1	%	69
p-Terphenyl-d14 (surr.)	1	%	106
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
TRH >C10-C16	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	95
pH (1:5 Aqueous extract)	0.1	pH Units	7.1
% Moisture	1	%	19
Heavy Metals			
Arsenic	2	mg/kg	3.9
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	22
Copper	5	mg/kg	38
Lead	5	mg/kg	20
Mercury	0.1	mg/kg	< 0.1
Nickel	5	mg/kg	46
Zinc	5	mg/kg	51

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	Sydney	Mar 28, 2017	14 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
BTEX	Sydney	Mar 28, 2017	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Mar 28, 2017	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
NSW DECC - Waste Classification Table 1			
Volatile Organics	Sydney	Mar 28, 2017	7 Days
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
Polycyclic Aromatic Hydrocarbons	Sydney	Mar 28, 2017	14 Day
- Method: E007 Polyaromatic Hydrocarbons (PAH)			
Organochlorine Pesticides	Sydney	Mar 28, 2017	14 Day
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Nitrobenzene	Sydney	Mar 28, 2017	14 Day
- Method: E017 Semivolatile Organic Compounds			
Organophosphorus Pesticides	Sydney	Mar 28, 2017	14 Day
- Method: LTM-ORG-2200 Organophosphorus Pesticides by GC-MS			
Acid Herbicides	Melbourne	Mar 29, 2017	14 Day
- Method: LTM-ORG-2180 Phenoxy Acid Herbicides			
Phenols (Halogenated)	Sydney	Mar 28, 2017	0 Day
Phenols (non-Halogenated)	Sydney	Mar 28, 2017	0 Day
Phthalates	Sydney	Mar 28, 2017	14 Day
- Method: E017 Phthalates			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Mar 28, 2017	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Semivolatile Organic Compounds (SVOC)	Sydney	Mar 28, 2017	14 Day
- Method: E017 Semivolatile Organic Compounds (SVOC)			
Chromium (hexavalent)	Sydney	Apr 03, 2017	28 Day
- Method: E043 /E057 Total Speciated Chromium			
Cyanide (total)	Melbourne	Mar 29, 2017	14 Day
- Method: LTM-INO-4020 Total Free WAD Cyanide by CFA			
Fluoride	Melbourne	Mar 29, 2017	28 Day
- Method: NEPC 404 (Fusion followed by ISE)			
DECC Metals : Metals M9DECC	Sydney	Mar 28, 2017	28 Day
- Method: LTM-MET-3040_R0 TOTAL AND DISSOLVED METALS AND MERCURY IN WATERS BY ICP-MS			
ENM Exemption Suite -The excavated natural material order 2014 NSW EPA(excluding Foreign Material)			
Conductivity (1:5 aqueous extract at 25°C)	Sydney	Mar 29, 2017	7 Day
- Method: LTM-INO-4030			
pH (1:5 Aqueous extract)	Sydney	Mar 29, 2017	7 Day
- Method: LTM-GEN-7090 pH in soil by ISE			
Metals M8	Sydney	Mar 28, 2017	28 Day
- Method: LTM-MET-3040_R0 TOTAL AND DISSOLVED METALS AND MERCURY IN WATERS BY ICP-MS			
% Moisture	Sydney	Mar 27, 2017	14 Day
- Method: LTM-GEN-7080 Moisture			

Company Name:	DRC Environmental Pty Ltd	**Order No.:**	
Address:	Suite G6/79-109 Manningham Rd Bulleen VIC 3105	**Report #:**	539755
		Phone:	0402 455 638
		Fax:	
Project Name:	DUNHEVED CIRCUIT	**Received:**	Mar 27, 2017 11:20 AM
Project ID:	ST MARYS	**Due:**	Apr 3, 2017
		Priority:	5 Day
		Contact Name:	Patrick Baldwin

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						Asbestos - AS4964	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	Moisture Set	ENM Exemption Suite -The excavated natural material order 2014 NSW	NSW DECC - Waste Classification Table 1	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271													X	
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 18217														
External Laboratory														
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**									
1	TP01_0.1	Mar 24, 2017		Soil	S17-Ma29521		X				X	X		
2	TP01_0.7	Mar 24, 2017		Soil	S17-Ma29522						X	X		
3	TP01_1.6	Mar 24, 2017		Soil	S17-Ma29523					X				
4	TP02_0.05	Mar 24, 2017		Soil	S17-Ma29524	X					X		X	
5	TP02_1.2	Mar 24, 2017		Soil	S17-Ma29527						X	X		
6	TP03_0.1	Mar 24, 2017		Soil	S17-Ma29528		X				X	X		
7	TP03_1.0	Mar 24, 2017		Soil	S17-Ma29529					X				
8	TP03_1.2	Mar 24, 2017		Soil	S17-Ma29530						X	X		
9	TP04_0.6	Mar 24, 2017		Soil	S17-Ma29531						X	X		

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Melbourne Laboratory - NATA Site # 1254 & 14271													X	
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 18217														
10	TP05_0.1	Mar 24, 2017		Soil	S17-Ma29532	X					X	X		
11	TP05_0.2	Mar 24, 2017		Soil	S17-Ma29533					X				
12	TP05_0.6	Mar 24, 2017		Soil	S17-Ma29534						X	X		
13	TP06_0.1	Mar 24, 2017		Soil	S17-Ma29535	X					X		X	
14	TP06_0.6	Mar 24, 2017		Soil	S17-Ma29536						X	X		
15	TP07_0.1	Mar 24, 2017		Soil	S17-Ma29537	X					X	X		
16	TP07_0.6	Mar 24, 2017		Soil	S17-Ma29538						X	X		
17	TP08_0.1	Mar 24, 2017		Soil	S17-Ma29539		X				X	X		
18	TP08_0.5	Mar 24, 2017		Soil	S17-Ma29540					X				
19	TP08_1.5	Mar 24, 2017		Soil	S17-Ma29541						X	X		
20	TP08_3.9	Mar 24, 2017		Soil	S17-Ma29542						X	X		
21	TP09_0.1	Mar 24, 2017		Soil	S17-Ma29543	X					X	X		

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Sample Detail						Asbestos - AS4964	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	Moisture Set	ENM Exemption Suite - The excavated natural material order 2014 NSW	NSW DECC - Waste Classification Table 1	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271													X	
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 18217														
22	TP09_2.5	Mar 24, 2017		Soil	S17-Ma29544						X	X		
23	TP10_0.1	Mar 24, 2017		Soil	S17-Ma29545						X	X		
24	TP10_2.8	Mar 24, 2017		Soil	S17-Ma29546					X				
25	SS01	Mar 24, 2017		Soil	S17-Ma29547						X	X		
26	TP11_0.2	Mar 24, 2017		Soil	S17-Ma29548			X			X	X		
27	TP11_0.7	Mar 24, 2017		Soil	S17-Ma29549						X	X		
28	TP11_2.9	Mar 24, 2017		Soil	S17-Ma29550				X					
29	TP12_0.1	Mar 24, 2017		Soil	S17-Ma29551			X			X		X	
30	TP12_2.2	Mar 24, 2017		Soil	S17-Ma29552						X	X		
31	TP12_3.2	Mar 24, 2017		Soil	S17-Ma29553					X				
32	TP13_0.1	Mar 24, 2017		Soil	S17-Ma29554			X			X	X		
33	TP13_1.2	Mar 24, 2017		Soil	S17-Ma29555						X	X		

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Sample Detail						Asbestos - AS4964	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	Moisture Set	ENM Exemption Suite - The excavated natural material order 2014 NSW	NSW DECC - Waste Classification Table 1	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271													X	
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 18217														
34	TP13_2.9	Mar 24, 2017		Soil	S17-Ma29556					X				
35	TP14_0.2	Mar 24, 2017		Soil	S17-Ma29557	X					X	X		
36	TP14_1.4	Mar 24, 2017		Soil	S17-Ma29558						X	X		
37	TP14_2.9	Mar 24, 2017		Soil	S17-Ma29559					X				
38	TB01	Mar 24, 2017		Water	S17-Ma29560									X
39	TP15_0.1	Mar 25, 2017		Soil	S17-Ma29562			X			X		X	
40	TP15_2.0	Mar 25, 2017		Soil	S17-Ma29563						X	X		
41	TP15_3.5	Mar 25, 2017		Soil	S17-Ma29564						X	X		
42	TP16_0.2	Mar 25, 2017		Soil	S17-Ma29565			X			X	X		
43	TP16_1.0	Mar 25, 2017		Soil	S17-Ma29566						X	X		
44	TP17_0.2	Mar 25, 2017		Soil	S17-Ma29567			X			X	X		
45	TP17_1.5	Mar 25, 2017		Soil	S17-Ma29568					X				

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NATA # 1261
Site # 18217

Company Name:	DRC Environmental Pty Ltd	**Order No.:**	
Address:	Suite G6/79-109 Manningham Rd Bulleen VIC 3105	**Report #:**	539755
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Project Name:	DUNHEVED CIRCUIT		
Project ID:	ST MARYS		

Received:	Mar 27, 2017 11:20 AM
Due:	Apr 3, 2017
Priority:	5 Day
Contact Name:	Patrick Baldwin

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						Asbestos - AS4964	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	Moisture Set	ENM Exemption Suite - The excavated natural material order 2014 NSW	NSW DECC - Waste Classification Table 1	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271													X	
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 18217														
46	TP17_3.5	Mar 25, 2017		Soil	S17-Ma29569						X	X		
47	TP16_3.0	Mar 25, 2017		Soil	S17-Ma29570					X				
48	TP18_0.2	Mar 25, 2017		Soil	S17-Ma29571			X			X	X		
49	TP18_2.5	Mar 25, 2017		Soil	S17-Ma29572						X	X		
50	QC01_250317	Mar 25, 2017		Soil	S17-Ma29573			X			X	X		
51	QC03_250317	Mar 25, 2017		Soil	S17-Ma29574						X	X		
52	TP19_0.2	Mar 25, 2017		Soil	S17-Ma29575						X	X		
53	TP19_3.5	Mar 25, 2017		Soil	S17-Ma29576						X	X		
54	TB03_250317	Mar 25, 2017		Water	S17-Ma29577									X
55	TB04_250317	Mar 25, 2017		Water	S17-Ma29578									X
56	TP19	Mar 25, 2017		Other	S17-Ma29579			X						
Test Counts						6	3	9	1	10	41	37	4	3

Internal Quality Control Review and Glossary

General

1. 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.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. 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 Sample Receipt Advice.

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.

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

Units

mg/kg: milligrams per Kilogram	**mg/l:** milligrams per litre
ug/l: micrograms per litre	**ppm:** Parts per million
ppb: Parts per billion	**%:** Percentage
org/100ml: Organisms per 100 millilitres	**NTU:** Nephelometric Turbidity Units
MPN/100mL: Most Probable Number of organisms per 100 millilitres	

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	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
TEQ	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 20-130%

