2021 Site Condition Report:

Caprolactone Business Areas

Baronet Works, Warrington

Prepared for

Ingevity
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Project Number: GCU0141023
July 2022

REVISED DRAFT

Project Title:	2021 Site Condition Report: Caprolactone Business Areas, Baronet Works, Warrington
Project No:	GCU0141023
Report Ref:	2021 SCR/Ingevity
Status:	Revised Draft (Private & Confidential)
Client:	Ingevity
Client Address:	Baronet Works, Baronet Road, Lower Walton, Warrington. WA4 6HA
Issued By:	Geosyntec Consultants Ltd 1st Floor Gatehead Business Park, Delph New Road, Delph, Oldham. OL3 5DE

Document Production / Approval Record (final documents only)

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EXECUTIVE SUMMARY

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There were no permitted installation boundary or activity changes and no reported pollution incidents on site between operational phase groundwater monitoring events in October 2019 and November 2021. The 8th phase of Site Protection and Monitoring Programme (SPMP) groundwater monitoring was undertaken at the Ingevity Warrington site between 16th – 19th November 2021[2]. Groundwater sampling and analytical methods were in accordance with the updated (2014[3]) Design SPMP document. Results are presented and discussed in section 10.

With the exception of monitoring well D11, groundwater monitoring results showed no indication of new or worsening impacts to shallow or deep groundwater quality within the Ingevity permitted installation areas. However, it is considered that TPH detections in D11 may represent a new (post baseline) groundwater impact given the emergence of increased heavy aliphatic fraction detections in 2019, followed by their repeat detection in March 2022.

TPH concentrations greatly exceeded expected solubility limits suggestive of free product presence within the analysed samples. An iridescent sheen was observed within purged groundwater when sampling D11 in March 2022. As such, the presence of free product within D11 appears to be the most likely scenario. The well headworks for D11 are in poor condition and are inferred to have allowed surface water ingress into the well. This may have been a mechanism for introduction of hydrocarbons (such as hydraulic oil from site vehicles) into the well. Replacement of the D11 headworks and cleaning out of potentially oil impacted mud and silt from inside the well is recommended.

Follow-on sampling of monitoring well D11 is recommended, for a targeted suite of analytes informed by Ingevity's Relevant Hazardous Substances inventory. Additional analysis and assessment would seek to better understand potential links between groundwater impacts in D11 and permitted site operations in a timely manner.

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[1] Environment Agency, May 2013. Guidance for Applicants H5. Environmental Permitting Regulations. Site condition report – guidance and templates. Version 3.0.

[2] With additional sample collection in December 2021 and March 2022.

[3] Geosyntec Consultants Ltd., September 2014. Revised SPMP Design for the Perstorp Caprolactone Business Areas, Baronet Works, Warrington. Reference: GCU0141006/Revised SPMP Design-Perstorp

1 INTRODUCTION

This Site Condition Report (SCR) for the Ingevity operated Caprolactone business areas of the Baronet Works site in Warrington, is presented in line with the Environment Agency H5[4] guidance (lifetime approach for protection of soil and groundwater quality) and incorporates Industrial Emissions Directive (IED) permit requirements relating to designation and risk assessment of Relevant Hazardous Substances (RHS).

1.1 Reference Documents

Key environmental permitting documents for the Baronet Works site are listed below:

- Ingevity Caprolactone business areas environmental permit: No. PP3139XA
- Application Site Report[5] (ASR):

  "Waterman Environmental, August 2005. Application Site Report for PPC Application, Solvay Chemicals Warrington."
- The original Site Protection and Monitoring Programme (SPMP) design was completed in 2005 (at the time of the ASR):

  "Waterman Environmental, August 2005. SPMP Design for PPC Permit (including Reference Data). Reference EN6344.R.1.2.1.BS."
- The first operational phase Site Condition Report (SCR) for Caprolactone business areas at the Baronet Road site was completed in 2008, and included baseline reference data:

  "Waterman Environmental, January 2008. Site Protection and Monitoring Programme – First Phase Report (with reference data). Reference: EN6344/R/5.1.1/GW."
- The SPMP design was updated in 2014:

  "Geosyntec Consultants Ltd., September 2014. Revised SPMP Design for the Perstorp Caprolactone Business Areas, Baronet Works, Warrington. Reference: GCU0141006/Revised SPMP Design-Perstorp."
- Since permit issue seven operational phase SCRs have been submitted, coincident with the required frequency of groundwater quality monitoring as specified in condition 4.1.7 of the environmental permit at that time (groundwater monitoring every two years); reports were prepared in 2008, 2010, 2011, 2013, 2015, 2017 and 2019.

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[4] Environment Agency, May 2013. Guidance for Applicants H5. Environmental Permitting Regulations. Site condition report – guidance and templates. Version 3.0.

[5] At the date of environmental permit issue for the Baronet Works site Solvay Interox operated both the Peroxygen and Caprolactone business areas. Both the Application SCR and original 2005 design SPMP documents are therefore common to both business areas, which are now separately owned and operated.

- The 8th phase of operational site condition reporting (2021) is incorporated into this report (see sections 7 to 10). Currently, groundwater monitoring is required every 2 years.
- The SCR was updated in 2022 to include for an additional area of land to accommodate the installation of four gas fired boilers.

The key documents listed above are referenced in relevant sections of this report. Additionally, selected information contained within these key documents has been appended herein to provide a single point of reference for regulatory assessment.

2 SITE DETAILS

The site address is Baronet Works, Baronet Road, Lower Walton, Warrington, Cheshire, WA4 6HA.

The site location, surrounding land use and sensitive environmental receptors are shown in **Figure 1**. The centre of the site is at National Grid Reference 359640 386040. The site is approximately triangular in shape and is bordered to the south by the Manchester Ship Canal (MSC). Land to the northwest is occupied by railway lines and sidings beyond which is Moore Nature Reserve. To the north east are Morley Common (parkland and sports pitches), residential properties and beyond that the River Mersey.

Permitted areas of the Baronet Road facility are shown in **Figure 2**, including Peroxygen business areas operated by Solvay Interox[6] and Caprolactone business areas operated by Ingevity.

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[6] A separate 2021 Site Condition Report has been prepared for the Peroxygen business areas:

"Geosyntec, January 2022. 2021 Site Condition Report: Peroxygen Business Areas, Baronet Works, Warrington".

3 ENVIRONMENTAL SETTING

3.1 Geology

Stratum	Area Covered	Estimated Thickness	Typical Description
Made Ground	Entire site	0.4 to 2.2m	Concrete, asphalt, limestone hardcore, ash, sandy reworked soil and building rubble
Unconsolidated Deposits: Marine and Estuarine Alluvium	Entire site	Up to 7m, but generally up to 4m	Sands and silty sands with localised clay horizons of up to 2m thickness. There are also some indications of highly weathered bedrock (sandstone gravel and cobbles) at the base of this formation.
Bedrock: Sherwood Sandstone	Entire site	Not proven (top at 2 to >6m AOD) and at least 150m thick	Sandstone with subordinate mudstones. The upper-most member at the site is the Helsby Sandstone comprising red, fine to medium grained poorly cemented sandstones with minor mudstones and conglomerates. The top of this unit is heavily weathered to a depth of up to approximately 5m.