QC Data General Comments

1. 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.
2. 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.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. 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.
6. 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.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. 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
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
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	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Volatile Organics							
1.1-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
1.1.1-Trichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.1.2-Tetrachloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.2-Trichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.2.2-Tetrachloroethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dibromoethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.2-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dichloropropane	mg/kg	< 0.5			0.5	Pass	
1.2.3-Trichloropropane	mg/kg	< 0.5			0.5	Pass	
1.2.4-Trimethylbenzene	mg/kg	< 0.5			0.5	Pass	
1.3-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.3-Dichloropropane	mg/kg	< 0.5			0.5	Pass	
1.3.5-Trimethylbenzene	mg/kg	< 0.5			0.5	Pass	
1.4-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
2-Butanone (MEK)	mg/kg	< 0.5			0.5	Pass	
2-Propanone (Acetone)	mg/kg	< 0.5			0.5	Pass	
4-Chlorotoluene	mg/kg	< 0.5			0.5	Pass	
4-Methyl-2-pentanone (MIBK)	mg/kg	< 0.5			0.5	Pass	
Allyl chloride	mg/kg	< 0.5			0.5	Pass	
Benzene	mg/kg	< 0.1			0.1	Pass	
Bromobenzene	mg/kg	< 0.5			0.5	Pass	
Bromochloromethane	mg/kg	< 0.5			0.5	Pass	
Bromodichloromethane	mg/kg	< 0.5			0.5	Pass	
Bromoform	mg/kg	< 0.5			0.5	Pass	
Bromomethane	mg/kg	< 0.5			0.5	Pass	
Carbon disulfide	mg/kg	< 0.5			0.5	Pass	
Carbon Tetrachloride	mg/kg	< 0.5			0.5	Pass	
Chlorobenzene	mg/kg	< 0.5			0.5	Pass	
Chloroethane	mg/kg	< 0.5			0.5	Pass	
Chloroform	mg/kg	< 0.5			0.5	Pass	
Chloromethane	mg/kg	< 0.5			0.5	Pass	
cis-1.2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
cis-1.3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Dibromochloromethane	mg/kg	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Dibromomethane	mg/kg	< 0.5			0.5	Pass	
Dichlorodifluoromethane	mg/kg	< 0.5			0.5	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
Iodomethane	mg/kg	< 0.5			0.5	Pass	
Isopropyl benzene (Cumene)	mg/kg	< 0.5			0.5	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
Methylene Chloride	mg/kg	< 0.5			0.5	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Styrene	mg/kg	< 0.5			0.5	Pass	
Tetrachloroethene	mg/kg	< 0.5			0.5	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
trans-1.2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
trans-1.3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Trichloroethene	mg/kg	< 0.5			0.5	Pass	
Trichlorofluoromethane	mg/kg	< 0.5			0.5	Pass	
Vinyl chloride	mg/kg	< 0.5			0.5	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
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	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endrin aldehyde	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	< 0.2			0.2	Pass	
Toxaphene	mg/kg	< 1			1	Pass	
Method Blank							
Nitrobenzene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organophosphorus Pesticides							
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	
Ethoprop	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	
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	
Trichloronate	mg/kg	< 0.2			0.2	Pass	
Method Blank							
Acid Herbicides							
2.4-D	mg/kg	< 0.5			0.5	Pass	
2.4-DB	mg/kg	< 0.5			0.5	Pass	
2.4.5-T	mg/kg	< 0.5			0.5	Pass	
2.4.5-TP	mg/kg	< 0.5			0.5	Pass	
Actril (Ioxynil)	mg/kg	< 0.5			0.5	Pass	
Dicamba	mg/kg	< 0.5			0.5	Pass	
Dichlorprop	mg/kg	< 0.5			0.5	Pass	
Dinitro-o-cresol	mg/kg	< 0.5			0.5	Pass	
Dinoseb	mg/kg	< 0.5			0.5	Pass	
MCPA	mg/kg	< 0.5			0.5	Pass	
MCPB	mg/kg	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Mecoprop	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Phenols (Halogenated)							
2-Chlorophenol	mg/kg	< 0.5			0.5	Pass	
2.4-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
2.4.5-Trichlorophenol	mg/kg	< 1			1	Pass	
2.4.6-Trichlorophenol	mg/kg	< 1			1.0	Pass	
2.6-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
4-Chloro-3-methylphenol	mg/kg	< 1			1.0	Pass	
Pentachlorophenol	mg/kg	< 1			1.0	Pass	
Tetrachlorophenols - Total	mg/kg	< 1			1.0	Pass	
Method Blank							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	mg/kg	< 20			20	Pass	
2-Methyl-4.6-dinitrophenol	mg/kg	< 5			5	Pass	
2-Methylphenol (o-Cresol)	mg/kg	< 0.2			0.2	Pass	
2-Nitrophenol	mg/kg	< 1			1	Pass	
2.4-Dimethylphenol	mg/kg	< 0.5			0.5	Pass	
2.4-Dinitrophenol	mg/kg	< 5			5	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/kg	< 0.4			0.4	Pass	
4-Nitrophenol	mg/kg	< 5			5	Pass	
Dinoseb	mg/kg	< 20			20	Pass	
Phenol	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Phthalates							
Bis(2-ethylhexyl)phthalate	mg/kg	< 5			5	Pass	
Butyl benzyl phthalate	mg/kg	< 0.5			0.5	Pass	
Di-n-butyl phthalate	mg/kg	< 0.5			0.5	Pass	
Di-n-octyl phthalate	mg/kg	< 0.5			0.5	Pass	
Diethyl phthalate	mg/kg	< 0.5			0.5	Pass	
Dimethyl phthalate	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Semivolatile Organic Compounds (SVOC)							
2.4-Dinitrotoluene	mg/kg	< 1			1	Pass	
Method Blank							
Chromium (hexavalent)	mg/kg	< 1			1	Pass	
Cyanide (free)	mg/kg	< 5			5	Pass	
Cyanide (total)	mg/kg	< 5			5	Pass	
Fluoride	mg/kg	< 100			100	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Arsenic	mg/kg	< 2			2	Pass	
Beryllium	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Molybdenum	mg/kg	< 5			5	Pass	
Nickel	mg/kg	< 5			5	Pass	
Nickel	mg/kg	< 5			5	Pass	
Selenium	mg/kg	< 2			2	Pass	
Silver	mg/kg	< 0.2			0.2	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	81			70-130	Pass	
TRH C10-C14	%	94			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	90			70-130	Pass	
Toluene	%	90			70-130	Pass	
Ethylbenzene	%	92			70-130	Pass	
m&p-Xylenes	%	88			70-130	Pass	
o-Xylene	%	87			70-130	Pass	
Xylenes - Total	%	88			70-130	Pass	
LCS - % Recovery							
Volatile Organics							
1.1-Dichloroethane	%	116			70-130	Pass	
1.1-Dichloroethene	%	111			70-130	Pass	
1.1.1-Trichloroethane	%	114			70-130	Pass	
1.1.1.2-Tetrachloroethane	%	112			70-130	Pass	
1.1.2-Trichloroethane	%	117			70-130	Pass	
1.1.2.2-Tetrachloroethane	%	123			70-130	Pass	
1.2-Dibromoethane	%	116			70-130	Pass	
1.2-Dichlorobenzene	%	118			70-130	Pass	
1.2-Dichloroethane	%	117			70-130	Pass	
1.2-Dichloropropane	%	114			70-130	Pass	
1.2.3-Trichloropropane	%	119			70-130	Pass	
1.2.4-Trimethylbenzene	%	111			70-130	Pass	
1.3-Dichlorobenzene	%	116			70-130	Pass	
1.3-Dichloropropane	%	118			70-130	Pass	
1.3.5-Trimethylbenzene	%	112			70-130	Pass	
1.4-Dichlorobenzene	%	116			70-130	Pass	
2-Propanone (Acetone)	%	126			70-130	Pass	
4-Chlorotoluene	%	112			70-130	Pass	
4-Methyl-2-pentanone (MIBK)	%	118			70-130	Pass	
Allyl chloride	%	112			70-130	Pass	
Benzene	%	117			70-130	Pass	
Bromobenzene	%	111			70-130	Pass	
Bromochloromethane	%	112			70-130	Pass	
Bromodichloromethane	%	111			70-130	Pass	
Bromoform	%	110			70-130	Pass	
Bromomethane	%	74			70-130	Pass	
Carbon disulfide	%	103			70-130	Pass	
Carbon Tetrachloride	%	112			70-130	Pass	
Chlorobenzene	%	116			70-130	Pass	
Chloroethane	%	108			70-130	Pass	
Chloroform	%	118			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
cis-1.2-Dichloroethene	%	117			70-130	Pass	
cis-1.3-Dichloropropene	%	112			70-130	Pass	
Dibromochloromethane	%	110			70-130	Pass	
Dibromomethane	%	117			70-130	Pass	
Dichlorodifluoromethane	%	93			70-130	Pass	
Ethylbenzene	%	113			70-130	Pass	
Iodomethane	%	105			70-130	Pass	
Isopropyl benzene (Cumene)	%	115			70-130	Pass	
m&p-Xylenes	%	114			70-130	Pass	
Methylene Chloride	%	101			70-130	Pass	
o-Xylene	%	115			70-130	Pass	
Styrene	%	116			70-130	Pass	
Tetrachloroethene	%	119			70-130	Pass	
Toluene	%	115			70-130	Pass	
trans-1.2-Dichloroethene	%	116			70-130	Pass	
trans-1.3-Dichloropropene	%	111			70-130	Pass	
Trichloroethene	%	117			70-130	Pass	
Trichlorofluoromethane	%	107			70-130	Pass	
Vinyl chloride	%	111			70-130	Pass	
Xylenes - Total	%	114			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	113			70-130	Pass	
TRH C6-C10	%	80			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	103			70-130	Pass	
Acenaphthylene	%	94			70-130	Pass	
Anthracene	%	114			70-130	Pass	
Benz(a)anthracene	%	81			70-130	Pass	
Benzo(a)pyrene	%	95			70-130	Pass	
Benzo(b&j)fluoranthene	%	86			70-130	Pass	
Benzo(g.h.i)perylene	%	111			70-130	Pass	
Benzo(k)fluoranthene	%	112			70-130	Pass	
Chrysene	%	114			70-130	Pass	
Dibenz(a.h)anthracene	%	106			70-130	Pass	
Fluoranthene	%	97			70-130	Pass	
Fluorene	%	103			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	118			70-130	Pass	
Naphthalene	%	103			70-130	Pass	
Phenanthrene	%	92			70-130	Pass	
Pyrene	%	101			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	106			70-130	Pass	
4.4'-DDD	%	117			70-130	Pass	
4.4'-DDE	%	108			70-130	Pass	
4.4'-DDT	%	117			70-130	Pass	
a-BHC	%	111			70-130	Pass	
Aldrin	%	108			70-130	Pass	
b-BHC	%	120			70-130	Pass	
d-BHC	%	128			70-130	Pass	
Dieldrin	%	112			70-130	Pass	
Endosulfan I	%	111			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endosulfan II	%	114			70-130	Pass	
Endosulfan sulphate	%	114			70-130	Pass	
Endrin	%	115			70-130	Pass	
Endrin aldehyde	%	114			70-130	Pass	
Endrin ketone	%	110			70-130	Pass	
g-BHC (Lindane)	%	108			70-130	Pass	
Heptachlor	%	126			70-130	Pass	
Heptachlor epoxide	%	119			70-130	Pass	
Methoxychlor	%	111			70-130	Pass	
Toxaphene	%	119			70-130	Pass	
LCS - % Recovery							
Acid Herbicides							
2.4-D	%	101			70-130	Pass	
2.4-DB	%	85			70-130	Pass	
2.4.5-T	%	105			70-130	Pass	
2.4.5-TP	%	105			70-130	Pass	
Actril (Ioxynil)	%	87			70-130	Pass	
Dicamba	%	94			70-130	Pass	
Dichlorprop	%	99			70-130	Pass	
Dinitro-o-cresol	%	77			70-130	Pass	
Dinoseb	%	76			70-130	Pass	
MCPA	%	109			70-130	Pass	
MCPB	%	85			70-130	Pass	
Mecoprop	%	83			70-130	Pass	
LCS - % Recovery							
Phenols (Halogenated)							
2-Chlorophenol	%	92			30-130	Pass	
2.4-Dichlorophenol	%	78			30-130	Pass	
2.4.5-Trichlorophenol	%	94			30-130	Pass	
2.4.6-Trichlorophenol	%	109			30-130	Pass	
2.6-Dichlorophenol	%	102			30-130	Pass	
4-Chloro-3-methylphenol	%	70			30-130	Pass	
Tetrachlorophenols - Total	%	84			30-130	Pass	
LCS - % Recovery							
Phenols (non-Halogenated)							
2-Methylphenol (o-Cresol)	%	111			30-130	Pass	
2-Nitrophenol	%	92			30-130	Pass	
2.4-Dimethylphenol	%	91			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	%	103			30-130	Pass	
4-Nitrophenol	%	122			30-130	Pass	
Phenol	%	86			30-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	98			70-130	Pass	
LCS - % Recovery							
Chromium (hexavalent)	%	92			70-130	Pass	
Cyanide (total)	%	92			70-130	Pass	
Fluoride	%	102			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	102			70-130	Pass	
Arsenic	%	101			70-130	Pass	
Beryllium	%	94			70-130	Pass	
Cadmium	%	100			70-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Cadmium			%	88			70-130	Pass	
Chromium			%	93			70-130	Pass	
Copper			%	96			70-130	Pass	
Lead			%	110			70-130	Pass	
Lead			%	101			70-130	Pass	
Mercury			%	100			70-130	Pass	
Mercury			%	89			70-130	Pass	
Molybdenum			%	78			70-130	Pass	
Nickel			%	95			70-130	Pass	
Nickel			%	94			70-130	Pass	
Selenium			%	93			70-130	Pass	
Silver			%	84			70-130	Pass	
Zinc			%	113			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	S17-Ma28827	NCP	%	111			70-130	Pass	
4.4'-DDD	S17-Ma28863	NCP	%	110			70-130	Pass	
4.4'-DDE	S17-Ma28827	NCP	%	114			70-130	Pass	
4.4'-DDT	S17-Ma28863	NCP	%	109			70-130	Pass	
a-BHC	S17-Ma28827	NCP	%	118			70-130	Pass	
Aldrin	S17-Ma28827	NCP	%	117			70-130	Pass	
b-BHC	S17-Ma28827	NCP	%	124			70-130	Pass	
d-BHC	S17-Ma28827	NCP	%	124			70-130	Pass	
Dieldrin	S17-Ma28827	NCP	%	115			70-130	Pass	
Endosulfan I	S17-Ma28827	NCP	%	113			70-130	Pass	
Endosulfan II	S17-Ma28827	NCP	%	115			70-130	Pass	
Endosulfan sulphate	S17-Ma28827	NCP	%	113			70-130	Pass	
Endrin	S17-Ma28827	NCP	%	105			70-130	Pass	
Endrin aldehyde	S17-Ma28827	NCP	%	109			70-130	Pass	
Endrin ketone	S17-Ma28827	NCP	%	104			70-130	Pass	
g-BHC (Lindane)	S17-Ma28827	NCP	%	108			70-130	Pass	
Heptachlor	S17-Ma28827	NCP	%	110			70-130	Pass	
Heptachlor epoxide	S17-Ma28827	NCP	%	126			70-130	Pass	
Methoxychlor	S17-Ma28827	NCP	%	80			70-130	Pass	
Spike - % Recovery									
Acid Herbicides				Result 1					
2.4-D	S17-Ma29524	CP	%	114			70-130	Pass	
Actril (Ioxynil)	S17-Ma29524	CP	%	105			70-130	Pass	
Dichlorprop	S17-Ma29524	CP	%	112			70-130	Pass	
MCPA	S17-Ma29524	CP	%	130			70-130	Pass	
MCPB	S17-Ma29524	CP	%	104			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Beryllium	S17-Ma22881	NCP	%	86			70-130	Pass	
Molybdenum	S17-Ma22881	NCP	%	89			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	S17-Ma29531	CP	%	97			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	S17-Ma29531	CP	%	99			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Acenaphthene	S17-Ma29535	CP	%	91			70-130	Pass	
Spike - % Recovery									
Phenols (Halogenated)				Result 1					
2-Chlorophenol	S17-Ma29535	CP	%	86			30-130	Pass	
4-Chloro-3-methylphenol	S17-Ma29535	CP	%	83			30-130	Pass	
Spike - % Recovery									
Phenols (non-Halogenated)				Result 1					
Phenol	S17-Ma29535	CP	%	78			30-130	Pass	
Spike - % Recovery									
				Result 1					
Cyanide (total)	M17-Ma30008	NCP	%	66			70-130	Fail	Q08
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	S17-Ma29543	CP	%	81			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	S17-Ma29543	CP	%	78			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S17-Ma29544	CP	%	82			70-130	Pass	
Cadmium	S17-Ma29544	CP	%	87			70-130	Pass	
Chromium	S17-Ma29544	CP	%	91			70-130	Pass	
Copper	S17-Ma29544	CP	%	85			70-130	Pass	
Lead	S17-Ma29544	CP	%	130			70-130	Pass	
Mercury	S17-Ma29544	CP	%	95			70-130	Pass	
Nickel	S17-Ma29544	CP	%	88			70-130	Pass	
Selenium	S17-Ma29544	CP	%	95			70-130	Pass	
Silver	S17-Ma29544	CP	%	81			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S17-Ma29548	CP	%	98			70-130	Pass	
Acenaphthylene	S17-Ma29548	CP	%	95			70-130	Pass	
Anthracene	S17-Ma29548	CP	%	86			70-130	Pass	
Benz(a)anthracene	S17-Ma29548	CP	%	83			70-130	Pass	
Benzo(a)pyrene	S17-Ma29548	CP	%	93			70-130	Pass	
Benzo(b&j)fluoranthene	S17-Ma29548	CP	%	96			70-130	Pass	
Benzo(g.h.i)perylene	S17-Ma29548	CP	%	111			70-130	Pass	
Benzo(k)fluoranthene	S17-Ma29548	CP	%	95			70-130	Pass	
Chrysene	S17-Ma29548	CP	%	105			70-130	Pass	
Dibenz(a.h)anthracene	S17-Ma29548	CP	%	104			70-130	Pass	
Fluoranthene	S17-Ma29548	CP	%	80			70-130	Pass	
Fluorene	S17-Ma29548	CP	%	92			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S17-Ma29548	CP	%	115			70-130	Pass	
Naphthalene	S17-Ma29548	CP	%	98			70-130	Pass	
Phenanthrene	S17-Ma29548	CP	%	76			70-130	Pass	
Pyrene	S17-Ma29548	CP	%	81			70-130	Pass	
Spike - % Recovery									
Phenols (Halogenated)				Result 1					
2.4-Dichlorophenol	S17-Ma31745	NCP	%	75			30-130	Pass	
2.6-Dichlorophenol	S17-Ma31745	NCP	%	88			30-130	Pass	
Pentachlorophenol	S17-Ma31745	NCP	%	97			30-130	Pass	
Spike - % Recovery									
Phenols (non-Halogenated)				Result 1					
2-Methylphenol (o-Cresol)	S17-Ma31745	NCP	%	91			30-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
2-Nitrophenol	S17-Ma31745	NCP	%	85			30-130	Pass	
2.4-Dimethylphenol	S17-Ma31745	NCP	%	86			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	S17-Ma31745	NCP	%	90			30-130	Pass	
4-Nitrophenol	S17-Ma31745	NCP	%	128			30-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S17-Ma29552	CP	%	81			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S17-Ma29552	CP	%	75			70-130	Pass	
Toluene	S17-Ma29552	CP	%	75			70-130	Pass	
Ethylbenzene	S17-Ma29552	CP	%	76			70-130	Pass	
m&p-Xylenes	S17-Ma29552	CP	%	74			70-130	Pass	
o-Xylene	S17-Ma29552	CP	%	73			70-130	Pass	
Xylenes - Total	S17-Ma29552	CP	%	74			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S17-Ma29552	CP	%	70			70-130	Pass	
TRH C6-C10	S17-Ma29552	CP	%	86			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	S17-Ma29557	CP	%	86			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	S17-Ma29557	CP	%	91			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S17-Ma29558	CP	%	95			70-130	Pass	
Cadmium	S17-Ma29558	CP	%	81			70-130	Pass	
Chromium	S17-Ma29558	CP	%	100			70-130	Pass	
Copper	S17-Ma29558	CP	%	103			70-130	Pass	
Lead	S17-Ma29558	CP	%	114			70-130	Pass	
Mercury	S17-Ma29558	CP	%	85			70-130	Pass	
Nickel	S17-Ma29558	CP	%	93			70-130	Pass	
Selenium	S17-Ma29558	CP	%	89			70-130	Pass	
Silver	S17-Ma29558	CP	%	78			70-130	Pass	
Zinc	S17-Ma29558	CP	%	123			70-130	Pass	
Spike - % Recovery									
Phenols (Halogenated)				Result 1					
Tetrachlorophenols - Total	S17-Ma31075	NCP	%	109			30-130	Pass	
Spike - % Recovery									
Phenols (non-Halogenated)				Result 1					
2-Methyl-4.6-dinitrophenol	S17-Ma31075	NCP	%	72			30-130	Pass	
2.4-Dinitrophenol	S17-Ma31075	NCP	%	85			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S17-Ma29567	CP	%	78			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S17-Ma29567	CP	%	79			70-130	Pass	
Toluene	S17-Ma29567	CP	%	79			70-130	Pass	
Ethylbenzene	S17-Ma29567	CP	%	80			70-130	Pass	
m&p-Xylenes	S17-Ma29567	CP	%	78			70-130	Pass	
o-Xylene	S17-Ma29567	CP	%	78			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Xylenes - Total	S17-Ma29567	CP	%	78			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S17-Ma29567	CP	%	72			70-130	Pass	
TRH C6-C10	S17-Ma29567	CP	%	80			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	S17-Ma29572	CP	%	91			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	S17-Ma29572	CP	%	97			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S17-Ma29576	CP	%	86			70-130	Pass	
Acenaphthylene	S17-Ma29576	CP	%	84			70-130	Pass	
Anthracene	S17-Ma29576	CP	%	82			70-130	Pass	
Benz(a)anthracene	S17-Ma29576	CP	%	91			70-130	Pass	
Benzo(a)pyrene	S17-Ma29576	CP	%	88			70-130	Pass	
Benzo(b&j)fluoranthene	S17-Ma29576	CP	%	93			70-130	Pass	
Benzo(g.h.i)perylene	S17-Ma29576	CP	%	87			70-130	Pass	
Benzo(k)fluoranthene	S17-Ma29576	CP	%	100			70-130	Pass	
Chrysene	S17-Ma29576	CP	%	103			70-130	Pass	
Dibenz(a.h)anthracene	S17-Ma29576	CP	%	90			70-130	Pass	
Fluoranthene	S17-Ma29576	CP	%	99			70-130	Pass	
Fluorene	S17-Ma29576	CP	%	89			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S17-Ma29576	CP	%	98			70-130	Pass	
Naphthalene	S17-Ma29576	CP	%	100			70-130	Pass	
Phenanthrene	S17-Ma29576	CP	%	75			70-130	Pass	
Pyrene	S17-Ma29576	CP	%	100			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S17-Ma29444	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	S17-Ma29444	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	S17-Ma29444	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	S17-Ma29444	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	S17-Ma29444	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S17-Ma29444	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S17-Ma29444	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	S17-Ma29444	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S17-Ma29444	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S17-Ma29444	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S17-Ma29444	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S17-Ma29444	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S17-Ma29444	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S17-Ma29444	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S17-Ma29444	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	S17-Ma29444	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S17-Ma29444	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S17-Ma29444	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S17-Ma29444	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S17-Ma29444	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Toxaphene	S17-Ma29444	NCP	mg/kg	< 1	< 1	<1	30%	Pass	