3.2 Surface Water Features

There are no surface water features on site. As shown in **Figure 1** there are several surface water receptors nearby:

- The Manchester Ship Canal (MSC) forms the southern site boundary.
- Several quarry ponds (former sand and gravel quarry pits) are situated adjacent to the north western site boundary, separated from the site by railway lines. All the ponds are part of Moore Nature Reserve.
- The River Mersey is approximately 270m north east of the site at its closest point and flows in a broadly east to west direction.
- The disused Runcorn and Latchford Canal runs immediately north of the quarry ponds and immediately south of the River Mersey.

3.3 Hydrogeology

3.3.1 *Shallow Groundwater*

Shallow groundwater is present within the near surface, sand dominated, superficial deposits aquifer.

Figure 3 shows the inferred shallow groundwater flow regime beneath the site based on measurements made during one day on 16th November 2021 from representative shallow groundwater monitoring wells. Shallow groundwater elevations ranged between approximately 5.5 to 7.4 mAOD. The range of shallow groundwater elevations on site has been consistent over time (observations since 2010). Shallow groundwater flow beneath the site in November 2021 was broadly from west to east, consistent with long-term observations.

Shallow groundwater beneath the site is not inferred to be tidally influenced. Downgradient of the site, shallow groundwater is inferred to flow towards the River Mersey and potentially the MSC in the vicinity of Walton Lock (east of the site). The lock and the River Mersey were historically connected, and a small stream (inferred to be shallow groundwater fed) still runs between the two and discharges to the River Mersey.

The quarry ponds to the north west of the Baronet Works site are inferred to lie across hydraulic gradient with respect to shallow groundwater flow beneath the site. At their closest point, the ponds are approximately 230 m away from the north western site boundary.

The relict canal section north of the quarry ponds no longer retains water. The relict canal section adjacent to the River Mersey does hold water. Based on measured elevations (for this water retaining section of the canal, the River Mersey and shallow groundwater at the north eastern site boundary), the local shallow groundwater table is inferred to lie below the base of the canal. There is unlikely to be significant site-derived shallow groundwater discharge into the canal.

3.3.2 *Deep Groundwater*

Beneath the site, deep groundwater is present within the sandstone bedrock underlying the superficial deposits aquifer. Whilst the bedrock aquifer is at least 150 m thick beneath the site, deep groundwater monitoring wells assessed herein represent deep groundwater piezometry within the uppermost 10 – 20 metres of the bedrock aquifer.

Figure 4 shows the deep groundwater flow regime beneath the site, based on measurements made during one day on 16th November 2021 from representative deep groundwater monitoring wells (D series wells, BH102 and WE12). Deep groundwater elevations ranged between approximately 4.5 to 6.8 mAOD. The inferred deep groundwater flow regime is consistent with that inferred from previous assessments since 2010. Deep groundwater flow is broadly towards the south across most of the site, and locally beneath the Polymer Plant area broadly from the north west to the south east.

The deep flow regime presented in **Figure 4** should be considered as indicative. Interpretation of the deep groundwater flow regime is complicated by:

- Variation in the screened elevations of deep groundwater monitoring wells at the site, and;
- Local vertical hydraulic gradients and groundwater capture zones caused by deep groundwater abstraction (for site production processes) from wells PW1, PW2 and PW12 (refer to **Figure 4**).

Historically, groundwater levels in deep groundwater monitoring well D7 were inferred to be hydraulically influenced by deep groundwater abstraction from Ingevity production well PW12 (when operational) located approximately 50 metres to the north east of D7. Since October 2020, groundwater has been abstracted directly from well D7 for betterment of historic TBA impacts identified in this well and associated with the former Organic Peroxides Plant. Deep groundwater abstractions from production wells PW1 and PW2 located along the southern site boundary are inferred to influence the general southwards hydraulic gradient within the upper portions of the sandstone bedrock aquifer, as is the inferred deep aquifer hydraulic connection with the MSC which forms the site's southern boundary.

A degree of hydraulic connection between shallow and deep groundwater aquifers beneath the site is inferred from:

- Historical evidence of contaminant impact migration in groundwater from surface into the deep aquifer, and;
- A consistent inferred downwards head gradient. Deep groundwater elevations are close to, but consistently lower than shallow groundwater elevations.

However, this connectivity is considered to be limited, based on:

- The distinct and consistent difference in general flow directions between the shallow and deep aquifers;
- The presence of an intermittent but laterally extensive lower permeability clay layer beneath the site, between the superficial aquifer and underlying sandstone bedrock, and;
- Long-term observations of dissolved phase contaminant plume development (plumes derived from on-site impacts at surface), and;
- Numerical groundwater modelling of the Baronet Works site by Geosyntec, (calibrated to site groundwater elevations) suggesting an order of magnitude decrease in hydraulic conductivity between the shallow alluvial and deeper sandstone aquifers.

3.4 Site Drainage

Site surface water and sewer drainage plans are shown in **Appendix A**. Additional description of Ingevity area drainage arrangements and plant effluent handling is also presented in Appendix A.

On a whole site scale the surface water and process effluent drainage systems are shared between Ingevity and Solvay Interox. Site surface water drainage is discharged under consent to the River Mersey northeast of the site. Site sewer drains receive treated effluent from both Ingevity and Solvay Interox plant areas and discharge under consent to the United Utilities (UU) sewer main (to Baronet Road).

3.5 Pollution History

Extracts from historic environmental site investigation reporting, summarisingknown historic soil and groundwater pollution impacts associated with the land within the installation boundary are presented in **Appendix B**. Known impacts include:

- Working Solution related impacts, greatest within the northern and central AO Plant areas and extending eastwards, associated with loss of containment and release of Working Solution LNAPL during the AO Plant fire in 1984;
- Sextate related impacts (2-methylcyclohexanone and 2-methylcyclohexanol) around the former Sextate Plant in the far western corner of the site (approximately 150 m west of the Steam Raising Plant area);
- Chlorinated hydrocarbon impacts, primarily 1,1-dichloroethane and 1,1,1-trichloroethane, but historically also including carbon tetrachloride and trichloroethene associated with the former Organic Peroxides Plant (within the Steam Raising Plant and to the west of the Caprolactone Monomer Plant);
- Phthalate, dimethyl phenol, 3,5,5-trimethylhexanoic acid (isononanoic acid), tertiary butyl alcohol (TBA) and methyl tertiary butyl ether (MTBE) impacts mostly associated with effluent treatment within the former Organic Peroxides Plant, in what is now the north east corner of the Steam Raising Plant and to the west and north west of the Caprolactone Monomer Plant. Historical TBA and MTBE impacts were greatest within deeper groundwater (bedrock aquifer) in the vicinity of the Steam Raising Plant and Caprolactone Monomer Plant;
- Further isononanoic acid impacts associated with drainage failure in the vicinity of the former Thames Board Mills pumphouse immediately north of the Caprolactone Monomer Plant.