Duplicate									
				Result 1	Result 2	RPD			
Nitrobenzene	S17-Ma29524	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organophosphorus Pesticides				Result 1	Result 2	RPD			
Azinphos-methyl	S17-Ma29630	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Bolstar	S17-Ma29630	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorfenvinphos	S17-Ma29630	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorpyrifos	S17-Ma29630	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorpyrifos-methyl	S17-Ma29630	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Coumaphos	S17-Ma29630	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Demeton-S	S17-Ma29630	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Demeton-O	S17-Ma29630	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Diazinon	S17-Ma29630	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Dichlorvos	S17-Ma29630	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Dimethoate	S17-Ma29630	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Disulfoton	S17-Ma29630	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
EPN	S17-Ma29630	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ethion	S17-Ma29630	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ethoprop	S17-Ma29630	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fenitrothion	S17-Ma29630	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fensulfothion	S17-Ma29630	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fenthion	S17-Ma29630	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Malathion	S17-Ma29630	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Merphos	S17-Ma29630	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Methyl parathion	S17-Ma29630	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Mevinphos	S17-Ma29630	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Monocrotophos	S17-Fe17214	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Omethoate	S17-Ma29630	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Phorate	S17-Ma29630	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Pirimiphos-methyl	S17-Ma29630	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Pyrazophos	S17-Ma29630	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ronnel	S17-Ma29630	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Terbufos	S17-Ma29630	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Trichloronate	S17-Ma29630	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
Acid Herbicides				Result 1	Result 2	RPD			
2.4-D	M17-Ma29952	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4-DB	M17-Ma29952	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4.5-T	M17-Ma29952	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4.5-TP	M17-Ma29952	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Actril (loxynil)	M17-Ma29952	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dicamba	M17-Ma29952	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dichlorprop	M17-Ma29952	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dinitro-o-cresol	M17-Ma29952	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dinoseb	M17-Ma29952	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
MCPA	M17-Ma29952	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
MCPB	M17-Ma29952	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Mecoprop	M17-Ma29952	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Phenols (Halogenated)				Result 1	Result 2	RPD			
2-Chlorophenol	S17-Ma29524	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4.5-Trichlorophenol	S17-Ma29524	CP	mg/kg	< 1	< 1	<1	30%	Pass	
2.4.6-Trichlorophenol	S17-Ma29524	CP	mg/kg	< 1	< 1	<1	30%	Pass	
4-Chloro-3-methylphenol	S17-Ma29524	CP	mg/kg	< 1	< 1	<1	30%	Pass	

Duplicate									
Phenols (non-Halogenated)				Result 1	Result 2	RPD			
Phenol	S17-Ma29524	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Phthalates				Result 1	Result 2	RPD			
Bis(2-ethylhexyl)phthalate	S17-Ma29524	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Butyl benzyl phthalate	S17-Ma29524	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Di-n-butyl phthalate	S17-Ma29524	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Di-n-octyl phthalate	S17-Ma29524	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Diethyl phthalate	S17-Ma29524	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dimethyl phthalate	S17-Ma29524	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chromium (hexavalent)	S17-Ma29524	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Molybdenum	S17-Ma17665	NCP	mg/kg	6.8	7.6	10	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S17-Ma29530	CP	mg/kg	26	27	7.0	30%	Pass	
TRH C15-C28	S17-Ma29530	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S17-Ma29530	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S17-Ma29530	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S17-Ma29530	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S17-Ma29530	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
pH (1:5 Aqueous extract)	S17-Ma29530	CP	pH Units	6.0	5.7	pass	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S17-Ma29534	CP	%	23	22	3.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Cyanide (total)	M17-Ma29983	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S17-Ma29542	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S17-Ma29542	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S17-Ma29542	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S17-Ma29542	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S17-Ma29542	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S17-Ma29542	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
pH (1:5 Aqueous extract)	S17-Ma29543	CP	pH Units	9.0	9.0	pass	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S17-Ma29543	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Cadmium	S17-Ma29543	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S17-Ma29543	CP	mg/kg	30	33	10	30%	Pass	
Copper	S17-Ma29543	CP	mg/kg	38	33	12	30%	Pass	
Lead	S17-Ma29543	CP	mg/kg	< 5	< 5	<1	30%	Pass	

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Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Mercury	S17-Ma29543	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Nickel	S17-Ma29543	CP	mg/kg	40	41	2.0	30%	Pass
Selenium	S17-Ma29543	CP	mg/kg	3.3	3.5	7.0	30%	Pass
Zinc	S17-Ma29543	CP	mg/kg	37	41	10	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	S17-Ma29545	CP	%	18	17	5.0	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	S17-Ma29547	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	S17-Ma29547	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	S17-Ma29547	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	S17-Ma29547	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	S17-Ma29547	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	S17-Ma29547	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g.h.i)perylene	S17-Ma29547	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	S17-Ma29547	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	S17-Ma29547	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a.h)anthracene	S17-Ma29547	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	S17-Ma29547	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	S17-Ma29547	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1.2.3-cd)pyrene	S17-Ma29547	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	S17-Ma29547	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	S17-Ma29547	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	S17-Ma29547	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	S17-Ma29551	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Toluene	S17-Ma29551	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Ethylbenzene	S17-Ma29551	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
m&p-Xylenes	S17-Ma29551	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
o-Xylene	S17-Ma29551	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Xylenes - Total	S17-Ma29551	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass
Duplicate								
Volatile Organics				Result 1	Result 2	RPD		
1.1-Dichloroethane	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1-Dichloroethene	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1.1-Trichloroethane	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1.1.2-Tetrachloroethane	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1.2-Trichloroethane	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1.2.2-Tetrachloroethane	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2-Dibromoethane	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2-Dichlorobenzene	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2-Dichloroethane	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2-Dichloropropane	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2.3-Trichloropropane	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2.4-Trimethylbenzene	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.3-Dichlorobenzene	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.3-Dichloropropane	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.3.5-Trimethylbenzene	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.4-Dichlorobenzene	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2-Butanone (MEK)	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2-Propanone (Acetone)	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Chlorotoluene	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass

Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
4-Methyl-2-pentanone (MIBK)	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Allyl chloride	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromobenzene	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromochloromethane	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromodichloromethane	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromoform	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromomethane	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Carbon disulfide	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Carbon Tetrachloride	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chlorobenzene	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloroethane	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloroform	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloromethane	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
cis-1.2-Dichloroethene	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
cis-1.3-Dichloropropene	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibromochloromethane	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibromomethane	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dichlorodifluoromethane	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Iodomethane	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Isopropyl benzene (Cumene)	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Methylene Chloride	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Styrene	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Tetrachloroethene	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
trans-1.2-Dichloroethene	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
trans-1.3-Dichloropropene	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Trichloroethene	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Trichlorofluoromethane	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Vinyl chloride	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S17-Ma29551	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Phenols (Halogenated)				Result 1	Result 2	RPD			
2.4-Dichlorophenol	S17-Ma31744	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.6-Dichlorophenol	S17-Ma31744	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pentachlorophenol	S17-Ma31744	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Tetrachlorophenols - Total	S17-Ma31744	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Phenols (non-Halogenated)				Result 1	Result 2	RPD			
2-Cyclohexyl-4.6-dinitrophenol	S17-Ma31744	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
2-Methyl-4.6-dinitrophenol	S17-Ma31744	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
2-Methylphenol (o-Cresol)	S17-Ma31744	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
2-Nitrophenol	S17-Ma31744	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
2.4-Dimethylphenol	S17-Ma31744	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4-Dinitrophenol	S17-Ma31744	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
3&4-Methylphenol (m&p-Cresol)	S17-Ma31744	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
4-Nitrophenol	S17-Ma31744	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Dinoseb	S17-Ma31744	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S17-Ma29555	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S17-Ma29555	CP	mg/kg	73	64	14	30%	Pass	
TRH C29-C36	S17-Ma29555	CP	mg/kg	61	< 50	23	30%	Pass	

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Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S17-Ma29555	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S17-Ma29555	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S17-Ma29555	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S17-Ma29557	CP	mg/kg	4.0	4.1	3.0	30%	Pass	
Cadmium	S17-Ma29557	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Copper	S17-Ma29557	CP	mg/kg	53	54	2.0	30%	Pass	
Lead	S17-Ma29557	CP	mg/kg	12	12	1.0	30%	Pass	
Mercury	S17-Ma29557	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S17-Ma29557	CP	mg/kg	12	11	10	30%	Pass	
Selenium	S17-Ma29557	CP	mg/kg	2.0	2.1	5.0	30%	Pass	
Silver	S17-Ma29557	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Zinc	S17-Ma29557	CP	mg/kg	37	36	4.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
pH (1:5 Aqueous extract)	S17-Ma29558	CP	pH Units	6.9	6.6	pass	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S17-Ma29562	CP	%	18	15	20	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S17-Ma29563	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S17-Ma29563	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S17-Ma29563	CP	mg/kg	< 0.5	0.7	56	30%	Fail	Q15
Benz(a)anthracene	S17-Ma29563	CP	mg/kg	1.3	1.2	3.0	30%	Pass	
Benzo(a)pyrene	S17-Ma29563	CP	mg/kg	1.4	1.3	7.0	30%	Pass	
Benzo(b&j)fluoranthene	S17-Ma29563	CP	mg/kg	1.7	1.6	10	30%	Pass	
Benzo(g.h.i)perylene	S17-Ma29563	CP	mg/kg	1.2	1.0	10	30%	Pass	
Benzo(k)fluoranthene	S17-Ma29563	CP	mg/kg	0.8	0.8	2.0	30%	Pass	
Chrysene	S17-Ma29563	CP	mg/kg	1.1	1.1	1.0	30%	Pass	
Dibenz(a.h)anthracene	S17-Ma29563	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S17-Ma29563	CP	mg/kg	2.3	2.8	21	30%	Pass	
Fluorene	S17-Ma29563	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S17-Ma29563	CP	mg/kg	1.0	0.9	9.0	30%	Pass	
Naphthalene	S17-Ma29563	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S17-Ma29563	CP	mg/kg	0.6	1.4	78	30%	Fail	Q15
Pyrene	S17-Ma29563	CP	mg/kg	2.3	2.6	14	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S17-Ma29566	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S17-Ma29566	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S17-Ma29566	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S17-Ma29566	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S17-Ma29566	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S17-Ma29566	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S17-Ma29566	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S17-Ma29566	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S17-Ma29566	CP	mg/kg	< 20	< 20	<1	30%	Pass	

Duplicate									
				Result 1	Result 2	RPD			
pH (1:5 Aqueous extract)	S17-Ma29574	CP	pH Units	6.9	7.0	pass	30%	Pass	
% Moisture	S17-Ma29574	CP	%	21	20	7.0	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S17-Ma29575	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S17-Ma29575	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S17-Ma29575	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S17-Ma29575	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S17-Ma29575	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S17-Ma29575	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S17-Ma29575	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S17-Ma29575	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S17-Ma29575	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S17-Ma29575	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S17-Ma29575	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S17-Ma29575	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S17-Ma29575	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S17-Ma29575	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S17-Ma29575	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S17-Ma29575	CP	mg/kg	< 0.5	< 0.5	<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.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
N09	Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference
Q15	The RPD reported passes Eurofins | mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Mary Makarios	Analytical Services Manager
Alex Petridis	Senior Analyst-Organic (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Nibha Vaidya	Senior Analyst-Asbestos (NSW)
Ryan Hamilton	Senior Analyst-Inorganic (NSW)
Ryan Hamilton	Senior Analyst-Metal (NSW)
Ryan Hamilton	Senior Analyst-Organic (NSW)
Ryan Hamilton	Senior Analyst-Volatile (NSW)

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.

Certificate of Analysis

DRC Environmental Pty Ltd
Suite G6/79-109 Manningham Rd
Bulleen
VIC 3105

NATA Accredited
Accreditation Number 1261
Site Number 18217

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:	**Patrick Baldwin**
Report	**539755-W**
Project name	DUNHEVED CIRCUIT
Project ID	ST MARYS
Received Date	Mar 27, 2017

Client Sample ID			**TB01**	**TB03_250317**	**TB04_250317**
Sample Matrix			**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**S17-Ma29560**	**S17-Ma29577**	**S17-Ma29578**
Date Sampled			**Mar 24, 2017**	**Mar 25, 2017**	**Mar 25, 2017**
Test/Reference	LOR	Unit			
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02	< 0.02	< 0.02
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02
BTEX					
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	89	91	86
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02
Volatile Organics					
Naphthalene[N02]	0.01	mg/L	< 0.01	< 0.01	< 0.01

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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
TRH C6-C10 less BTEX (F1)	Sydney	Mar 27, 2017	14 Day
- Method: LM-LTM-ORG-2010			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Mar 27, 2017	7 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
BTEX	Sydney	Mar 27, 2017	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Mar 27, 2017	7 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Volatile Organics	Sydney	Mar 27, 2017	7 Days
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			

Company Name: DRC Environmental Pty Ltd
Address: Suite G6/79-109 Manningham Rd
Bulleen
VIC 3105

Project Name: DUNHEVED CIRCUIT
Project ID: ST MARYS

Order No.:
Report #: 539755
Phone: 0402 455 638
Fax:

Received: Mar 27, 2017 11:20 AM
Due: Apr 3, 2017
Priority: 5 Day
Contact Name: Patrick Baldwin

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						Asbestos - AS4964	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	Moisture Set	ENM Exemption Suite - The excavated natural material order 2014 NSW	NSW DECC - Waste Classification Table 1	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271													X	
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 18217														
External Laboratory														
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**									
1	TP01_0.1	Mar 24, 2017		Soil	S17-Ma29521		X				X	X		
2	TP01_0.7	Mar 24, 2017		Soil	S17-Ma29522						X	X		
3	TP01_1.6	Mar 24, 2017		Soil	S17-Ma29523					X				
4	TP02_0.05	Mar 24, 2017		Soil	S17-Ma29524	X					X		X	
5	TP02_1.2	Mar 24, 2017		Soil	S17-Ma29527						X	X		
6	TP03_0.1	Mar 24, 2017		Soil	S17-Ma29528		X				X	X		
7	TP03_1.0	Mar 24, 2017		Soil	S17-Ma29529					X				
8	TP03_1.2	Mar 24, 2017		Soil	S17-Ma29530						X	X		
9	TP04_0.6	Mar 24, 2017		Soil	S17-Ma29531						X	X		

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		Phone:	0402 455 638	**Priority:**	5 Day
		Fax:		**Contact Name:**	Patrick Baldwin
Project Name:	DUNHEVED CIRCUIT				
Project ID:	ST MARYS				

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						Asbestos - AS4964	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	Moisture Set	ENM Exemption Suite - The excavated natural material order 2014 NSW	NSW DECC - Waste Classification Table 1	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271													X	
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 18217														
10	TP05_0.1	Mar 24, 2017		Soil	S17-Ma29532	X					X	X		
11	TP05_0.2	Mar 24, 2017		Soil	S17-Ma29533					X				
12	TP05_0.6	Mar 24, 2017		Soil	S17-Ma29534						X	X		
13	TP06_0.1	Mar 24, 2017		Soil	S17-Ma29535	X					X		X	
14	TP06_0.6	Mar 24, 2017		Soil	S17-Ma29536						X	X		
15	TP07_0.1	Mar 24, 2017		Soil	S17-Ma29537	X					X	X		
16	TP07_0.6	Mar 24, 2017		Soil	S17-Ma29538						X	X		
17	TP08_0.1	Mar 24, 2017		Soil	S17-Ma29539		X				X	X		
18	TP08_0.5	Mar 24, 2017		Soil	S17-Ma29540					X				
19	TP08_1.5	Mar 24, 2017		Soil	S17-Ma29541						X	X		
20	TP08_3.9	Mar 24, 2017		Soil	S17-Ma29542						X	X		
21	TP09_0.1	Mar 24, 2017		Soil	S17-Ma29543	X					X	X		

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Company Name:	DRC Environmental Pty Ltd	**Order No.:**		**Received:**	Mar 27, 2017 11:20 AM
Address:	Suite G6/79-109 Manningham Rd	**Report #:**	539755	**Due:**	Apr 3, 2017
	Bulleen	**Phone:**	0402 455 638	**Priority:**	5 Day
	VIC 3105	**Fax:**		**Contact Name:**	Patrick Baldwin
Project Name:	DUNHEVED CIRCUIT				
Project ID:	ST MARYS				

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						Asbestos - AS4964	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	Moisture Set	ENM Exemption Suite - The excavated natural material order 2014 NSW	NSW DECC - Waste Classification Table 1	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271													X	
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 18217														
22	TP09_2.5	Mar 24, 2017		Soil	S17-Ma29544						X	X		
23	TP10_0.1	Mar 24, 2017		Soil	S17-Ma29545						X	X		
24	TP10_2.8	Mar 24, 2017		Soil	S17-Ma29546					X				
25	SS01	Mar 24, 2017		Soil	S17-Ma29547						X	X		
26	TP11_0.2	Mar 24, 2017		Soil	S17-Ma29548			X			X	X		
27	TP11_0.7	Mar 24, 2017		Soil	S17-Ma29549						X	X		
28	TP11_2.9	Mar 24, 2017		Soil	S17-Ma29550				X					
29	TP12_0.1	Mar 24, 2017		Soil	S17-Ma29551			X			X		X	
30	TP12_2.2	Mar 24, 2017		Soil	S17-Ma29552						X	X		
31	TP12_3.2	Mar 24, 2017		Soil	S17-Ma29553					X				
32	TP13_0.1	Mar 24, 2017		Soil	S17-Ma29554			X			X	X		
33	TP13_1.2	Mar 24, 2017		Soil	S17-Ma29555						X	X		

Company Name:	DRC Environmental Pty Ltd	**Order No.:**		**Received:**	Mar 27, 2017 11:20 AM
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	VIC 3105	**Fax:**		**Contact Name:**	Patrick Baldwin
Project Name:	DUNHEVED CIRCUIT				
Project ID:	ST MARYS				

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						Asbestos - AS4964	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	Moisture Set	ENM Exemption Suite - The excavated natural material order 2014 NSW	NSW DECC - Waste Classification Table 1	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271													X	
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 18217														
34	TP13_2.9	Mar 24, 2017		Soil	S17-Ma29556					X				
35	TP14_0.2	Mar 24, 2017		Soil	S17-Ma29557	X					X	X		
36	TP14_1.4	Mar 24, 2017		Soil	S17-Ma29558						X	X		
37	TP14_2.9	Mar 24, 2017		Soil	S17-Ma29559					X				
38	TB01	Mar 24, 2017		Water	S17-Ma29560									X
39	TP15_0.1	Mar 25, 2017		Soil	S17-Ma29562			X			X		X	
40	TP15_2.0	Mar 25, 2017		Soil	S17-Ma29563						X	X		
41	TP15_3.5	Mar 25, 2017		Soil	S17-Ma29564						X	X		
42	TP16_0.2	Mar 25, 2017		Soil	S17-Ma29565			X			X	X		
43	TP16_1.0	Mar 25, 2017		Soil	S17-Ma29566						X	X		
44	TP17_0.2	Mar 25, 2017		Soil	S17-Ma29567			X			X	X		
45	TP17_1.5	Mar 25, 2017		Soil	S17-Ma29568					X				

Company Name: DRC Environmental Pty Ltd
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Bulleen
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Priority: 5 Day
Contact Name: Patrick Baldwin

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						Asbestos - AS4964	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	Moisture Set	ENM Exemption Suite - The excavated natural material order 2014 NSW	NSW DECC - Waste Classification Table 1	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271													X	
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 18217														
46	TP17_3.5	Mar 25, 2017		Soil	S17-Ma29569						X	X		
47	TP16_3.0	Mar 25, 2017		Soil	S17-Ma29570					X				
48	TP18_0.2	Mar 25, 2017		Soil	S17-Ma29571			X			X	X		
49	TP18_2.5	Mar 25, 2017		Soil	S17-Ma29572						X	X		
50	QC01_250317	Mar 25, 2017		Soil	S17-Ma29573			X			X	X		
51	QC03_250317	Mar 25, 2017		Soil	S17-Ma29574						X	X		
52	TP19_0.2	Mar 25, 2017		Soil	S17-Ma29575						X	X		
53	TP19_3.5	Mar 25, 2017		Soil	S17-Ma29576						X	X		
54	TB03_250317	Mar 25, 2017		Water	S17-Ma29577									X
55	TB04_250317	Mar 25, 2017		Water	S17-Ma29578									X
56	TP19	Mar 25, 2017		Other	S17-Ma29579			X						
Test Counts						6	3	9	1	10	41	37	4	3

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Internal Quality Control Review and Glossary

General

1. 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.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. 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 Sample Receipt Advice.