The time series total organic carbon (TOC) plots presented in **Appendix B**, illustrate the key organic contaminant impact areas (within the shallow drift aquifer) as measured in 1995; the former sextate and organic peroxide plants, the pumphouse area and AO Plant related impacts. An improvement in groundwater quality is observed over time as shown by comparison of TOC plots from 1995 and 2012/2013. Note that the contoured areas are relative to a norm of 50 mg/l TOC.

4 PERMITTED ACTIVITIES

The Caprolactone Business area comprises the following principal plant areas (as illustrated in **Figure 2**):

- The Monomer Plant;
- The Polymer Plant; and
- Gas fired boilers.

The Caprolactone Monomer produced by the plant is either sold on directly or used to manufacture Caprolactone Polymer on site. The key processes in the Monomer and Polymer Plant areas are described in sections 1.3.1 and 1.3.2.

The northern portion of the warehouse area (at the eastern end of the installation area, refer to **Figure 2)** is used for storage of Caprolactone process materials and finished products.

4.1.1 Monomer Plant

The Caprolactone Monomer Plant is situated in the central western section of the site and has been the subject of significant redevelopment over recent years. The production of Caprolactone Monomer can be summarised as follows:

- The first stage is to concentrate Hydrogen Peroxide (H_2O_2) to an 87% strength solution. This is reacted with Acetic Acid to form a high strength Peracetic Acid solution;
- The concentrate is distilled, then reacted with Cyclohexanone and purified to produce a solution that includes approximately 30% Caprolactone Monomer with the remaining 70% comprising unreacted Acetic Acid and Cyclohexanone;
- The unreacted Acetic Acid and Cyclohexanone are recovered in evaporators and fractionators under vacuum;
- A distillation residue is formed in the process. This is taken off-site for use as cement kiln fuel;
- The purge from the distillation is sent to a recovery system to recover Acetic Acid. A residual acidic purge, containing Sulphuric Acid, Acetic Acid, Peracetic Acid and organic residues is discharged to the effluent treatment system;
- Filtered process abstraction water (from the sites deep abstraction wells) is used for cooling purposes but has no contact with the process materials;
- Some of the purge from the Peracetic Acid distillation is used as a biocide to treat the cooling water and prevent algal growth.

4.1.2 Polymer Plant

The Caprolactone Polymer plant is situated in the north eastern section of the site. The production of Caprolactone Polymer is undertaken by:

- Transfer of Monomer from the Caprolactone Monomer Plant via above ground pipelines to a 150m^3 storage vessel adjacent to the Caprolactone Polymer Plant. This is then pumped into one of eight reactors;
- There are five high molecular weight (HMW) Polymer reactors that produce solid Polymer and three low molecular weight Polymer reactors (LMW) that produce liquid Polymer;
- The Monomer is reacted with a variety of initiators and catalysts, such as glycols and organotin to form the Polymers. All the reactors operate under vacuum and steam is used to heat the reactors;
- High molecular weight Polymer is extruded and pelletised via a die face cutter system which is water cooled using a glycol-based coolant system;
- Whilst the steam does not come in direct contact with the product, the main liquid effluent arises from steam cooled using borehole water. Process area surface drainage makes up the remainder of the liquid effluent;

Caustic methylated spirit is used as a cleaning solution to dissolve the Polymer that adheres to the plant. The waste solution is stored in bulk and sent off-site for disposal by biological treatment.

4.1.3 Gas fired boilers

Up to four gas fired steam boilers, located in the western area of the site, will provide steam to the Monomer and Polymer Plants. In addition, the boilers will export steam to the adjacent Solvay facility. Demineralised water for the boiler, will be supplied to Ingevity by Solvay. Water treatment chemicals will be dosed into the boiler feedwater system to prevent slagging and the accumulation of deposits within the boiler.

The boilers are expected to be operational in April 2023. It is intended three boilers will be installed initially, with the option to install a fourth boiler as the steam demand for the Monomer and Polymer Plants increases.

Each boiler will have a rated thermal input of approximately 14.65 MWth with an aggregated thermal input of 58.60 MWth.

The boilers will be regulated as Medium Combustion Plant (MCP).

4.2 Non-permitted activities

- Main office block and amenities at the western end of the site (approximately 50m west of the Monomer Plant).

- Contractor's/materials laydown areas immediately west and north of the Monomer Plant.
- Ingevity laboratory facility in the central eastern portion of the site (undergoing extension and redevelopment through 2021).

5 CONCEPTUAL SITE MODEL

The 2005 Application Site Condition Report submitted by Waterman Environmental included a preliminary conceptual site model. The relevant report section and schematic CSM are included in **Appendix C**.

Geosyntec updated the CSM in 2014 during redesign of the Ingevity (formerly Perstorp) SPMP. The relevant 2014 report section, shallow and deep inferred groundwater flow regimes and schematic hydrogeological cross-section (illustrating aspects of the inferred deep groundwater flow regime) are also included in **Appendix C**.

During both the initial SPMP design and redesign in 2014 a shallow groundwater remediation system was in operation across much of the (Solvay Interox owned and operated) AO Plant area. Locally, containment of shallow groundwater effectively limited migration of shallow groundwater off-site.

In June 2018 the shallow groundwater remediation system was turned off, as part of a transition to a Monitored Natural Attenuation approach to manage historical shallow groundwater contamination impacts at the site. In line with the rationale for stopping shallow groundwater hydraulic containment, observations to date have indicated no significant change to the shallow and deep groundwater contaminant impacts derived from historic sources, and no significant change to the long-term shallow groundwater flow regime.

The CSM underpinning the 2014 SPMP design is not altered by either:

- The removal of localised shallow groundwater containment on site, particularly with respect to the suitability of monitoring well positioning, or;
- The addition of the Steam Raising Plant to the Ingevity installation.

6 BASELINE REFERENCE DATA

Baseline groundwater data for the original SPMP monitoring well network and for the former Organic Peroxides Plant area (now part occupied by the Steam Raining Plant) is included in **Appendix D**. Baseline data for other monitoring wells added to the network after 2014 is included within the time Series data presented in **Figures 5 - 7** (discussed in section 10). All baseline data is included for comparison against recent groundwater quality data within **Tables 3 - 5**.

7 CHANGES TO PERMITTED ACTIVITIES

7.1 Boundary changes

The installation boundaries shown in **Figure 2** are current as of July 2022.

7.2 Activity changes

The permitted activities, including those proposed through this update to the Site Condition Report, are included in section 4.

7.3 Changes to Relevant Hazardous Substances

A Hazardous Substances Inventory for Ingevity business operations is included in **Appendix E**. This includes a yes/no designation of whether a hazardous substance is "relevant", or not. Designation of hazardous substances as "relevant" indicates a realistic possibility of those substances impacting soil and/or groundwater quality. Conversely, those hazardous substances not classed as "relevant" are considered by nature of their physical/chemical properties or volume of use/production to have no realistic possibility of impacting soil and/or groundwater quality.

The RHS inventory of relevant hazardous substances used, produced or emitted from the site will be reviewed prior to completion of biannual groundwater monitoring in 2023.

8 POLLUTION PREVENTION INFRASTRUCTURE MONITORING

Monthly tank and bund visual inspections are completed by Ingevity's EHS, Maintenance and Engineering departments. The whole site is covered over an annual cycle. These inspections are undertaken using the example checklist presented in **Appendix F**.

Over a 3 yearly cycle bunds and drainage inspections are carried out by independent external experts. On a periodic basis all storage and process tanks undergo appropriate non-destructive testing and inspection for tank condition in accordance with Ingevity's risk-based inspection regime, which is controlled by independent experts accredited by Ingevity's insurers. All inspection and testing actions are transferred to the site's maintenance system or project plan.

Additional detail of pollution prevention infrastructure is provided in **Appendix A**.

9 POLLUTION INCIDENTS

There were no reported pollution incidents on site between SPMP groundwater monitoring events in October 2019 and November 2021.

10 GROUNDWATER QUALITY MONITORING

The 8th phase of Site Protection and Monitoring Programme (SPMP) groundwater monitoring was undertaken at the Ingevity Warrington site between 16th – 19th November 2021.

BH101 was covered with a broken-down lorry during the main sampling round. This monitoring well became accessible and was sampled on 8th December. Deep groundwater monitoring well D11 was not sampled in November 2021, as an adjacent shallow monitoring well was sampled in error. When the error became apparent D11 was sampled on 2nd March 2022.

An inventory of groundwater samples and analysis is presented in **Tables 1a-b**. Groundwater sampling and analytical methods were in accordance with the updated (2014) Design SPMP document.

10.1 Sampling Methods

Shallow wells were purged and sampled using dedicated polyethylene bailers. Deep wells were purged and sampled using in situ submersible pumps. Wells were purged of three water column volumes prior to collection of samples. Hydrochemical parameters were recorded through purging. Samples were refrigerated and dispatched in cool boxes under chain of custody within recommended holding times. Groundwater levels, hydrochemical parameters and sampling notes are presented in **Table 2**.

10.2 Analytical Methods

Groundwater analytical certificates are presented in **Appendix G.**

Samples were analysed by Element Laboratories in Deeside. Acid/base/neutral (ABN) extraction was used for TPH CWG (applies to aromatic and aliphatic C10-C35 fractions only) and SVOC analysis to enhance recovery of polar compounds.

10.3 Groundwater Flow Regime

Groundwater levels were measured over one day on the 16th November in thirty shallow and nine deep groundwater monitoring wells across the Baronet Works site, using an oil/water interface meter. Inferred shallow and deep groundwater flow regimes are presented in **Figure 3** and **Figure 4**, respectively.

The inferred shallow groundwater flow regime is consistent with previous observations. Shallow groundwater flow within the near surface alluvial sand dominated aquifer is broadly from west to east across the site and locally from north west to south east, downgradient of the AO Plant and beneath the former PCS Plant and Site Warehouse areas.

The inferred deep groundwater flow regime is also consistent with previous observations. Interpretation of deeper groundwater flow within the sandstone bedrock (underlying the shallow alluvial sand aquifer) is complicated by variations in the screened depth of deep monitoring wells. Beneath the site, deep groundwater flow is inferred to be broadly from north to south and is affected by local abstraction from site production wells (PW1, PW2 and PW12 are shown on **Figure 4**). Note that PW12 was not operational at the time of 2021 SPMP monitoring, in contrast to previous SPMP monitoring events.

Assessment of inferred groundwater flow direction shows shallow groundwater monitoring wells are appropriately placed adjacent to or down gradient of plant areas. Deep groundwater monitoring wells are generally within their respective plant areas. BH102 is within 50m of the AO Plant Tank Farm but slightly across gradient from it. D9 is ~100m from the Site Warehouse and is not inferred to lie downgradient of permitted areas, although does provide a background deep groundwater quality reference point.

10.4 Groundwater Quality Results

November 2021 monitoring results are discussed below by permitted area. For each permitted site area, findings are compared to baseline results with reference to known historical contaminant impacts to soil and groundwater (where these are inferred and applicable).

November 2021 groundwater analytical data is presented alongside baseline data in **Tables 3 - 5**.

Time series data for contaminant groups, split out by permitted area are presented in **Figures 5 - 7**. Blank cells within the data tables embedded within figures represent where that parameter was not analysed. Below laboratory method detection limit results are shown in grey and italicised.

10.4.1 Monomer Plant

November 2021 results for shallow monitoring wells WE9, SB18, W36, BH103 and deep wells BH102 and D7 in the Monomer Plant area are presented in **Table 3**.

Time series results for these monitoring wells are presented in **Figures 5a - c**.

With respect to metals results in the Monomer Plant area:

- In November 2021, arsenic was reported at 72.9 ug/l in deep groundwater monitoring well BH102, south (and down gradient) of the Monomer plant. This is above the 2015 baseline[7] concentration of 8.7 ug/l but similar to 2017 and 2019 results of 81.5 and 75.2 ug/l respectively. Historically, elevated arsenic concentrations have been reported in up gradient deep monitoring well D7 (451 ug/l, 2014).

With respect to inorganic parameters in the Monomer Plant area:

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[7] BH102 was drilled and installed and added to the SPMP monitoring network in 2015.

- In November 2021 results were generally similar to the long-term observed range and baseline conditions;
- Increased concentrations of chloride (3480 mg/l) and sodium (1650 mg/l) were detected in shallow groundwater in W36, north of the Monomer plant and across hydraulic gradient. November 2021 results are approximately double the highest values reported within their respective observed concentration ranges (since 2011 baseline[8]). It is noted that sodium and chloride concentrations have been high in nearby shallow groundwater monitoring well SB18 since the 2007 baseline, with a chloride concentration range of 1809 – 3800 mg/l and a sodium concentration range of 942 – 2200 mg/l.