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.

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

Units

mg/kg: milligrams per Kilogram

ug/l: micrograms per litre

ppb: Parts per billion

org/100ml: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/l: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	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
TEQ	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 20-130%

QC Data General Comments

1. 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.
2. 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.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. 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.
6. 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.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

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Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
Method Blank							
BTEX							
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	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Volatile Organics							
Naphthalene	mg/L	< 0.01			0.01	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	92			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	87			70-130	Pass	
Toluene	%	94			70-130	Pass	
Ethylbenzene	%	93			70-130	Pass	
m&p-Xylenes	%	98			70-130	Pass	
o-Xylene	%	96			70-130	Pass	
Xylenes - Total	%	97			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH C6-C10	%	81			70-130	Pass	
LCS - % Recovery							
Volatile Organics							
Naphthalene	%	101			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S17-Ma29595	NCP	%	122			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S17-Ma29364	NCP	%	88			70-130	Pass	
Toluene	S17-Ma29364	NCP	%	89			70-130	Pass	
Ethylbenzene	S17-Ma29364	NCP	%	89			70-130	Pass	
m&p-Xylenes	S17-Ma29364	NCP	%	94			70-130	Pass	
o-Xylene	S17-Ma29364	NCP	%	95			70-130	Pass	
Xylenes - Total	S17-Ma29364	NCP	%	95			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH C6-C10	S17-Ma32978	NCP	%	87			70-130	Pass	
Spike - % Recovery									
Volatile Organics				Result 1					
Naphthalene	S17-Ma29364	NCP	%	95			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S17-Ma28877	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S17-Ma28877	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	S17-Ma28877	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	S17-Ma28877	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	S17-Ma28877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	S17-Ma28877	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	S17-Ma28877	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C10	S17-Ma28877	NCP	mg/L	0.06	0.06	5.0	30%	Pass	
Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
Naphthalene	S17-Ma28877	NCP	mg/L	< 0.01	< 0.01	<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
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

Mary Makarios	Analytical Services Manager
Ryan Hamilton	Senior Analyst-Volatile (NSW)

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.

CHAIN OF CUSTODY DOCUMENTATION

DRC ENVIRONMENTAL
DRC Environmental Pty Ltd

CLIENT: DRC Environmental Pty Ltd	SAMPLER:
ADDRESS / OFFICE: G6 / 79-109 Manningham Road, Bulleen VIC 3105	MOBILE:
PROJECT MANAGER (PM): Patrick Baldwin	PHONE
PROJECT ID:	EMAIL REPORT TO: patrick@drcenviro.com.au poppy@drcenviro.com.au
SITE: P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No N/A
SAMPLE TEMPERATURE
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water) / CONTAINER INFORMATION

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	R12	R16	R17	Asbestos NEPM	TRH cis								Hold	Notes
	TP18 - 0.2	S	25/3		J + Asb.				1											
	TP18 - 2.5				J				1											
	QC01_250317				J + Asb				1											
1	QC02_250317				J - Asb				1											Please fwd to ALS
	QC03-250317				J				1											
2	QC04-250317				J				1											Please fwd to ALS
	TP19 - 0.2				J				1											
	TP19 - 3.5				J				1											
	TB03 - 250317	W			2x vial						1									
	TB04 - 250317				2x vials						1									
	TP19				Asb.					1										

Subcon / Forward Lab / Split WO
Lab / Analysis: Newcastle
Organised By / Date:
Relinquished By / Date: Asbestos
Connote / Courier:
WO No:
Attach By PO / Internal Sheet:

Environmental Division
Sydney
Work Order Reference
ES1707373
Telephone : +61-2-8784 8555

RELINQUISHED BY		RECEIVED BY		METHOD OF SHIPMENT
Name:	Date:	Name: AB	Date: 27/3	Con' Note No:
Of:	Time:	Of: ALS	Time: 11:20 Am	
Name:	Date:	Name: J. Creaty	Date: 28/3/17	Transport Co:
Of:	Time:	Of: ALS	Time: 12:50	

Water Container Codes: P = Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserveed Plastic; AG = Amber Glass Unpreserved;
V = VOA Vial HCl Preserved; V... Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; ASS = Plastic Bad for Acid Sulphate Soils; B = Unpreserved Bag.

Pg 5 of 5

CERTIFICATE OF ANALYSIS

Work Order	: **ES1707373**	Page	: 1 of 6
Client	: **DRC ENVIRONMENTAL**	Laboratory	: Environmental Division Sydney
Contact	: MR PATRICK BALDWIN	Contact	: Bronwyn Sheen
Address	: Suite G6 79-109 Manningham Road BULLEEN 3105	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-3-8549 9636
Project	: ----	Date Samples Received	: 28-Mar-2017 12:50
Order number	: ----	Date Analysis Commenced	: 29-Mar-2017
C-O-C number	: ----	Issue Date	: 03-Apr-2017 17:53
Sampler	: ----		
Site	: ----		
Quote number	: Blanket Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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
- Descriptive 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.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Peter Wu		Sydney Inorganics, Smithfield, NSW
Raymond Commodore	Instrument Chemist	Sydney Inorganics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW
Shaun Spooner	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

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 no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

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.

- EA200N: Asbestos weights and percentages are not covered under the Scope of NATA Accreditation.
  Weights of Asbestos are based on extracted bulk asbestos, fibre bundles, and/or ACM and do not include respirable fibres (if present)
  The Friable Asbestos weight is calculated from the extracted Fibrous Asbestos and Asbestos Fines as an equivalent weight of 100% Asbestos
  Percentages for Asbestos content in ACM are based on the 2013 NEPM default values.
  All calculations of percentage Asbestos under this method are approximate and should be used as a guide only.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.
- EA200N: ALS laboratory procedures and methods used for the identification and quantitation of asbestos are consistent with AS4964-2004 and the requirements of the 2013 NEPM for Assessment of Site Contamination
- 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.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	QC02_250317	QC04_250317	----	----	----
			Client sampling date / time	25-Mar-2017 00:00	25-Mar-2017 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1707373-001	ES1707373-002	--------	--------	--------
				Result	Result	----	----	----
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	**8.7**	**7.5**	----	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	**118**	**116**	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	**8.2**	**17.0**	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	**No**	----	----	----	----
Asbestos Type	1332-21-4	-	--	**-**	----	----	----	----
Sample weight (dry)	----	0.01	g	**202**	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	**S.SPOONER**	----	----	----	----
EA200N: Asbestos Quantification (non-NATA)								
ø Free Fibres	----	5	Fibres	**No**	----	----	----	----
ø Friable Asbestos	1332-21-4	0.0004	g	<0.0004	----	----	----	----
ø Friable Asbestos (as Asbestos in Soil)	1332-21-4	0.001	% (w/w)	<0.001	----	----	----	----
ø Asbestos Containing Material	1332-21-4	0.1	g	<0.1	----	----	----	----
ø Asbestos Containing Material (as 15% Asbestos in ACM >7mm)	1332-21-4	0.01	% (w/w)	<0.01	----	----	----	----
ø Weight Used for % Calculation	----	0.0001	kg	**0.202**	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	**6**	----	----	----
Cadmium	7440-43-9	0.4	mg/kg	<0.4	<0.4	----	----	----
Chromium	7440-47-3	2	mg/kg	**9**	**22**	----	----	----
Copper	7440-50-8	5	mg/kg	**10**	**14**	----	----	----
Lead	7439-92-1	5	mg/kg	**23**	**15**	----	----	----
Nickel	7440-02-0	2	mg/kg	**5**	**7**	----	----	----
Zinc	7440-66-6	5	mg/kg	**39**	**46**	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
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	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	QC02_250317	QC04_250317	----	----	----
			Client sampling date / time	25-Mar-2017 00:00	25-Mar-2017 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1707373-001	ES1707373-002	--------	--------	--------
				Result	Result	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
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	----	----	----
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	**0.6**	**0.6**	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	**1.2**	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
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	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>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	----	----	----
EP080: BTEXN								
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	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	----	----	----

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

			Client sample ID	QC02_250317	QC04_250317	----	----	----
			Client sampling date / time	25-Mar-2017 00:00	25-Mar-2017 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1707373-001	ES1707373-002	--------	--------	--------
				Result	Result	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**82.0**	**82.7**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	**84.2**	**84.5**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	**69.2**	**72.1**	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**87.5**	**86.3**	----	----	----
Anthracene-d10	1719-06-8	0.5	%	**86.9**	**86.5**	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	**86.2**	**85.4**	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**110**	**106**	----	----	----
Toluene-D8	2037-26-5	0.2	%	**106**	**99.4**	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	**107**	**100**	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	QC02_250317 - 25-Mar-2017 00:00	Mid brown sandy soil.

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130

QUALITY CONTROL REPORT

Work Order	: **ES1707373**	Page	: 1 of 6
Client	: **DRC ENVIRONMENTAL**	Laboratory	: Environmental Division Sydney
Contact	: MR PATRICK BALDWIN	Contact	: Bronwyn Sheen
Address	: Suite G6 79-109 Manningham Road BULLEEN 3105	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-3-8549 9636
Project	: ----	Date Samples Received	: 28-Mar-2017
Order number	: ----	Date Analysis Commenced	: 29-Mar-2017
C-O-C number	: ----	Issue Date	: 03-Apr-2017
Sampler	: ----		
Site	: ----		
Quote number	: Blanket Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Peter Wu		Sydney Inorganics, Smithfield, NSW
Raymond Commodore	Instrument Chemist	Sydney Inorganics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW
Shaun Spooner	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

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 (%)*
EA002 : pH (Soils) (QC Lot: 815803)									
ES1707373-001	QC02_250317	EA002: pH Value	----	0.1	pH Unit	8.7	8.8	0.00	0% - 20%
ES1707464-004	Anonymous	EA002: pH Value	----	0.1	pH Unit	7.0	7.0	0.00	0% - 20%
EA010: Conductivity (QC Lot: 815804)									
ES1707373-001	QC02_250317	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	118	127	7.24	0% - 20%
ES1707464-004	Anonymous	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	43	41	3.83	0% - 20%
EA055: Moisture Content (QC Lot: 816134)									
ES1707373-001	QC02_250317	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	8.2	8.4	2.04	No Limit
ES1707377-011	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	18.8	17.2	8.57	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 815899)									
ES1707373-001	QC02_250317	EG005T-MW: Cadmium	7440-43-9	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EG005T-MW: Chromium	7440-47-3	2	mg/kg	9	8	13.4	No Limit
		EG005T-MW: Nickel	7440-02-0	2	mg/kg	5	5	0.00	No Limit
		EG005T-MW: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T-MW: Copper	7440-50-8	5	mg/kg	10	8	16.5	No Limit
		EG005T-MW: Lead	7439-92-1	5	mg/kg	23	22	7.47	No Limit
		EG005T-MW: Zinc	7440-66-6	5	mg/kg	39	34	13.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 815900)									
ES1707373-001	QC02_250317	EG035T-MW: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 814604)									
ES1707373-001	QC02_250317	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

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 814604) - continued									
ES1707373-001	QC02_250317	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	205-99-2 205-82-3	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
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 814605)									
ES1707373-001	QC02_250317	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
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 814605)									
ES1707373-001	QC02_250317	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
EP080: BTEXN (QC Lot: 815773)									
ES1707373-001	QC02_250317	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	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES1707377-010	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	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	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 Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA010: Conductivity (QCLot: 815804)								
EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	1412 µS/cm	98.2	92	108
EG005T: Total Metals by ICP-AES (QCLot: 815899)								
EG005T-MW: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	87.1	77	121
EG005T-MW: Cadmium	7440-43-9	0.4	mg/kg	<0.4	4.64 mg/kg	93.3	81	125
EG005T-MW: Chromium	7440-47-3	2	mg/kg	<2	----	----	----	----
EG005T-MW: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	95.9	85	133
EG005T-MW: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	102	76	126
EG005T-MW: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	102	81	125
EG005T-MW: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	106	75	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 815900)								
EG035T-MW: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	77.2	76	112
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 814604)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	107	77	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	107	72	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	114	73	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	109	72	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	109	75	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	110	77	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	109	73	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	110	74	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	104	69	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	106	75	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	103	68	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	103	74	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	104	70	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	84.3	61	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	86.5	62	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	83.1	63	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 814605)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	99.2	75	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	103	77	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	106	71	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 814605)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 814605) - continued								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	250 mg/kg	97.9	77	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	90.4	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	150 mg/kg	107	63	131
EP080: BTEXN (QCLot: 815773)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	89.1	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	85.3	67	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	84.2	65	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	90.3	66	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	87.2	68	120

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	SpikeRecovery(%) MS	Recovery Limits (%) Low	Recovery Limits (%) High
EG005T: Total Metals by ICP-AES (QCLot: 815899)							
ES1707373-001	QC02_250317	EG005T-MW: Arsenic	7440-38-2	50 mg/kg	98.3	70	130
		EG005T-MW: Cadmium	7440-43-9	50 mg/kg	101	70	130
		EG005T-MW: Chromium	7440-47-3	50 mg/kg	99.7	70	130
		EG005T-MW: Copper	7440-50-8	250 mg/kg	102	70	130
		EG005T-MW: Lead	7439-92-1	250 mg/kg	99.8	70	130
		EG005T-MW: Nickel	7440-02-0	50 mg/kg	96.1	70	130
		EG005T-MW: Zinc	7440-66-6	250 mg/kg	106	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 815900)							
ES1707373-001	QC02_250317	EG035T-MW: Mercury	7439-97-6	5 mg/kg	93.8	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 814604)							
ES1707373-001	QC02_250317	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	92.2	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	95.3	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 814605)							
ES1707373-001	QC02_250317	EP071: C10 - C14 Fraction	----	523 mg/kg	87.6	73	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	99.1	53	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	106	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 814605)							
ES1707373-001	QC02_250317	EP071: >C10 - C16 Fraction	----	860 mg/kg	90.8	73	137

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 814605) - continued							
ES1707373-001	QC02_250317	EP071: >C16 - C34 Fraction	----	3223 mg/kg	105	53	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	93.7	52	132
EP080: BTEXN (QCLot: 815773)							
ES1707373-001	QC02_250317	EP080: Benzene	71-43-2	2.5 mg/kg	84.2	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	83.1	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	88.5	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	90.3	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	88.5	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1707373**	Page	: 1 of 6
Client	: **DRC ENVIRONMENTAL**	Laboratory	: Environmental Division Sydney
Contact	: MR PATRICK BALDWIN	Telephone	: +61-3-8549 9636
Project	: ----	Date Samples Received	: 28-Mar-2017
Site	: ----	Issue Date	: 03-Apr-2017
Sampler	: ----	No. of samples received	: 2
Order number	: ----	No. of samples analysed	: 2