TPH results within the Monomer Plant area:

- In November 2021 results were generally similar to the long-term observed range and baseline conditions;
- In deep groundwater monitoring well D7, up gradient and north west of the Monomer Plant, TPH concentrations in 2021 (1.5 mg/l) are significantly reduced from the 2007 baseline result of 65 mg/l;[9]

With respect to other organic compound detections in the Monomer Plant area:

- MTBE was detected in D7 at a concentration of 7.1 ug/l, below the baseline of 140 ug/l;
- VOC analysis detected trace levels of 1,1-dichloroethane in deeper groundwater in D7 at 15 ug/l and down gradient in BH102 at 10 ug/l. Detections are relative to a D7 baseline (2007) result of 110 ug/l.
- 1,3,5-trimethyl hexanoic acid was detected in D7 as an SVOC TIC, consistent with detections in previous monitoring events, inferred to be associated with historic Isononanoic impacts in the vicinity of the TBM Pumphouse (D7 is approximately 80 m south west of the inferred Isononanoic source area);
- The same hexanoic acid compound was also detected as an SVOC TIC in shallow groundwater in WE9, approximately 20m south of the inferred source area);

10.4.2 Polymer Plant

November 2021 results for monitoring wells in the Polymer Plant area are presented in **Table 4**.

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[8] W36 was added to the SPMP monitoring network in 2011.

[9] The main impacts to deeper groundwater quality in the vicinity of monitoring well D7 are inferred to be from tertiary butyl alcohol (TBA). These historic impacts are associated with the former Organic Peroxides Plant. Groundwater abstraction from D7, to reduce contaminant mass in deeper groundwater, started in October 2020 and is ongoing. During abstraction from D7, dissolved total organic carbon (TOC) has been measured as a proxy for total organic contamination and has shown a downward trend approaching an asymptote.

Time series results for these monitoring wells are presented in **Figures 6a - c**.

Note that data presented for D11 in Table 4 and Figures 6a-c is for a sample taken on 2nd March 2022.

Tin was the only metal scheduled in the Ingevity Polymer area and was not reported above the laboratory detection limit of < 5 ug/l in 2021. This is consistent with the 2008 baseline data in this area (all results < 1 ug/l).

Five of the seven monitoring wells in the Ingevity Polymer area were scheduled for the full set of inorganic analyses. The following is noted in respect of this data:

- In deep groundwater well D11, within the south of the Polymer Plant area, pH (laboratory measured pH 8.7 and field measured pH 8.4) is at the top of the observed range since 2010, which is typically slightly alkaline (range of pH 7.5 - 8.5);
- In shallow groundwater within and immediately down gradient of the Polymer Plant (4 monitoring wells, see **Figure 6a**) pH ranged from 7.5 - 7.7, which is within the observed range since 2007 baseline (range of pH 6.6 - 8.5);
- In deep groundwater well D11, chloride concentrations in March 2022 (45.1 mg/l) were towards the lower end of the observed range since 2010 of 36.5 – 1260 mg/l and significantly reduced on the recent 2019 peak of 1260 mg/l. Similarly, sodium concentrations in D11 were below detection limits in March 2022 (<0.1 mg/l) relative to the observed range since 2010 of 25 - 734 mg/l and significantly reduced on the recent 2019 peak of 734 mg/l;
- In shallow groundwater within and immediately down gradient of the Polymer Plant (**Figure 6a**) all inorganic parameters analysed, including sodium and chloride, were similar to their respective long-term observed range and baseline conditions;

With respect to TPH concentrations in the Polymer Plant area:

- In shallow groundwater TPH detections were similar to their respective long-term observed range and baseline conditions. TPH results are generally dominated by detections in the aromatic EC10-12 fractions, consistent with previous findings and inferred to reflect the dissolved phase impacts derived from (historical) residual working solution within shallow AO Plant soils (upgradient of the Polymer Plant);
- In deep groundwater well D11 TPH concentrations have increased from 2.2 mg/l in 2019 to 14.1 mg/l in March 2022, relative to an observed historical peak (2010) result of 1.1 mg/l. Both 2019 and 2021 detections were dominated by heavy fraction (C21-C35) aliphatics. Detection of these TPH fractions in D11 was first seen in 2019. They have not been detected anywhere else on site (in shallow or deep groundwater) since baseline monitoring.

  C21-C35 aliphatic fraction detections in D11 (1.5 mg/l in 2019 and 14.1 mg/l in 2022) are approximately 6-7 orders of magnitude above representative solubility limits for petroleum hydrocarbons with boiling points in the C21-C35 equivalent carbon range. This means the reported dissolved phase concentrations greatly exceeded the expected amount of these compounds that could feasibly dissolve into groundwater. Such detections could be caused by the presence of free phase product in D11, (droplets of free phase product become entrained in the groundwater sample and subsequently affect analytical results). As noted in **Table 2**, a slight iridescent sheen was observed within purged groundwater water when sampling D11 in March 2022.

With respect to other organic compound detections in the Polymer Plant area:

- An isolated SVOC analysis detection of di-n-butyl phthalate (109 ug/l) was reported in shallow well WE12 relative to a 2007 baseline result of < 1 ug/l;
- Trace level VOC analysis detections (generally <10 ug/l) of trimethylbenzenes, butyl-benzene and o-xylene were reported in shallow Polymer Plant groundwater coincident with VOC and SVOC TIC detections of similar alkylated benzene compounds. Again these VOC compound and TIC detections are consistent with previous findings and are inferred to be derived from historic working solution contamination.

10.4.3 Warehouse Area

November 2021 results for monitoring wells WE16, NW7, BH101 and D9 in the Warehouse area are presented in **Table 5.**

Time series results for these monitoring wells are presented in **Figures 7a - b**.

With respect to notable detections in BH101:

- In 2019 a TPH concentration of 1.6 mg/l was reported in BH101 (all within the C8-C10 aliphatic fraction), compared to 2015 baseline results below laboratory method detection limits (<0.01 mg/l). In November 2021 this had decreased to 0.034 mg/l, again with all detections within the C8-10- aliphatic fraction.
- There were corresponding VOC and SVOC TIC detections of 2-methyl cyclohexanone and 2-methyl cyclohexanol in BH101 in both 2019 and 2021. Both these compounds are inferred to be derived from sextate (2-methylcyclohexyl acetate[10]), a raw material used in the on-site production of hydrogen peroxide (a process owned and operated by Solvay). Both have been detected in shallow and deep groundwater on site historically, and often associated with historic working solution contamination.
- Cyclohexanone is also used as a raw material in the on-site production of Caprolactone Monomer. No storage of cyclohexanone, sextate, 2-methyl cyclohexanone or 2-methyl cyclohexanol takes place in the vicinity of BH101 (adjacent warehouse) and the nearest

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[10] 2-methylcyclohexyl acetate hydrolises to form 2-methylcyclohexanol, which will oxidise to 2-methylcyclohexanone

upgradient storage of sextate is located at the northern end of the AO Plant, over 300 m up gradient of BH101.

- Other TPH results in shallow groundwater within the Ingevity Warehouse area were below laboratory detection limits, consistent with observed ranges and baseline results.

With respect to metals and other inorganic parameter results in the Ingevity Warehouse area, in November 2021 concentrations were broadly similar to or lower than their respective baseline levels. In 2019, chloride and sodium concentrations in NW7 were the highest reported in this location since the 2007 baseline with concentrations of 662 mg/l and 420 mg/l, respectively compared to the baseline values of 150 mg/l and 110 mg/l, respectively. Concentrations of chloride and sodium remain elevated in 2021 but have decreased to 473 mg/l and 346 mg/l, respectively.

A low-level VOC analysis detection of di-n-butyl phthalate (94 ug/l) was detected in deep groundwater well D9 (across gradient from the Ingevity warehouse, indicative of background deep groundwater quality), relative to a 2015 baseline result of <1 ug/l.

11 GROUNDWATER QUALITY MONITORING CONCLUSIONS

With the exception of monitoring well D11, groundwater monitoring results generally showed no indication of new or worsening impacts to shallow or deep groundwater quality within the Ingevity permitted installation areas.

However, it is considered that TPH detections in D11 may represent a new (post baseline) groundwater impact given the emergence of increased aliphatic fraction detections in 2019, followed by their repeat detection (at a higher concentration) in March 2022. Several points are noted with respect to these recent heavy aliphatic fraction detections in D11:

- Reported concentrations greatly exceed expected solubility limits suggestive of free product presence within the analysed samples. An iridescent sheen was observed within purged groundwater when sampling D11 in March 2022. As such, the presence of free product within D11 appears to be the most likely scenario;
- Considering the influence of widespread historic working solution impacts to shallow and deeper groundwater quality locally, it is noted that typical working solution related signatures were not detected in D11 in March 2022 (no EC10-12 aromatic TPH analysis detections or alkylated benzene detections in VOC/SVOC (TIC) analyses).

The well headworks for D11 are in poor condition and are inferred to have allowed surface water ingress into the well. This may have been a mechanism for introduction of hydrocarbons (such as hydraulic oil from site vehicles) into the well. Replacement of the D11 headworks and cleaning out of potentially oil impacted mud and silt from inside the well is recommended.

Following headworks replacement and well cleaning, additional sampling of monitoring well D11 is recommended, for a targeted suite of analytes. Specific analytes should be informed by Ingevity’s relevant hazardous substances inventory (**Appendix E**). Cross-reference should be made to known development or repair works (including ground and drainage works), loss of containment or other potential release incidents within the Polymer Plant between late 2017 and March 2022 (such that impacts to groundwater would be detectable in 2019 and 2021 monitoring, but not detectable in 2017 monitoring).

Additional analysis and assessment would seek to better understand potential links between groundwater impacts in D11 and permitted site operations in a timely manner.

oo0oo

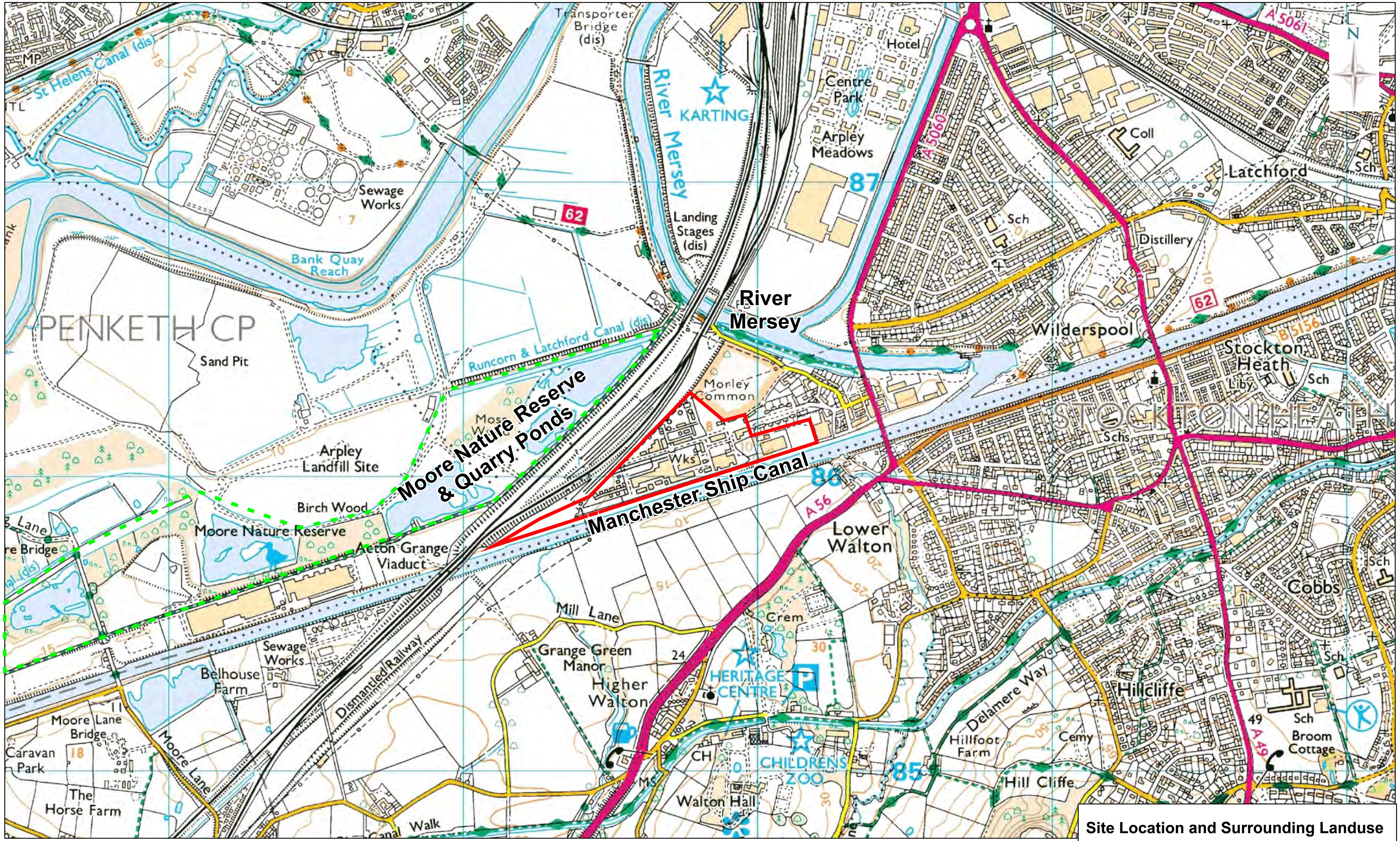
Geosyntec Consultants trust the information and discussion contained in this report meets all your immediate requirements. Please do not hesitate to contact the undersigned if you have any further comments or questions about any aspect of the work.