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

- **NO Quality Control Sample Frequency Outliers exist.**

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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		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA002 : pH (Soils)								
Soil Glass Jar - Unpreserved (EA002)								
QC02_250317,	QC04_250317	**25-Mar-2017**	**30-Mar-2017**	01-Apr-2017	✓	**30-Mar-2017**	30-Mar-2017	✓
EA010: Conductivity								
Soil Glass Jar - Unpreserved (EA010)								
QC02_250317,	QC04_250317	**25-Mar-2017**	**30-Mar-2017**	01-Apr-2017	✓	**30-Mar-2017**	27-Apr-2017	✓
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103)								
QC02_250317,	QC04_250317	**25-Mar-2017**	**----**	----	----	**30-Mar-2017**	08-Apr-2017	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Snap Lock Bag: Separate bag received (EA200)								
QC02_250317		**25-Mar-2017**	**----**	----	----	**30-Mar-2017**	21-Sep-2017	✓
EA200N: Asbestos Quantification (non-NATA)								
Snap Lock Bag: Separate bag received (EA200N)								
QC02_250317		**25-Mar-2017**	**----**	----	----	**30-Mar-2017**	21-Sep-2017	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T-MW)								
QC02_250317,	QC04_250317	**25-Mar-2017**	**30-Mar-2017**	21-Sep-2017	✓	**30-Mar-2017**	21-Sep-2017	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T-MW)								
QC02_250317,	QC04_250317	**25-Mar-2017**	**30-Mar-2017**	21-Sep-2017	✓	**30-Mar-2017**	21-Sep-2017	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM))								
QC02_250317,	QC04_250317	**25-Mar-2017**	**29-Mar-2017**	08-Apr-2017	✓	**29-Mar-2017**	08-May-2017	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP071)								
QC02_250317,	QC04_250317	**25-Mar-2017**	**29-Mar-2017**	08-Apr-2017	✓	**30-Mar-2017**	08-May-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP071)								
QC02_250317,	QC04_250317	**25-Mar-2017**	**29-Mar-2017**	08-Apr-2017	✓	**30-Mar-2017**	08-May-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
QC02_250317, QC04_250317	**25-Mar-2017**	**30-Mar-2017**	08-Apr-2017	✓	**30-Mar-2017**	08-Apr-2017	✓

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		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Electrical Conductivity (1:5)	EA010	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055-103	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH (1:5)	EA002	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS (Microwave Digestion)	EG035T-MW	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICPAES (Microwave Digestion)	EG005T-MW	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Electrical Conductivity (1:5)	EA010	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS (Microwave Digestion)	EG035T-MW	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICPAES (Microwave Digestion)	EG005T-MW	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Electrical Conductivity (1:5)	EA010	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS (Microwave Digestion)	EG035T-MW	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICPAES (Microwave Digestion)	EG005T-MW	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS (Microwave Digestion)	EG035T-MW	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICPAES (Microwave Digestion)	EG005T-MW	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	6	**16.67**	**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*
pH (1:5)	EA002	SOIL	In house: Referenced to APHA 4500H+. pH is determined on soil samples after a 1:5 soil/water leach. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Electrical Conductivity (1:5)	EA010	SOIL	In house: Referenced to APHA 2510. Conductivity is determined on soil samples using a 1:5 soil/water leach. This method is compliant with NEPM (2013) Schedule B(3) (Method 104)
Moisture Content	EA055-103	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Asbestos Classification and Quantitation per NEPM 2013	* EA200N	SOIL	Asbestos Classification and Quantitation per NEPM 2013 with Confirmation of Identification by AS 4964 - 2004 Gravimetric determination of Asbestos Containing Material, Friable Asbestos and sample weight and calculation of percentage concentrations per NEPM protocols. Friable Asbestos is reported as the equivalent weight in the sample received after accounting for sub-sampling (where applicable for the <7mm and/or <2mm fractions).
Total Metals by ICPAES (Microwave Digestion)	EG005T-MW	SOIL	In house: Referenced to USEPA SW846 - 3051 (Microware Digestion); APHA 3120; USEPA SW846 - 6010. Metals in solids are determined following a microware digestion. The ICPAES technique ionizes selected elements. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass / charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS (Microwave Digestion)	EG035T-MW	SOIL	In house: Referenced to USEPA SW846 - 3051 (Microware Digestion); AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following a microware digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 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)
TRH - Semivolatile 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.
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)
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.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Microwave Digest for Metals in Soils, Sediments and Sludges	EN31	SOIL	In house: Referenced to USEPA SW 846 - 3051. Microwave Assisted Nitric Acid Digestion 1.0g of sample is mixed with 10 mL conc. Nitric acid in a closed, high pressure vessel, and heated using a specific program. Digest is appropriate for selected metals analysis in sludge, sediments, soils and oils. This method is compliant with NEPM (2013) Schedule B(3) (Method 203)
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of distilled water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
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, Na2SO4 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.

APPENDIX E – CHAIN OF CUSTODY DOCUMENTATION

539755

CHAIN OF CUSTODY DOCUMENTATION

DRC ENVIRONMENTAL
DRC Environmental Pty Ltd

CLIENT: DRC Environmental Pty Ltd	SAMPLER: R. Prochazka
ADDRESS / OFFICE: G6 / 79-109 Manningham Road, Bulleen VIC 3105	MOBILE: 0400 459 492
PROJECT MANAGER (PM): Patrick Baldwin	PHONE
PROJECT ID: St Marys	EMAIL REPORT TO: patrick@drcenviro.com.au ~~[illegible]~~ tracee@drcenviro.com.au
SITE: Dumbeleed Circuit P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): Standard TR QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No N/A
SAMPLE TEMPERATURE
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water) / CONTAINER INFORMATION

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	R12	R16	R17	Asbestos NEPM	HOLD
	TP01 - 0.1	S	24/3		J, Asb, Bag			1		1	
	TP01 - 0.7				J				1		
	TP01 - 1.6				J						X
	TP02 - 0.05				J, Asb, Bag		1			1	
	TP02 - 1.2				J				1		
	TP03 - 0.1				J, Asb, Bag				1	1	
	TP03 - 1.0				J						
	TP03 - 1.2				J				1		
	TP04 - 0.6				J				1		
	TP05 - 0.1				J, Asb, Bag			1		1	
	TP05 - 0.2				J						X
	TP05 - 0.6				J				1		

RELINQUISHED BY:		RECEIVED BY:		METHOD OF SHIPMENT
Name: RCP	Date: 27/3/17	Name: AB	Date: 27/3	Con' Note No:
Of: DRC	Time: Courier	Of: Bulleen	Time: 11:20AM	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

DRC ENVIRONMENTAL

DRC Environmental Pty Ltd

CLIENT: DRC Environmental Pty Ltd

ADDRESS / OFFICE: G6 / 79-109 Manningham Road, Bulleen VIC 3105

PROJECT MANAGER (PM): Patrick Baldwin

PROJECT ID:

SITE: P.O. NO.:

RESULTS REQUIRED (Date): QUOTE NO.:

SAMPLER:

MOBILE:

PHONE

EMAIL REPORT TO: patrick@drcenviro.com.au poppy@drcenviro.com.au

EMAIL INVOICE TO: (if different to report)

ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No N/A

SAMPLE TEMPERATURE

CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water) — CONTAINER INFORMATION

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	R12	R16	R17	Asbestos NEPM	HOLD
	TP06_0.1	S	24/3		J, Asb, Bag		1			1	
	TP06 – 0.6	↓	↓		J				1		
	TP07 – 0.1				J, Asb, Bag			1		1	
	TP07 – 0.6				J				1		
	TP08 – 0.1				J, Asb, Bag				1	1	
	TP08 – 0.5				J						X
	TP08 – 1.5				J				1		
	TP08 – 3.9				J				1		
	TP09 – 0.1				J, Asb, Bag			1		1	
	TP09 – 2.5				J				1		
	TP10 – 0.1				J, Asb, Bag				1		
	TP10 – 2.8	↓	↓		J						X

RELINQUISHED BY:		RECEIVED BY:		METHOD OF SHIPMENT
Name:	Date:	Name: AB	Date: 27/3	Con' Note No:
Of:	Time:	Of: Eurofins	Time: 11:20AM	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

DRC ENVIRONMENTAL
DRC Environmental Pty Ltd

CLIENT: DRC Environmental Pty Ltd
ADDRESS / OFFICE: G6 / 79-109 Manningham Road, Bulleen VIC 3105
PROJECT MANAGER (PM): Patrick Baldwin
PROJECT ID:
SITE:
P.O. NO.:
RESULTS REQUIRED (Date):
QUOTE NO.:

SAMPLER:
MOBILE:
PHONE
EMAIL REPORT TO: patrick@drcenviro.com.au poppy@drcenviro.com.au
EMAIL INVOICE TO: (if different to report)

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No N/A
SAMPLE TEMPERATURE
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected".
Extra volume for QC or trace LORs etc.

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	R12	R16	R17	NEPM Asbestos	HOLD	Notes
	SS01	S	24/3		J				1			OILY - CONTAMINATED
	TP11-0.2	↓	↓		J, Asb				1	1		
	TP11-0.7				J				1			
	TP11-2.9				J						X	
	TP12-0.1				J, Asb		1			1		
	TP12-2.2				J				1			
	TP12-3.2				J						X	
	TP13-0.1				J, Asb				1	1		
	TP13-1.2				J				1			
	TP13-2.9				J						X	
	TP14-0.2				J, Asb				1	1		
	TP14-1.4	↓	↓		J				1			

SAMPLE INFORMATION (note: S = Soil, W=Water) / CONTAINER INFORMATION

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name:	Date:	Name: AB	Date: 27/3	Con' Note No:
Of:	Time:	Of: Eurofins	Time: 11:20AM	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved, V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass, Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Pg 3 of 5

CHAIN OF CUSTODY DOCUMENTATION

CLIENT: DRC Environmental Pty Ltd

ADDRESS / OFFICE: G6 / 79-109 Manningham Road, Bulleen VIC 3105

PROJECT MANAGER (PM): Patrick Baldwin

PROJECT ID: St marys

SITE: P.O. NO.:

RESULTS REQUIRED (Date): Standard TR QUOTE NO.:

SAMPLER: R.Prochazka

MOBILE: 0400 659 452

PHONE

EMAIL REPORT TO: patrick@drcenviro.com.au ~~[illegible]@drcenviro.com.au~~ reas@drcenviro.com.au

EMAIL INVOICE TO: (If different to report)

ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

DRC ENVIRONMENTAL

DRC Environmental Pty Ltd

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No N/A

SAMPLE TEMPERATURE

CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water) — CONTAINER INFORMATION

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	R12	R16	R17	Asbestos NEPM	TPH C6-C9								HOLD
	TP14-2.0	S	24/3		J														X
	TB01	W	24/3		2xvials						1								
	TB02	W	24/3		2xvials						1								
	TP16_0.1	S	25/3		J + Asb.		1			1									
	TP15_2.0				J				1										
	TP15-3.5				J				1										
	TP16_0.2				J + Asb				1	1									
	TP16_1.0				J				1										
	TP16-3.0				J														X
	TP17_0.2				J + Asb				1	1									
	TP17_1.5				J														X
	TP17_3.5				J				1										

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name:	Date:	Name: AB	Date: 27/3	Con' Note No:
Of:	Time:	Of: [illegible]	Time: 11:20 Am	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass. Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Pg 4 of 5

CHAIN OF CUSTODY DOCUMENTATION

DRC ENVIRONMENTAL

DRC Environmental Pty Ltd

CLIENT: DRC Environmental Pty Ltd	SAMPLER:
ADDRESS / OFFICE: G6 / 79-109 Manningham Road, Bulleen VIC 3105	MOBILE:
PROJECT MANAGER (PM): Patrick Baldwin	PHONE
PROJECT ID:	EMAIL REPORT TO: patrick@drcenviro.com.au poppy@drcenviro.com.au
SITE: P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No N/A
SAMPLE TEMPERATURE
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water) / CONTAINER INFORMATION

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	R12	R16	R17	Asbestos HBM	TRH C6-C9	Hold	Notes
	TP18 - 0.2	S	25/3		J + ASb.				1	1			
	TP18 - 2.5				J				1				
	QC01-250317				J + Asb				1	1			
	QC02-250317				J + ASb				1	1			Please fwd to ALS
	QC03-250317				J				1				
	QC04-250317				J				1				Please fwd to ALS
	TP19 - 0.2				J				1				
	TP19 - 3.5				J				1				
	TB03-250317	W			2x vial						1		
	TB04-250317				2x vials.						1		
	TP19				Asb.					1			

RELINQUISHED BY		RECEIVED BY		METHOD OF SHIPMENT
Name:	Date:	Name: [signature]	Date: 27/3	Con' Note No:
Of:	Time:	Of: [signature]	Time: 11:20 am	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Rupan 28/03 14:48.

Rupan Virk

From:	Renee Prochazka <renee@drcenviro.com.au>
Sent:	Tuesday, 28 March 2017 2:48 PM
To:	Rupan Virk
Subject:	RE: Eurofins | mgt Sample Receipt Advice - Report 539755 : Site DUNHEVED CIRCUIT (ST MARYS)

Ah,
I see. Please do the asbestos absence/presence analysis if not enough sample was provided. As for Foreign Materials – please change the analysis to no-FM where sample volume is not enough.
Regards
Renee

From: RupanVirk@eurofins.com [mailto:RupanVirk@eurofins.com]
Sent: Tuesday, 28 March 2017 2:31 PM
To: Renee Prochazka <renee@drcenviro.com.au>; EnviroSampleNSW@eurofins.com
Subject: RE: Eurofins | mgt Sample Receipt Advice - Report 539755 : Site DUNHEVED CIRCUIT (ST MARYS)

Hi Renee

As per COC analysis asked for asbestos is Asbestos-WA analysis which requires approx. 500ml of sample(i.e. 700-800 gms) for which zip-lock bags were used, whereas for Foreign Materials about 4-6 kgs of sample is required. Small Asbestos bags can just be used for Asbestos Absence/Presence analysis. Please provide further instructions.
Thanks

Rupan Virk
Sample Receipt | NSW

Phone : +61 2 9900 8400

Email : RupanVirk@eurofins.com

From: Renee Prochazka [mailto:renee@drcenviro.com.au]
Sent: Tuesday, 28 March 2017 7:54 AM
To: !AU04_CAU001_EnviroSampleNSW
Subject: RE: Eurofins | mgt Sample Receipt Advice - Report 539755 : Site DUNHEVED CIRCUIT (ST MARYS)

There should have been asbestos (small) bags provided for all those samples listed.
As for FM bags, I just used zip lock bags for that analysis.... They should have been double bagged in the esky.

Regards
Renee

From: envirosamplensw@eurofins.com [mailto:envirosamplensw@eurofins.com]
Sent: Monday, 27 March 2017 8:38 PM
To: Patrick Baldwin <patrick@drcenviro.com.au>
Cc: Renee Prochazka <renee@drcenviro.com.au>
Subject: Eurofins | mgt Sample Receipt Advice - Report 539755 : Site DUNHEVED CIRCUIT (ST MARYS)

Alena Bounkeua

To: Mary Makarios
Subject: RE: Eurofins | mgt Sample Receipt Advice - Report 539755 : Site DUNHEVED CIRCUIT (ST MARYS)

From: Mary Makarios
Sent: Thursday, 30 March 2017 11:38 AM
To: Charl Du Preez; Alena Bounkeua
Cc: Rupan Virk
Subject: RE: Eurofins | mgt Sample Receipt Advice - Report 539755 : Site DUNHEVED CIRCUIT (ST MARYS)

Anyway I spoke with the client and she said to remove the FM if we cannot do it and just do the R17 instead if she requested R16.thanks

Mary Makarios
Phone : +61 3 8564 5088
Email : MaryMakarios@eurofins.com

From: Alena Bounkeua
Sent: Thursday, 30 March 2017 11:12 AM
To: Mary Makarios
Cc: Charl Du Preez; Rupan Virk
Subject: RE: Eurofins | mgt Sample Receipt Advice - Report 539755 : Site DUNHEVED CIRCUIT (ST MARYS)

Hi Mary,

How are we going about this job with foreign materials as only small bags were received.

Thanks

Alena Bounkeua
Sample Receipt | NSW

Phone : +61 2 9900 8400

Email : AlenaBounkeua@eurofins.com

From: Charl Du Preez
Sent: Tuesday, 28 March 2017 11:01 AM
To: Alena Bounkeua
Cc: Mary Makarios
Subject: FW: Eurofins | mgt Sample Receipt Advice - Report 539755 : Site DUNHEVED CIRCUIT (ST MARYS)

Can you please sort in collaboration with Mary?

Charl DuPreez
Phone : +61 2 9900 8460
Email : CharlDuPreez@eurofins.com

From: Renee Prochazka [mailto:renee@drcenviro.com.au]
Sent: Tuesday, March 28, 2017 7:54 AM
To: !AU04_CAU001_EnviroSampleNSW
Subject: RE: Eurofins | mgt Sample Receipt Advice - Report 539755 : Site DUNHEVED CIRCUIT (ST MARYS)

There should have been asbestos (small) bags provided for all those samples listed.
As for FM bags, I just used zip lock bags for that analysis…. They should have been double bagged in the esky.

Regards
Renee

From: envirosamplensw@eurofins.com [mailto:envirosamplensw@eurofins.com]
Sent: Monday, 27 March 2017 8:38 PM
To: Patrick Baldwin <patrick@drcenviro.com.au>
Cc: Renee Prochazka <renee@drcenviro.com.au>
Subject: Eurofins | mgt Sample Receipt Advice - Report 539755 : Site DUNHEVED CIRCUIT (ST MARYS)

No Foreign Material Bags Provided hence analysis changed to R17. No asbestos WA bags(500ml) provided for TP11_0.2, TP12_0.1, TP13_0.1, TP15_0.1, TP16_0.2, TP17_0.2, TP18_0.2, QC01_250317, TP19 hence WA analysis cancelled. TB02_250317 not received hence analysis cancelled. Sample TP11_2.9 received as broken jar, cannot be salvaged, hence cancelled.

Dear Valued Client,

Please find attached a Sample Receipt Advice (SRA), a Summary Sheet and a scanned copy of your Chain-of-Custody (COC). It is important that you check this documentation to ensure that the details are correct such as the Client Job Number, Turn Around Time, any comments in the Notes section and sample numbers as well as the requested analysis. If there are any irregularities then please contact your Eurofins | mgt Analytical Services Manager as soon as possible to make certain that they get changed.

Regards

Rupar Virk
Sample Receipt

Eurofins | mgt
Unit F3, Parkview Building
16 Mars Road
LANE COVE WEST NSW 2066
AUSTRALIA
Phone: +61 299 008 400
Email: EnviroSampleNSW@eurofins.com
Website:environment.eurofins.com.au
EnviroNote 1068 - Eurofins Perth Laboratory
EnviroNote 1069 - Eurofins Overnight TAT

[EnviroNote 1071 - QSM 5.1]
[EnviroNote 1069 - Eurofins Overnight TAT]

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CHAIN OF CUSTODY DOCUMENTATION

DRC ENVIRONMENTAL

DRC Environmental Pty Ltd

CLIENT: DRC Environmental Pty Ltd	SAMPLER:
ADDRESS / OFFICE: G6 / 79-109 Manningham Road, Bulleen VIC 3105	MOBILE:
PROJECT MANAGER (PM): Patrick Baldwin	PHONE:
PROJECT ID:	EMAIL REPORT TO: patrick@drcenviro.com.au poppy@drcenviro.com.au
SITE: P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No N/A
SAMPLE TEMPERATURE
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	R12	R16	R17	Asbestos NEPM	TRH C6-C9								Hold	Notes
	TP18 - 0.2	S	25/3		J + Asb.				1											
	TP18 - 2.5				J				1											
	QC01 - 250317				J + Asb				1											
1	QC02 - 250317				J + Asb				1											Please fwd to ALS
	QC03 - 250317				J				1											
2	QC04 - 250317				J				1											Please fwd to ALS
	TP19 - 0.2				J				1											
	TP19 - 3.5				J				1											
	TB03 - 250317	W			2x vial						1									
	TB04 - 250317				2x vials						1									
	TP19				Asb.					1										

Subcon / Forward Lab / Split WO
Lab / Analysis: Newcd
Organised By / Date:
Relinquished By / Date: Asbesto
Connote / Courier:
WO No:
Attach By PO / Internal Sheet:

Environmental Division
Sydney
Work Order Reference
ES1707373

Telephone : +61-2-8784 8555

RELINQUISHED BY		RECEIVED BY		METHOD OF SHIPMENT
Name:	Date:	Name: AB	Date: 27/3	Con' Note No:
Of:	Time:	Of: ALS	Time: 11:20 Am	
Name:	Date:	Name: J. Crealy	Date: 28/3/17	Transport Co:
Of:	Time:	Of: ALS	Time: 12:50	

Water Container Codes: P = Unpreserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserveed Plastic; AG = Amber Glass Unpreserved;
V = VOA Vial HCl Preserved; V... Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; ASS = Plastic Bad for Acid Sulphate Soils; B = Unpreserved Bag.

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APPENDIX F – QUALITY ASSURANCE AND QUALITY CONTROL REPORT AND PROUCL CALCULATIONS

DETAILED SITE INVESTIGATION, 65-73 DUNHEVED CIRCUIT, ST MARYS

QUALITY ASSURANCE AND QUALITY CONTROL REPORT

A quality assurance/quality control (QA/QC) program was implemented as part of field procedures, which were based on recommended procedures and sample collection methodologies detailed in the following publications:

- Standards Australia (1999) Guide to the Sampling and Investigation of Potentially Contaminated Soil. Part 2: Volatile Substances. Australian Standard AS 4482.2-1999.
- Standards Australia (2005) Guide to the Sampling and Investigation of Potentially Contaminated Soil. Part 1: Non-volatile and Semi-volatile Compounds. Australian Standard AS 4482.1-2005.
- National Environment Protection Council (1999) National Environment Protection (Assessment of site Contamination) Measure, December 1999. May 2013 Amendment.
- ANZECC & NHMRC (January 1992) Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites. Australian and New Zealand Environment & Conservation Council/National Health and Medical Research Council.

The QA/QC program undertaken as part of the assessment by DRC included the following:

- Implementation of field procedures for sampling equipment decontamination between sampling points.
- Preservation of samples with ice during field activities and transport from the field to the laboratory.
- Transportation of samples with accompanying chain of custody (COC) documentation.
- Collection of blind and split duplicate samples and calculation and review of relative percent difference (RPDs).
- Collection and review of trip blank samples.
- Compliance with recommended sample holding times.
- Review of laboratory internal QA/QC data including analysis of blanks, spikes and duplicates.

DECONTAMINATION PROCEDURES

Soil samples were taken by hand from the excavator bucket, using new nitrile gloves for each sample. Care was taken to make sure soil samples were taken from bulk soil in the excavator bucket that had not touched the sides of the bucket. Based on the sampling method no decontamination of equipment was required.

No rinsate samples were taken off equipment during the field works, however based on the single natured use of the majority of the equipment, DRC does not consider it to impact the overall data quality at the site.

SAMPLE LABELLING AND ANALYSIS

Each sample was provided with an individual sample ID and placed in the appropriate laboratory provided containers. Asbestos samples were provided in ziplock bags.

FIELD QC SAMPLING PROGRAM

The QC sampling program conducted as part of this investigation involved collection of samples for data reliability purposes, assessing possible errors due to potential sources of cross contamination, inconsistencies in sampling, and analytical techniques used.

A quantitative measure of the accuracy of the results obtained was undertaken by calculating the relative percentage difference (RPD) values for each duplicate pair. The RPD values were calculated using the following equation.

$$\text{RPD (\%)} = \frac{\langle Co - Cs \rangle}{\left\langle \frac{Co + Cs}{2} \right\rangle} \times 100$$

where Co = concentration obtained from the original sample

Cs = concentration obtained from the split or duplicate sample

The RPD was used to normalise each pair of results, allowing data interpretation of reliability. For RPD values that exceed a generally accepted 30% to 50% limit, correlation of data between the sample pair is considered poor. Where any duplicate or split pair result had one sample that was reported to be below the limit of reporting and the other was positive, then the limit of reporting divided by two was used for calculation of the RPD.

The duplicate pairs and analytical program are summarised in **Table 1** below.

Table 1: QA/QC Sampling Program

Sample Type	Date Sampled	Primary ID	Replicate ID	Replicated Analysis
Soil				
Intralab Duplicate	25 March 2017	TP18_0.2	QC01_250317	TRH, BTEX, metals, PAH/phenols, inorganics
Interlab Duplicate			QC02_250317	TRH, BTEX, metals, PAH/phenols
Intralab Duplicate	25 March 2017	TP17_3.5	QC03_250317	TRH, BTEX, metals, PAH/phenols, inorganics
Interlab Duplicate			QC04_250317	TRH, BTEX, metals, PAH/phenols
Blanks				
Trip Blank	24 March 2017	TB01	-	TRH, BTEX, naphthalene
Trip Blank	25 March 2017	TB03_250317	-	
Trip Blank		TB04_250317	-	

In accordance with AS4482.1 (2005) the soil quality control samples were collected for every 20 primary samples. A full table of RPDs calculated for the blind duplicate pairs and inter-laboratory split pairs have been tabulated (attached **Tables 3**).

At total of 39 soil samples were taken with 2 intra-laboratory and 2 inter-laboratory QAQC samples analysed which meets the required AS4482.1 guidelines.

TRIP BLANKS

Trip blank samples were generally collected on days of field work and were analysed to ensure that there was no cross contamination of substances whilst en-route to the nominated laboratories.

Trip blank samples were generally analysed for each day of sampling and were considered sufficient to demonstrate the effectiveness of field procedures employed.

Analyte concentrations for trip blank samples were all below the limits of reporting.

Results of laboratory analysis of trip blank samples have been tabulated (**Table 2**), full copies of NATA certified laboratory transcripts are provided in **Appendix D**.

RPD CALCULATIONS

An RPD was calculated for each replicate analyte pair and these are provided in the **Tables Section** of this report. In some cases, RPDs were reported above the typical range of 30-50% provided in AS4482.1 (2005). Each elevated RPD is listed and discussed below.

RPD Calculations for Soil Replicate Samples

Table 2: Summary of Soil Assessment Elevated RPDs

Primary Sample	Replicate Sample	Analyte	RPD	Discussion Code
TP17_3.5	QC03_250317	Conductivity	69	b
		Lead	53	b
		Chromium (III+VI)	67	a
	QC04_250317	Lead	80	b
		Chromium (III+VI)	75	a
		Copper	60	a
TP18_0.2	QC01_250317	Copper	53	a
	QC02_250317	Zinc	56	a

Discussion Codes

a the RPD is greater than 50%, the results are lower than 10x the LOR and are therefore not considered an exceedance in accordance with AS4482.1 (2005).

b The replicate pairs showed variance, due to the RPDs being within a similar order of magnitude the variance is not considered to have affected the interpretation of the results, the maximum concentrations have been incorporated in our considerations.

Although there was one slight discrepancy between the primary laboratory and secondary laboratory, overall DRC are of the opinion that it does not alter the validity of the data set obtained given the concentrations are less than the adopted investigation levels.

COMPLIANCE WITH RECOMMENDED HOLDING-TIMES

Samples were immediately forwarded to the laboratory on the day of collection, or, where that was not possible, on the following day, with samples held in refrigeration overnight or iced daily.

Soil samples were generally analysed within applicable laboratory accepted holding times.

LABORATORY INTERNAL QUALITY CONTROL

Eurofins Pty Ltd and ALS Environmental Pty Ltd conducted their own internal QC programs including sample duplicates, spike recoveries, and method blanks in accordance with NATA certification requirements. A summary of the results of the laboratory internal quality control is provided in **Table 4**.

Table 4: Summary of Laboratory Internal Quality Control Results

Laboratory	Method Blank	Spike Percentage Recoveries	Internal Duplicate RPD	Comments
Eurofins	All non-detect	Spike % • 539755 cyanide failed due to matrix interference.	All non-detect or within acceptable limits	-
ALS	All non-detect	No outliers	All non-detect or within acceptable limits	-

Laboratory quality control data was concluded by the laboratory to meet their own internal quality requirements and all laboratories were accredited by NATA for the analysis undertaken (where NATA accreditation is available).

CONCLUSIONS OF QA/QC PROGRAM

Based on the results of the QA/QC program as detailed above, the following is concluded:

- The internal laboratory quality control program reported acceptable results.
- The field sampling procedure was carried out in general accordance with the DRC QA/QC program.
- The RPDs for blind and split samples were acceptable, although a few elevated RPD (>50%) were noted. However, these are not considered to impact on the integrity of the data set.
- Laboratories used were NATA accredited for the analyses performed.
- Samples were analysed within the applicable holding times.

DRC considers that the sampling and analytical programs were acceptable and the results obtained are of reliable quality.

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	26/04/2017 3:02:04 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Benzo(a) pyrene

General Statistics

Total Number of Observations	43	Number of Distinct Observations	5
		Number of Missing Observations	1
Number of Detects	4	Number of Non-Detects	39
Number of Distinct Detects	4	Number of Distinct Non-Detects	1
Minimum Detect	0.8	Minimum Non-Detect	0.5
Maximum Detect	3.7	Maximum Non-Detect	0.5
Variance Detects	1.75	Percent Non-Detects	90.7%
Mean Detects	1.75	SD Detects	1.323
Median Detects	1.25	CV Detects	0.756
Skewness Detects	1.797	Kurtosis Detects	3.335
Mean of Logged Detects	0.379	SD of Logged Detects	0.66

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.795	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.354	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.443	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.616	Standard Error of Mean	0.0887
SD	0.504	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.766	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.762	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.882	95% KM Chebyshev UCL	1.003
97.5% KM Chebyshev UCL	1.17	99% KM Chebyshev UCL	1.499

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.428	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.659	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.317	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.397	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	2.928	k star (bias corrected MLE)	0.899
Theta hat (MLE)	0.598	Theta star (bias corrected MLE)	1.947
nu hat (MLE)	23.42	nu star (bias corrected)	7.189
MLE Mean (bias corrected)	1.75	MLE Sd (bias corrected)	1.846

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	1.496	nu hat (KM)	128.6
Approximate Chi Square Value (128.63, α)	103.4	Adjusted Chi Square Value (128.63, β)	102.7
95% Gamma Approximate KM-UCL (use when n>=50)	0.766	95% Gamma Adjusted KM-UCL (use when n<50)	0.772

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.172
Maximum	3.7	Median	0.01
SD	0.622	CV	3.618
k hat (MLE)	0.291	k star (bias corrected MLE)	0.286
Theta hat (MLE)	0.59	Theta star (bias corrected MLE)	0.6
nu hat (MLE)	25.04	nu star (bias corrected)	24.62
MLE Mean (bias corrected)	0.172	MLE Sd (bias corrected)	0.321
		Adjusted Level of Significance (β)	0.0444
Approximate Chi Square Value (24.62, α)	14.32	Adjusted Chi Square Value (24.62, β)	14.05
95% Gamma Approximate UCL (use when n>=50)	0.295	95% Gamma Adjusted UCL (use when n<50)	N/A

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.913	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.276	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.443	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.219	Mean in Log Scale	-3.659
SD in Original Scale	0.616	SD in Log Scale	2.233
95% t UCL (assumes normality of ROS data)	0.377	95% Percentile Bootstrap UCL	0.388
95% BCA Bootstrap UCL	0.467	95% Bootstrap t UCL	0.632
95% H-UCL (Log ROS)	1.238		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-0.593	95% H-UCL (KM -Log)	0.651
KM SD (logged)	0.357	95% Critical H Value (KM-Log)	1.81
KM Standard Error of Mean (logged)	0.0629		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.39	Mean in Log Scale	-1.222
SD in Original Scale	0.565	SD in Log Scale	0.548
95% t UCL (Assumes normality)	0.534	95% H-Stat UCL	0.403

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.766	95% KM (Percentile Bootstrap) UCL	N/A

Warning: One or more Recommended UCL(s) not available!

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

C34-C40

General Statistics

Total Number of Observations	43	Number of Distinct Observations	9
		Number of Missing Observations	1
Number of Detects	10	Number of Non-Detects	33
Number of Distinct Detects	9	Number of Distinct Non-Detects	1
Minimum Detect	100	Minimum Non-Detect	100
Maximum Detect	5500	Maximum Non-Detect	100
Variance Detects	2782939	Percent Non-Detects	76.74%
Mean Detects	855	SD Detects	1668
Median Detects	215	CV Detects	1.951
Skewness Detects	2.93	Kurtosis Detects	8.826
Mean of Logged Detects	5.757	SD of Logged Detects	1.296

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.517	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.349	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.28	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	275.6	Standard Error of Mean	133
SD	827.2	95% KM (BCA) UCL	518.4
95% KM (t) UCL	499.2	95% KM (Percentile Bootstrap) UCL	527.9
95% KM (z) UCL	494.3	95% KM Bootstrap t UCL	1793
90% KM Chebyshev UCL	674.5	95% KM Chebyshev UCL	855.2
97.5% KM Chebyshev UCL	1106	99% KM Chebyshev UCL	1599

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.116	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.767	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.3	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.279	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.619	k star (bias corrected MLE)	0.5
Theta hat (MLE)	1382	Theta star (bias corrected MLE)	1711
nu hat (MLE)	12.37	nu star (bias corrected)	9.993
MLE Mean (bias corrected)	855	MLE Sd (bias corrected)	1210

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.111	nu hat (KM)	9.546
Approximate Chi Square Value (9.55, α)	3.66	Adjusted Chi Square Value (9.55, β)	3.534
95% Gamma Approximate KM-UCL (use when n>=50)	718.8	95% Gamma Adjusted KM-UCL (use when n<50)	744.4

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	198.8
Maximum	5500	Median	0.01
SD	854.4	CV	4.297
k hat (MLE)	0.107	k star (bias corrected MLE)	0.115
Theta hat (MLE)	1850	Theta star (bias corrected MLE)	1722
nu hat (MLE)	9.242	nu star (bias corrected)	9.93
MLE Mean (bias corrected)	198.8	MLE Sd (bias corrected)	585.2
		Adjusted Level of Significance (β)	0.0444
Approximate Chi Square Value (9.93, α)	3.898	Adjusted Chi Square Value (9.93, β)	3.767
95% Gamma Approximate UCL (use when n>=50)	506.5	95% Gamma Adjusted UCL (use when n<50)	524.1

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.854	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.216	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.28	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	204.4	Mean in Log Scale	1.667
SD in Original Scale	853.1	SD in Log Scale	3.062
95% t UCL (assumes normality of ROS data)	423.2	95% Percentile Bootstrap UCL	437.3
95% BCA Bootstrap UCL	601.6	95% Bootstrap t UCL	1625
95% H-UCL (Log ROS)	6861		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	4.873	95% H-UCL (KM -Log)	225.5
KM SD (logged)	0.767	95% Critical H Value (KM-Log)	2.124
KM Standard Error of Mean (logged)	0.123		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	237.2	Mean in Log Scale	4.341
SD in Original Scale	845.4	SD in Log Scale	0.991
95% t UCL (Assumes normality)	454.1	95% H-Stat UCL	179.7

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (BCA) UCL 518.4

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

General Statistics

Total Number of Observations	43	Number of Distinct Observations	14
		Number of Missing Observations	1
Number of Detects	14	Number of Non-Detects	29
Number of Distinct Detects	13	Number of Distinct Non-Detects	1
Minimum Detect	110	Minimum Non-Detect	100
Maximum Detect	22000	Maximum Non-Detect	100
Variance Detects	34975732	Percent Non-Detects	67.44%
Mean Detects	2236	SD Detects	5914
Median Detects	200	CV Detects	2.644
Skewness Detects	3.337	Kurtosis Detects	11.47
Mean of Logged Detects	5.945	SD of Logged Detects	1.559

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.416	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.874	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.468	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.237	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	795.6	Standard Error of Mean	538.4
SD	3402	95% KM (BCA) UCL	1790
95% KM (t) UCL	1701	95% KM (Percentile Bootstrap) UCL	1810
95% KM (z) UCL	1681	95% KM Bootstrap t UCL	23901
90% KM Chebyshev UCL	2411	95% KM Chebyshev UCL	3143
97.5% KM Chebyshev UCL	4158	99% KM Chebyshev UCL	6153

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	2.615	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.817	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.403	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.245	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.376	k star (bias corrected MLE)	0.343
Theta hat (MLE)	5948	Theta star (bias corrected MLE)	6519
nu hat (MLE)	10.53	nu star (bias corrected)	9.605
MLE Mean (bias corrected)	2236	MLE Sd (bias corrected)	3818

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.0547	nu hat (KM)	4.702
Approximate Chi Square Value (4.70, α)	1.017	Adjusted Chi Square Value (4.70, β)	0.96
95% Gamma Approximate KM-UCL (use when n>=50)	3678	95% Gamma Adjusted KM-UCL (use when n<50)	3895

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	728.1
Maximum	22000	Median	0.01
SD	3457	CV	4.748
k hat (MLE)	0.104	k star (bias corrected MLE)	0.112
Theta hat (MLE)	6994	Theta star (bias corrected MLE)	6481
nu hat (MLE)	8.953	nu star (bias corrected)	9.662
MLE Mean (bias corrected)	728.1	MLE Sd (bias corrected)	2172
		Adjusted Level of Significance (β)	0.0444
Approximate Chi Square Value (9.66, α)	3.732	Adjusted Chi Square Value (9.66, β)	3.604
95% Gamma Approximate UCL (use when n>=50)	1885	95% Gamma Adjusted UCL (use when n<50)	1952

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.734	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.874	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.256	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.237	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	733.9	Mean in Log Scale	2.512
SD in Original Scale	3456	SD in Log Scale	3.061
95% t UCL (assumes normality of ROS data)	1620	95% Percentile Bootstrap UCL	1749
95% BCA Bootstrap UCL	2609	95% Bootstrap t UCL	19619
95% H-UCL (Log ROS)	15896		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	761.9	Mean in Log Scale	4.574
SD in Original Scale	3450	SD in Log Scale	1.297
95% t UCL (Assumes normality)	1647	95% H-Stat UCL	386.6

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL 3143

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

F2-NAPHTHALENE

General Statistics

Total Number of Observations	41	Number of Distinct Observations	4
		Number of Missing Observations	3
Number of Detects	3	Number of Non-Detects	38
Number of Distinct Detects	3	Number of Distinct Non-Detects	1
Minimum Detect	54	Minimum Non-Detect	50
Maximum Detect	800	Maximum Non-Detect	50
Variance Detects	183052	Percent Non-Detects	92.68%
Mean Detects	306	SD Detects	427.8
Median Detects	64	CV Detects	1.398
Skewness Detects	1.731	Kurtosis Detects	N/A
Mean of Logged Detects	4.944	SD of Logged Detects	1.51

Warning: Data set has only 3 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.76	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.381	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.512	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	68.73	Standard Error of Mean	22.12
SD	115.6	95% KM (BCA) UCL	N/A
95% KM (t) UCL	106	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	105.1	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	135.1	95% KM Chebyshev UCL	165.1
97.5% KM Chebyshev UCL	206.9	99% KM Chebyshev UCL	288.8

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	0.766	k star (bias corrected MLE)	N/A
Theta hat (MLE)	399.5	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	4.595	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.353	nu hat (KM)	28.96
		Adjusted Level of Significance (β)	0.0441
Approximate Chi Square Value (28.96, α)	17.68	Adjusted Chi Square Value (28.96, β)	17.36
95% Gamma Approximate KM-UCL (use when n>=50)	112.6	95% Gamma Adjusted KM-UCL (use when n<50)	114.7

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.797	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.365	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.512	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	22.74	Mean in Log Scale	-5.518
SD in Original Scale	125.1	SD in Log Scale	5.456
95% t UCL (assumes normality of ROS data)	55.63	95% Percentile Bootstrap UCL	61.64
95% BCA Bootstrap UCL	85.39	95% Bootstrap t UCL	339.5
95% H-UCL (Log ROS)	26234556		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	3.988	95% H-UCL (KM -Log)	66.98
KM SD (logged)	0.428	95% Critical H Value (KM-Log)	1.848
KM Standard Error of Mean (logged)	0.0819		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	45.56	Mean in Log Scale	3.345
SD in Original Scale	121	SD in Log Scale	0.566
95% t UCL (Assumes normality)	77.38	95% H-Stat UCL	39.64

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	106	95% KM (Percentile Bootstrap) UCL	N/A

Warning: One or more Recommended UCL(s) not available!

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	26/04/2017 3:25:48 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Benzo(a)pyrene TEQ (LOR)

General Statistics

Total Number of Observations	43	Number of Distinct Observations	5
		Number of Missing Observations	1
Minimum	1.2	Mean	1.307
Maximum	3.4	Median	1.2
SD	0.396	Std. Error of Mean	0.0604
Coefficient of Variation	0.303	Skewness	4.335

Normal GOF Test

Shapiro Wilk Test Statistic	0.319	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.943	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.513	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.135	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	1.409	95% Adjusted-CLT UCL (Chen-1995)	1.449
		95% Modified-t UCL (Johnson-1978)	1.415

Gamma GOF Test

A-D Test Statistic	13.41	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.748	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.521	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.135	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	19.04	k star (bias corrected MLE)	17.73
Theta hat (MLE)	0.0686	Theta star (bias corrected MLE)	0.0737
nu hat (MLE)	1638	nu star (bias corrected)	1525
MLE Mean (bias corrected)	1.307	MLE Sd (bias corrected)	0.31
		Approximate Chi Square Value (0.05)	1435
Adjusted Level of Significance	0.0444	Adjusted Chi Square Value	1432

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	1.389	95% Adjusted Gamma UCL (use when n<50)	1.392

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.337	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.943	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.52	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.135	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.182	Mean of logged Data	0.241
Maximum of Logged Data	1.224	SD of logged Data	0.205

Assuming Lognormal Distribution

95% H-UCL	1.372	90% Chebyshev (MVUE) UCL	1.422
95% Chebyshev (MVUE) UCL	1.477	97.5% Chebyshev (MVUE) UCL	1.555
99% Chebyshev (MVUE) UCL	1.706		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	1.406	95% Jackknife UCL	1.409
95% Standard Bootstrap UCL	1.404	95% Bootstrap-t UCL	1.539
95% Hall's Bootstrap UCL	1.459	95% Percentile Bootstrap UCL	1.419
95% BCA Bootstrap UCL	1.465		
90% Chebyshev(Mean, Sd) UCL	1.488	95% Chebyshev(Mean, Sd) UCL	1.57
97.5% Chebyshev(Mean, Sd) UCL	1.684	99% Chebyshev(Mean, Sd) UCL	1.908

Suggested UCL to Use

95% Student's-t UCL	1.409	or 95% Modified-t UCL	1.415

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	1/05/2017 12:15:52 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

TPH C10-C36

General Statistics

Total Number of Observations	43	Number of Distinct Observations	19
Number of Detects	19	Number of Non-Detects	24
Number of Distinct Detects	18	Number of Distinct Non-Detects	1
Minimum Detect	76	Minimum Non-Detect	50
Maximum Detect	26060	Maximum Non-Detect	50
Variance Detects	37282085	Percent Non-Detects	55.81%
Mean Detects	2060	SD Detects	6106
Median Detects	220	CV Detects	2.965
Skewness Detects	3.813	Kurtosis Detects	15.05
Mean of Logged Detects	5.816	SD of Logged Detects	1.507

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.362	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.901	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.48	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.203	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	938	Standard Error of Mean	638.4
SD	4075	95% KM (BCA) UCL	2131
95% KM (t) UCL	2012	95% KM (Percentile Bootstrap) UCL	2126
95% KM (z) UCL	1988	95% KM Bootstrap t UCL	21607
90% KM Chebyshev UCL	2853	95% KM Chebyshev UCL	3721
97.5% KM Chebyshev UCL	4925	99% KM Chebyshev UCL	7290

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	3.407	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.829	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.378	**Kolmogrov-Smirnoff GOF**
5% K-S Critical Value	0.213	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.368	k star (bias corrected MLE)	0.345
Theta hat (MLE)	5602	Theta star (bias corrected MLE)	5975
nu hat (MLE)	13.97	nu star (bias corrected)	13.1
MLE Mean (bias corrected)	2060	MLE Sd (bias corrected)	3508

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.053	nu hat (KM)	4.557
Approximate Chi Square Value (4.56, α)	0.953	Adjusted Chi Square Value (4.56, β)	0.899
95% Gamma Approximate KM-UCL (use when n>=50)	4483	95% Gamma Adjusted KM-UCL (use when n<50)	4754

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	910.1
Maximum	26060	Median	0.01
SD	4129	CV	4.537
k hat (MLE)	0.117	k star (bias corrected MLE)	0.124
Theta hat (MLE)	7791	Theta star (bias corrected MLE)	7330
nu hat (MLE)	10.05	nu star (bias corrected)	10.68
MLE Mean (bias corrected)	910.1	MLE Sd (bias corrected)	2583
		Adjusted Level of Significance (β)	0.0444
Approximate Chi Square Value (10.68, α)	4.37	Adjusted Chi Square Value (10.68, β)	4.23
95% Gamma Approximate UCL (use when n>=50)	2224	95% Gamma Adjusted UCL (use when n<50)	2297

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.787	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.901	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.222	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.203	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	916.1	Mean in Log Scale	3.438
SD in Original Scale	4128	SD in Log Scale	2.63
95% t UCL (assumes normality of ROS data)	1975	95% Percentile Bootstrap UCL	2141
95% BCA Bootstrap UCL	2983	95% Bootstrap t UCL	20139
95% H-UCL (Log ROS)	6386		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	924	Mean in Log Scale	4.366
SD in Original Scale	4126	SD in Log Scale	1.636
95% t UCL (Assumes normality)	1982	95% H-Stat UCL	665.7

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL 3721

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

APPENDIX G – TEST PIT LOGS

TEST PIT LOG TP01

DRC ENVIRONMENTAL
DEVELOPMENT REMEDIATION CONSULTANTS

PROJECT No. 63-73 Dunheved Cir	**DRILLING DATE** 24/03/2017	**X COORDINATE** Refer to Site Layout Figure
SITE 63-73 Dunheved Cir, St Marys	**LOGGED BY** RP	**Y COORDINATE** Refer to Site Layout Figure
CLIENT Borg Manufacturing	**TOTAL DEPTH** 1.6 m	**ELEVATION**

LOCATION DISCRIPTION

Depth (m)	Well Installation	Graphic Log	Material Description	Additional Observations	Consistency	Moisture Content	PID	Samples	Water	Elevation (m)
			Gravel with silt and clay; brown to black; low plasticity; loose; moist.		L	M	0.7	TP01_0.1		
			Silty CLAY with trace sand; brown / red / grey; small pieces of brick and gravel; medium plasticity; loose; dry to moist.	No odour or staining present.	L	D/M				
			Silty CLAY with trace sand; brown / red; lower clay content that previous; medium plasticity; loose; dry to moist.	Asbestos bag collected			0.8	TP01_0.7		
1					L	D/M				1
			End of Test Pit @ 1.6 m BGL				0.8	TP01_1.6		

Disclaimer This bore log is intended for environmental not geotechnical purposes.

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Version: 1, Version Date: 26/02/2019

TEST PIT LOG TP02

DRC ENVIRONMENTAL
Development Remediation Consultants

PROJECT No. 63-73 Dunheved Cir	**DRILLING DATE** 24/03/2017	**X COORDINATE** Refer to Site Layout Figure
SITE 63-73 Dunheved Cir, St Marys	**LOGGED BY** RP	**Y COORDINATE** Refer to Site Layout Figure
CLIENT Borg Manufacturing	**TOTAL DEPTH** 1.4 m	**ELEVATION**

LOCATION DISCRIPTION

Depth (m)	Well Installation	Graphic Log	Material Description	Additional Observations	Consistency	Moisture Content	PID	Samples	Water	Elevation (m)
			Gravel / road-base, 20 mm sub-angular				0.4	TP02_0.05		
			Asphalt							
			Road base		H	M				
			Silty CLAY; grey with red and brown mottle; medium plasticity; hard; dry.	Asbestos bag collected No odour or staining present.	H	D				
1										1
							0.4	TP02_1.2		
			End of Test Pit @ 1.4 m BGL							

Disclaimer This bore log is intended for environmental not geotechnical purposes.

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TEST PIT LOG TP03

PROJECT No. 63-73 Dunheved Cir | **DRILLING DATE** 24/03/2017 | **X COORDINATE** Refer to Site Layout Figure

SITE 63-73 Dunheved Cir, St Marys | **LOGGED BY** RP | **Y COORDINATE** Refer to Site Layout Figure

CLIENT Borg Manufacturing | **TOTAL DEPTH** 1.3 m | **ELEVATION**

LOCATION DISCRIPTION

Depth (m)	Well Installation	Graphic Log	Material Description	Additional Observations	Consistency	Moisture Content	PID	Samples	Water	Elevation (m)
			Gravel / road-base		D	M	0.4	TP03_0.1		
			Silty CLAY; red; low to medium plasticity; dense; dry.	Asbestos bag collected	D	D				
				No odour or staining present.						
1							0.5	TP03_1.0		1
							1.2	TP03_1.2		
			Silty CLAY; grey with brown / orange mottle; loose; dry.		D	D				
			End of Test Pit @ 1.3 m BGL							

Disclaimer This bore log is intended for environmental not geotechnical purposes.

TEST PIT LOG TP04

PROJECT No. 63-73 Dunheved Cir	**DRILLING DATE** 24/03/2017	**X COORDINATE** Refer to Site Layout Figure
SITE 63-73 Dunheved Cir, St Marys	**LOGGED BY** RP	**Y COORDINATE** Refer to Site Layout Figure
CLIENT Borg Manufacturing	**TOTAL DEPTH** 0.8 m	**ELEVATION**

LOCATION DISCRIPTION

Depth (m)	Well Installation	Graphic Log	Material Description	Additional Observations	Consistency	Moisture Content	PID	Samples	Water	Elevation (m)
			Gravel / road-base; FILL; sandy CLAY; bricks and dark brown concrete; dry.	Ruptured storm water from site next door, abandoned hole.		D		TP04_0.2		
				Asbestos bag collected						
				No odour or staining present.		D		TP04_0.6		
			Silty CLAY; red / grey; medium plasticity; dry.							
			End of Test Pit @ 0.8 m BGL							
1										1

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TEST PIT LOG TP05

PROJECT No. 63-73 Dunheved Cir | **DRILLING DATE** 24/03/2017 | **X COORDINATE** Refer to Site Layout Figure

SITE 63-73 Dunheved Cir, St Marys | **LOGGED BY** RP | **Y COORDINATE** Refer to Site Layout Figure

CLIENT Borg Manufacturing | **TOTAL DEPTH** 1.0 m | **ELEVATION**

LOCATION DISCRIPTION

Depth (m)	Well Installation	Graphic Log	Material Description	Additional Observations	Consistency	Moisture Content	PID	Samples	Water	Elevation (m)
			Road-base / Crushed Rock				0.5	TP05_0.1		
							0.4	TP05_0.2		
			FILL: sandy CLAY; beige; sandstone cobbles, bricks and PVC.		D					
			FILL: sandy CLAY.				6.1	TP05_0.6		
			CLAY; red with grey mottle; medium plasticity; dense.	Asbestos bag collected						
				No odour or staining present.	D					
1			End of Test Pit @ 1.0 m BGL							1

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TEST PIT LOG TP06

DRC ENVIRONMENTAL
DEVELOPMENT REMEDIATION CONSULTANTS

PROJECT No. 63-73 Dunheved Cir	**DRILLING DATE** 24/03/2017	**X COORDINATE** Refer to Site Layout Figure
SITE 63-73 Dunheved Cir, St Marys	**LOGGED BY** RP	**Y COORDINATE** Refer to Site Layout Figure
CLIENT Borg Manufacturing	**TOTAL DEPTH** 0.9 m	**ELEVATION**

LOCATION DISCRIPTION

Depth (m)	Well Installation	Graphic Log	Material Description	Additional Observations	Consistency	Moisture Content	PID	Samples	Water	Elevation (m)
			FILL: road-base; sandy CLAY; dark brown to black; concrete pieces; dry.					TP06_0.1		
				Staining on surface and a diesel odour.		D				
								TP06_0.6		
			Sandy CLAY; red with grey mottle; dense; firm; dry	Asbestos bag collected	F/D	D	0.3			
			End of Test Pit @ 0.9 m BGL							
1										1

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TEST PIT LOG TP07

DRC ENVIRONMENTAL
DEVELOPMENT REMEDIATION CONSULTANTS

PROJECT No. 63-73 Dunheved Cir	**DRILLING DATE** 24/03/2017	**X COORDINATE** Refer to Site Layout Figure
SITE 63-73 Dunheved Cir, St Marys	**LOGGED BY** RP	**Y COORDINATE** Refer to Site Layout Figure
CLIENT Borg Manufacturing	**TOTAL DEPTH** 1.0 m	**ELEVATION**

LOCATION DISCRIPTION

Depth (m)	Well Installation	Graphic Log	Material Description	Additional Observations	Consistency	Moisture Content	PID	Samples	Water	Elevation (m)
			FILL: road-base; very compacted; angular gravels; hard; dry.				0.5	TP07_0.1		
			Sandy CLAY; dark brown; medium plasticity; stiff dense; stiff; dry.		St/D	D				
			Sandy CLAY; red with grey mottle; medium plasticity; dense; firm; dry.	Asbestos bag collected No odour or staining present.	F/D	D	0.5	TP07_0.6		
1			End of Test Pit @ 1.0 m BGL							1

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TEST PIT LOG TP08

PROJECT No. 63-73 Dunheved Cir | **DRILLING DATE** 24/03/2017 | **X COORDINATE** Refer to Site Layout Figure

SITE 63-73 Dunheved Cir, St Marys | **LOGGED BY** RP | **Y COORDINATE** Refer to Site Layout Figure

CLIENT Borg Manufacturing | **TOTAL DEPTH** 3.9 m | **ELEVATION**

LOCATION DISCRIPTION

Depth (m)	Well Installation	Graphic Log	Material Description	Additional Observations	Consistency	Moisture Content	PID	Samples	Water	Elevation (m)
0.0			FILL: road-base				0.4	TP08_0.1		
			FILL: sandy CLAY; brown with orange mottle; pieces of sandstone gravel with loose shale with clay clumps; low to medium plasticity.	Asbestos bag collected No odour or staining present	L	D	0.6	TP08_0.5		
1										1
							0.5	TP08_1.5		
2										2
3										3
			FILL: sandy SILT / shale; light brown; loose powdery.	Max reach of excavator, natural soil not encounted	L	D	0.7	TP08_3.9		
			End of Test Pit @ 3.9 m BGL							
4										4

Disclaimer This bore log is intended for environmental not geotechnical purposes.

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TEST PIT LOG TP09

PROJECT No. 63-73 Dunheved Cir	**DRILLING DATE** 24/03/2017	**X COORDINATE** Refer to Site Layout Figure
SITE 63-73 Dunheved Cir, St Marys	**LOGGED BY** RP	**Y COORDINATE** Refer to Site Layout Figure
CLIENT Borg Manufacturing	**TOTAL DEPTH** 3.9 m	**ELEVATION**

LOCATION DISCRIPTION

Depth (m)	Well Installation	Graphic Log	Material Description	Additional Observations	Consistency	Moisture Content	PID	Samples	Water	Elevation (m)
			FILL: road-base				0.4	TP09_0.1		
			FILL: silty CLAY; dark brown; sandstone cobbles; low plasticity; loose; dry.	Brick and concrete prior to 0.4 m	L	D				
				Asbestos bag collected						
1				No staining present						1
2			FILL: silty CLAY; black to dark grey; sandstone cobbles; low plasticity; loose; dry.	2 m organic peaty odour noted						2
			FILL: clayey SAND; grey							
			FILL: sandy CLAY; brown with black mottle; medium plasticity; dense; dry	Concrete still present at 2.5 m			1.1	TP09_2.5		
			End of Test Pit @ 2.8 m BGL	Natural soil not encounted						
3										3

Disclaimer This bore log is intended for environmental not geotechnical purposes.

produced by ESlog.ESdat.net on 01 May 2017

TEST PIT LOG TP10

PROJECT No. 63-73 Dunheved Cir	**DRILLING DATE** 24/03/2017	**X COORDINATE** Refer to Site Layout Figure
SITE 63-73 Dunheved Cir, St Marys	**LOGGED BY** RP	**Y COORDINATE** Refer to Site Layout Figure
CLIENT Borg Manufacturing	**TOTAL DEPTH** 2.8 m	**ELEVATION**

LOCATION DISCRIPTION

Depth (m)	Well Installation	Graphic Log	Material Description	Additional Observations	Consistency	Moisture Content	PID	Samples	Water	Elevation (m)
			FILL: road-base	From 0.1 m tiles, VC pipe and bricks present.			0.4	TP10_0.1		
			FILL: sandy CLAY; red to brown; gravels; loose; dry.	Asbestos bag collected	L	D				
1			FILL: sandy CLAY; grey band; concrete pieces; loose; dry.	No staining present						1
			FILL: sandy CLAY; red to brown; gravels; clayey cobbles; loose; dry	Bricks and concrete present at 1.3 m.						
2										2
			FILL: Sandy CLAY; red to brown; gravels; clayey cobbles; sandstone cobbles; loose; dry	Concrete present at 2.5 m slight decaying odour at 2.8 m			0.7	TP10_2.8		
			End of Test Pit @ 2.8 m BGL	Natural soil not encountered.						
3										3

Disclaimer This bore log is intended for environmental not geotechnical purposes.

DRC ENVIRONMENTAL
Development Remediation Consultants

TEST PIT LOG TP11

PROJECT No. 63-73 Dunheved Cir
DRILLING DATE 24/03/2017
X COORDINATE Refer to Site Layout Figure

SITE 63-73 Dunheved Cir, St Marys
LOGGED BY RP
Y COORDINATE Refer to Site Layout Figure

CLIENT Borg Manufacturing
TOTAL DEPTH 2.8 m
ELEVATION

LOCATION DISCRIPTION

Depth (m)	Well Installation	Graphic Log	Material Description	Additional Observations	Consistency	Moisture Content	PID	Samples	Water	Elevation (m)
			FILL: crushed rock							
			FILL: clayey SAND; brown; loose; dry.	bricks, concrete and sandstone present at 0.2 m			0	TP11_0.2		
			FILL: clayey SAND; dark brown; more clay; loose; dry.	slight oily odour at 0.7 m	L	D	0.6	TP11_0.7		
1			FILL: silty CLAY; banded orange/ brown/ grey at different depth intervals; sand stone cobbles; loose; dry.							1
2				Plastic, bricks and concrete pieces to 2 m						2
							0.5	TP11_2.9		
3			End of Test Pit @ 3.0 m BGL	Natural soil not encountered.						3

Disclaimer This bore log is intended for environmental not geotechnical purposes.

produced by ESlog.ESdat.net on 01 May 2017

TEST PIT LOG TP12

PROJECT No. 63-73 Dunheved Cir	**DRILLING DATE** 24/03/2017	**X COORDINATE** Refer to Site Layout Figure
SITE 63-73 Dunheved Cir, St Marys	**LOGGED BY** RP	**Y COORDINATE** Refer to Site Layout Figure
CLIENT Borg Manufacturing	**TOTAL DEPTH** 3.2 m	**ELEVATION**

LOCATION DISCRIPTION

Depth (m)	Well Installation	Graphic Log	Material Description	Additional Observations	Consistency	Moisture Content	PID	Samples	Water	Elevation (m)
			FILL: gravel / road-base.				0.9	TP12_0.1		
			FILL: silty CLAY with trace sand; dark brown; sandstone cobbles; low to medium plasticity; loose; dry.	Plastic at 0.2 m. Pieces of brick at 0.3 m.						
			FILL: silty CLAY with trace sand; brown with red mottle; sandstone cobbles; low to medium plasticity; loose; dry.		L	D				
1				concrete pieces at 1 m.						1
			FILL: silty CLAY; dark brown; low to medium plasticity; loose; dry.							
2				Bricks and steel wire at 2 m.						2
							13.6	TP12_2.2		
				Concrete at 2.3 m.						
				Burnt timber at 2.8 m.						
3										3
			End of Test Pit @ 3.2 m BGL	Natural soil not encountered.			0.7	TP12_3.2		

Disclaimer This bore log is intended for environmental not geotechnical purposes.

produced by ESlog.ESdat.net on 01 May 2017

ENVIRONMENTAL TEST PIT LOG TP13

PROJECT No. Dunheved Circuit, St Marys
SITE 65-87 Dunheved Circuit, St Marys, NSW

CLIENT Borg Manufacturing

EQUIPMENTS & METHODS
Test Pitting with Excavator

DATE COMPLETED 25/03/17

X COORDINATE Refer to site layout plan
Y COORDINATE Refer to site layout plan
ELEVATION 37.4

LOGGED BY RP

LOCATION DESCRIPTION

Graphic Log	Material Description	Depth (m)	PID	Samples	Consistency	Moisture	Additional Observations
	Gravel/Road base					D	
	FILL: silty CLAY; medium plasticity; brown orange		0.7	TP13_0.1	H		Small pieces of brick @ 0.1m Wire @ 0.2m
	FILL: sandy CLAY; dark brown with sandstone cobbles	1			L		
	FILL: sandy silty CLAY; grey; with small angular gravels		1.1	TP13_1.2	H		Concrete with rebar @ 1.2m
	FILL: silty CLAY; red brown; with sandstone cobbles	2		TP13_2.9	F		
	End of Test Pit @ 3.0m	3					

Disclaimer This log is intended for environmental not geotechnical purposes.
produced by ESlog.ESdat.net on 27 Apr 2017

ENVIRONMENTAL TEST PIT LOG TP14

PROJECT No. Dunheved Circuit, St Marys
SITE 65-87 Dunheved Circuit, St Marys, NSW
CLIENT Borg Manufacturing

EQUIPMENTS & METHODS Test Pitting with Excavator
DATE COMPLETED 25/03/17

X COORDINATE Refer to site layout plan
Y COORDINATE Refer to site layout plan
ELEVATION 37.4
LOGGED BY RP

LOCATION DESCRIPTION

Graphic Log	Material Description	Depth (m)	PID	Samples	Consistency	Moisture	Additional Observations
	Gravel/Road base				L		
	FILL: silty CLAY; low plasticity; with sandstone gravels		0.4	TP14_0.2			Sandstone chips
	Increasing clay content and becoming dark brown	1					Glass bottle and roots @ 0.5m
	FILL: sandy silty CLAY; grey; with gravels		0.6	TP14_1.4			Sandstone cobbles @ 1.4m
	FILL: silty CLAY; red and dark brown	2			F		
	FILL: silty CLAY with sand; brown orange; with some sandstone cobbles and gravels		1.1	TP14_2.9			Sandstone gravels and cobbles, and timber pieces
	End of Test Pit @ 3.0m	3					

Disclaimer This log is intended for environmental not geotechnical purposes.
produced by ESlog.ESdat.net on 27 Apr 2017

ENVIRONMENTAL TEST PIT LOG TP15

PROJECT No. Dunheved Circuit, St Marys	**EQUIPMENTS & METHODS**	**X COORDINATE** Refer to site layout plan
SITE 65-87 Dunheved Circuit, St Marys, NSW	Test Pitting with Excavator	**Y COORDINATE** Refer to site layout plan
		ELEVATION 37.4
CLIENT Borg Manufacturing	**DATE COMPLETED** 25/03/17	
		LOGGED BY RP

LOCATION DESCRIPTION SW corner of site

Graphic Log	Material Description	Depth (m)	PID	Samples	Consistency	Moisture	Additional Observations
	Gravel				L	D	
	FILL: silty CLAY; medium plasticity; brown; with gravels		0.7	TP15_0.1			Bricks, sandstone cobbles, and tile pieces
	FILL: sandy CLAY; dark brown						
	FILL: silty CLAY; low to medium plasticity; brown; with some sand Increasing clay content with depth	1					Concrete pieces @ 1.3m
		2	1.6	TP15_2.0			Concrete and sandstone boulders @ 2.0m
	FILL: sandy CLAY; low to medium plasticity; dark brown						
	FILL: silty CLAY; medium plasticity; dark brown with red mottles; trace sand	3			F		
	FILL: SILT; beige		0.7	TP15_3.5	S		
	End of Test Pit @ 3.8m						Natural soil not encountered

Disclaimer This log is intended for environmental not geotechnical purposes.

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ENVIRONMENTAL TEST PIT LOG TP16

PROJECT No. Dunheved Circuit, St Marys
SITE 65-87 Dunheved Circuit, St Marys, NSW
CLIENT Borg Manufacturing

EQUIPMENTS & METHODS Test Pitting with Excavator
DATE COMPLETED 25/03/17

X COORDINATE Refer to site layout plan
Y COORDINATE Refer to site layout plan
ELEVATION 37.4
LOGGED BY RP

LOCATION DESCRIPTION

Graphic Log	Material Description	Depth (m)	PID	Samples	Consistency	Moisture	Additional Observations
	Grass						
	FILL: silty CLAY; medium plasticity; brown; with trace sand and sandstone gravels		0.5	TP16_0.2			sandstone cobbles present @ 0.2-0.5m
	FILL: silty CLAY; medium plasticity; brown with orange grey mottles	1	0.5	TP16_1.0			Timber and brick pieces @ 1.0m
	FILL: silty CLAY; low to medium plasticity; brown; with some sand Becoming brown with orange red mottles and increasing clay content	2					Sandstone cobble and plastic @ 1.5m Brick pieces @ 2.4-3.0m Steel rod (~50cm) @ 2.7m
	End of Test Pit @ 3.0m	3	0.6	TP16_3.0			Natural soil not encountered

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ENVIRONMENTAL TEST PIT LOG TP17

DRC Environmental
Development Remediation Consultants

PROJECT No. Dunheved Circuit, St Marys
SITE 65-87 Dunheved Circuit, St Marys, NSW
CLIENT Borg Manufacturing

EQUIPMENTS & METHODS Test Pitting with Excavator
DATE COMPLETED 25/03/17

X COORDINATE Refer to site layout plan
Y COORDINATE Refer to site layout plan
ELEVATION 37.4
LOGGED BY RP

LOCATION DESCRIPTION

Graphic Log	Material Description	Depth (m)	PID	Samples	Consistency	Moisture	Additional Observations
	Gravel						
	FILL: silty CLAY; medium plasticity; brown with orange mottles; gravels and trace sand present		0.6	TP17_0.2			Plastic, brick pieces, concrete, and vitrified clay pipe @ 0.3m. Possible ACM placed in bag
		1					
			0.6	TP17_1.5			
	some grey mottles @ 2m and sandstone cobbles/gravels	2					
	becoming dark brown						
		3					plastic pipe @ 3.0m
							Timber pieces and shale cobbles @ 3.4m
	End of Test Pit @ 3.5m		1.0	TP17_3.5			Natural soil not encountered
				QC03/QC04			

ENVIRONMENTAL TEST PIT LOG TP18

DRC ENVIRONMENTAL
DEVELOPMENT REMEDIATION CONSULTANTS

PROJECT No. Dunheved Circuit, St Marys
SITE 65-87 Dunheved Circuit, St Marys, NSW

CLIENT Borg Manufacturing

EQUIPMENTS & METHODS
Test Pitting with Excavator

DATE COMPLETED 25/03/17

X COORDINATE Refer to site layout plan
Y COORDINATE Refer to site layout plan
ELEVATION 37.4

LOGGED BY RP

LOCATION DESCRIPTION

Graphic Log	Material Description	Depth (m)	PID	Samples	Consistency	Moisture	Additional Observations
	Gravel/Crushed Rock				L	D	Brick and concrete pieces present @ 0.2-0.5m
	FILL: silty SAND; brown; medium grained; with brick and concrete pieces		0.6	TP18_0.2 QC01/QC02			PVC and sandstone/shale cobbles @ 0.4m Timber pieces and ceramic tiles @ 0.5m
	FILL: silty CLAY; brown with orange red mottles	1			F		
	becoming dark brown with sand	2			L		Concrete pieces and shale cobbles @ 1.5m
	FILL: silty CLAY; medium plasticity; brown with red orange mottles; with some sandstone gravel	3		TP18_2.5	F		Rubber, bricks, sandstone cobbles, and timber @ 2-3m Plastic @ 2,7m
	End of Test Pit @ 3.5m						Natural soil not encountered

Disclaimer This log is intended for environmental not geotechnical purposes.
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ENVIRONMENTAL TEST PIT LOG TP19

DRC Environmental

PROJECT No. Dunheved Circuit, St Marys
SITE 65-87 Dunheved Circuit, St Marys, NSW
CLIENT Borg Manufacturing

EQUIPMENTS & METHODS Test Pitting with Excavator
DATE COMPLETED 25/03/17

X COORDINATE Refer to site layout plan
Y COORDINATE Refer to site layout plan
ELEVATION 37.4
LOGGED BY RP

LOCATION DESCRIPTION

Graphic Log	Material Description	Depth (m)	PID	Samples	Consistency	Moisture	Additional Observations
	Gravel				L	D	
	FILL: clayey SAND; brown; with sand and gravels		0.7	TP19_0.2			
	FILL: silty CLAY; medium plasticity; brown with orange mottles; with some sand Increasing clay content with depth and becoming darker brown	1 2			F		Concrete and pieces of brick @ 0.5m Vitrified clay pipe pieces
	dark brown to black	3			ST		
						M	Hole full of water within 1 minute. Water has slight diesel odour. No evidence of service 'hit'. Last two scoops moist.
	End of Test Pit @ 3.6m		1.2	TP19_3.5			

Disclaimer This log is intended for environmental not geotechnical purposes.
produced by ESlog.ESdat.net on 27 Apr 2017

APPENDIX H – EQUIPMENT CALIBRATION SHEETS

PID Calibration Certificate

Instrument **PhoCheck Tiger**
Serial No. **T-105422**

airmet

Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
	Recharge OK?	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
Pump	Operation	✓	
	Filter	✓	
	Flow	✓	
	Valves, Diaphragm	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	PID	✓	10.6 ev
Alarms	Beeper	✓	Low: 50ppm; High: 100ppm; TWA: N/A; STEL: N/A
	Settings	✓	
Software	Version	✓	
Data logger	Operation	✓	
Download	Operation	✓	
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Calibration gas and concentration	Certified	Gas bottle No		Instrument Reading
PID Lamp		98ppm Isobutylene	NATA	SY137		98.3ppm

Calibrated by: Lin Wang

Calibration date: 21/03/2017

Next calibration due: 20/04/2017

APPENDIX I – EPA CORRESPONDANCE 13 FEBRUARY 2018

DOC18/82693-01

Norton Rose Fulbright Australia
GPO Box 3872
SYDNEY NSW 2001

EMAIL

13 February 2018

Attention: Mr Richard Cohen

65 Dunheved Cct, St Marys NSW 2760

Thank you for your letter dated 8 February 2018 regarding Clean-up Notice No.1540293 issued to Maganic Brothers and Sister Pty Limited for clean-up of 65 Dunheved Cct, St Marys 2760 ("the Premises").

The EPA responds to your questions as follows:

1. The purchaser of the property should conduct their own investigations to satisfy themselves that all waste has been removed from the Premises.
2. The EPA does not intend to pursue any further regulatory action in relation to Clean-up Notice No.1540293 at this stage.
3. See comment 2 above.

If you have any questions regarding this matter, please contact Melissa Ward on 9995 5747.

Yours sincerely

DEANNE PITTS
A/Unit Head Waste Compliance
Environment Protection Authority

Contact officer: MELISSA WARD
(02) 9995 5747