Respectfully submitted

On behalf of Geosyntec Consultants

Nick Roe	**Lawrence Bowden**
Project Manager	**Project Director**

FIGURES

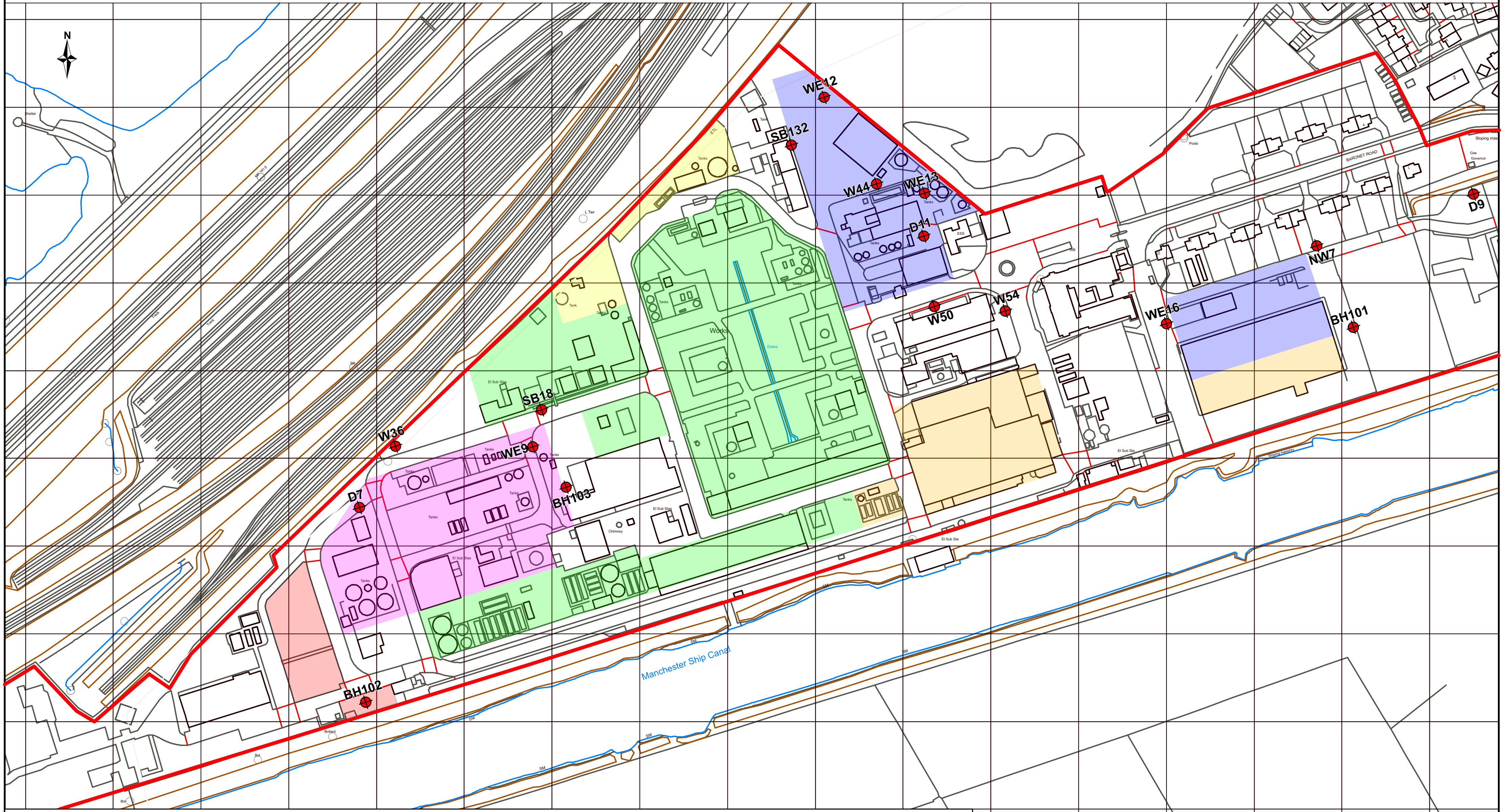


Key:

Site Outline

Site Location and Surrounding Landuse

Warrington	GCU0141023	
Geosyntec consultants	Ingevity	Figure 1
Delph, UK	January 2022	



KEY:

🟩 **AO Plant**

🟨 **DMW Plant**

🟧 **PCS Plant and Solvay Warehouse**

🟦 **Caprolactone Polymer Plant**

🟪 **Caprolactone Monomer Plant**

🟥 **Steam Raising Plant**

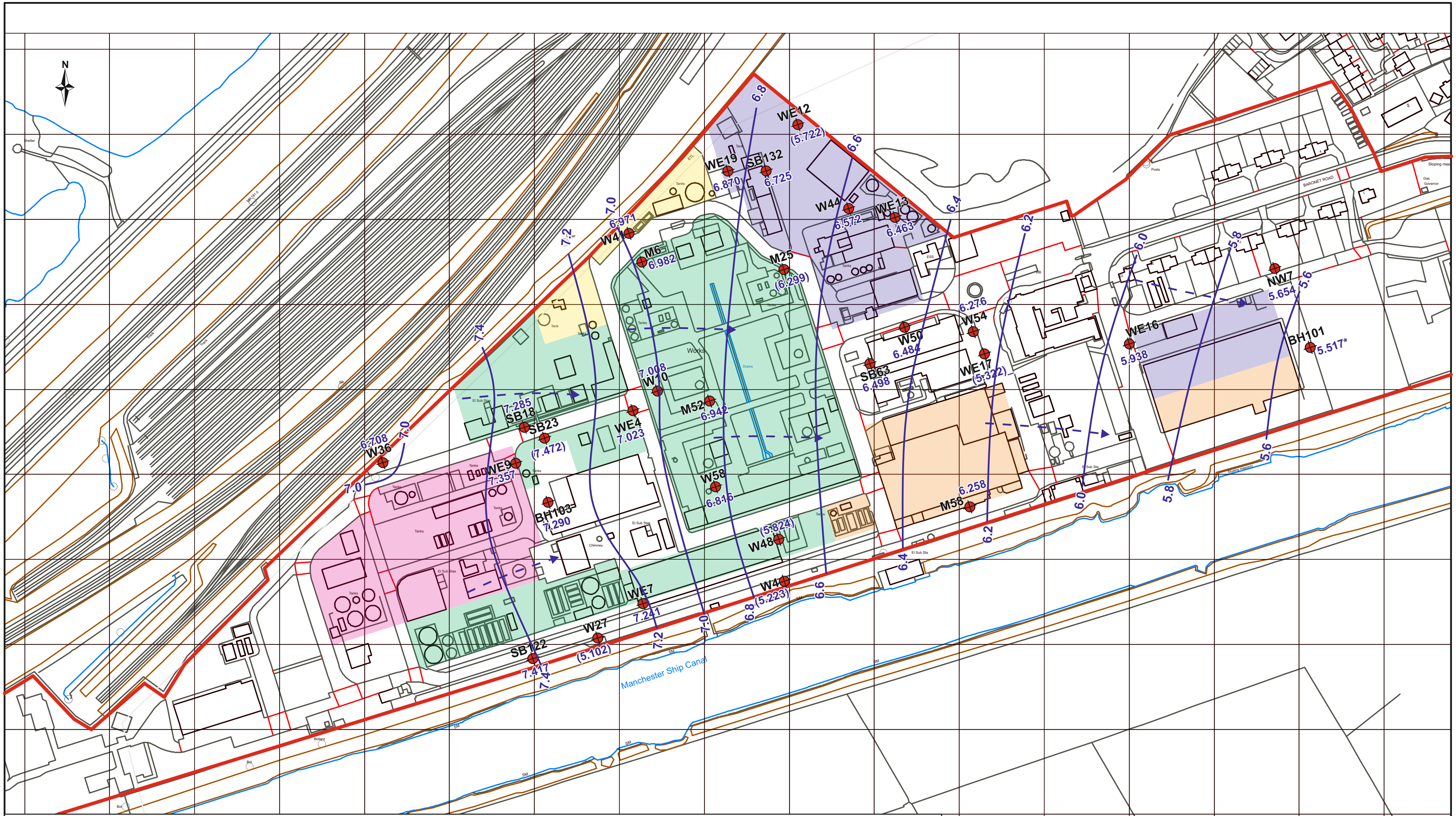
BH102 ⊕ **Groundwater Monitoring Well**

— **Site Boundary**

0m 50m 100m

SPMP Monitoring Well Locations & Site Layout

Warrington	GCU0292002
Geosyntec consultants	Ingevity	Figure 2
Delph, UK	August 2022



KEY:

🟩	**AO Plant**
🟨	**DMW Plant**
🟧	**PCS Plant**
🟪	**Caprolactone Polymer Plant**
🟥	**Caprolactone Monomer Plant**

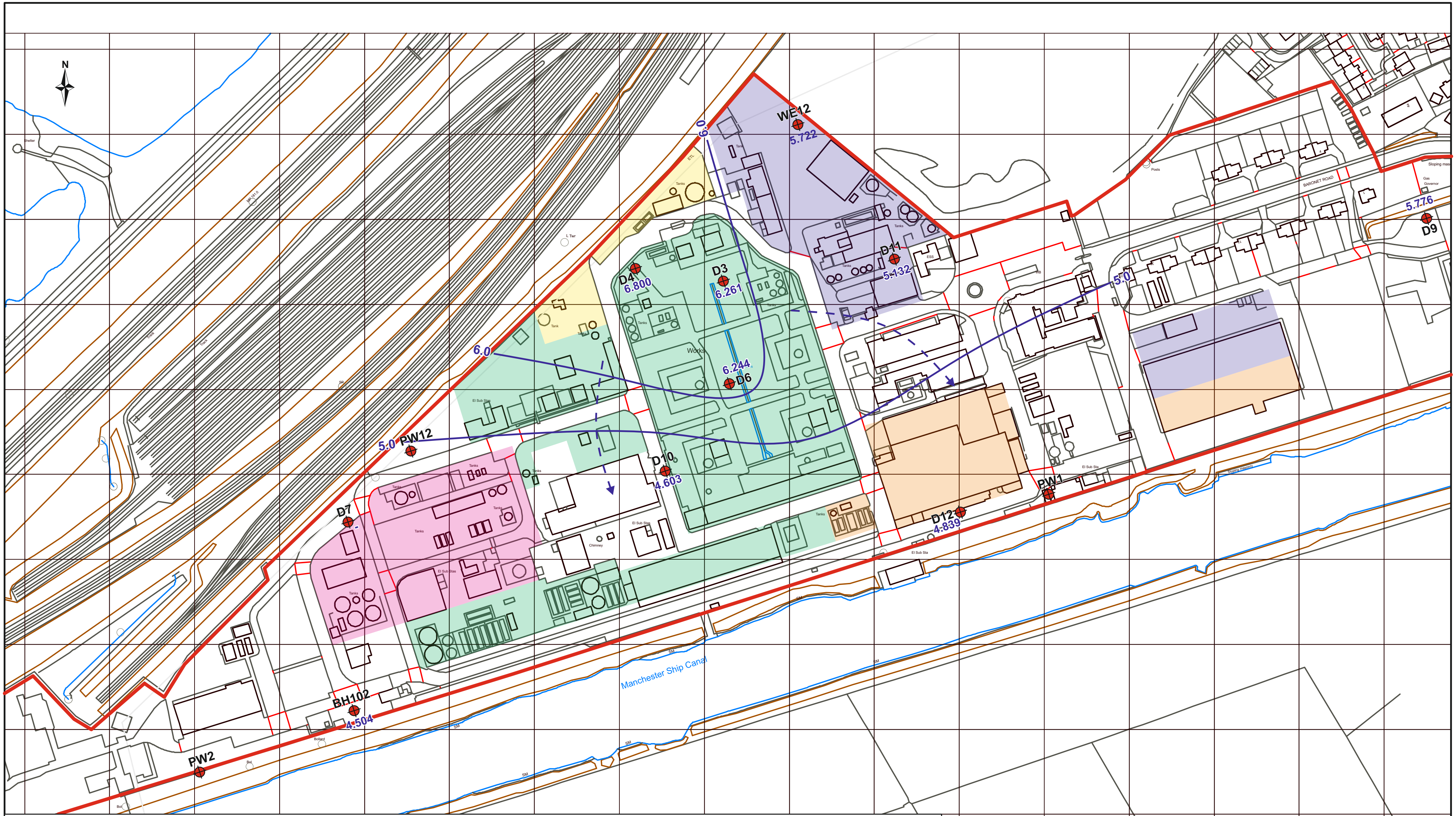
BH102 ⊕	**Shallow Groundwater Monitoring Well**
▬	**Site Boundary**
5.0 ↗	Inferred shallow groundwater head contours and indicative groundwater flow direction
(5.102)	Un-representative values
5.517*	Measurement taken on 08/12/21

0m 50m 100m

Inferred Shallow Groundwater Flow Regime
16th November 2021

Warrington	GCU0141023
Geosyntec consultants	Ingevity
Delph, UK	January 2022

Figure
3



KEY:

🟩	AO Plant
🟨	DMW Plant
🟧	PCS Plant
🟪	Caprolactone Polymer Plant
🟥	Caprolactone Monomer Plant

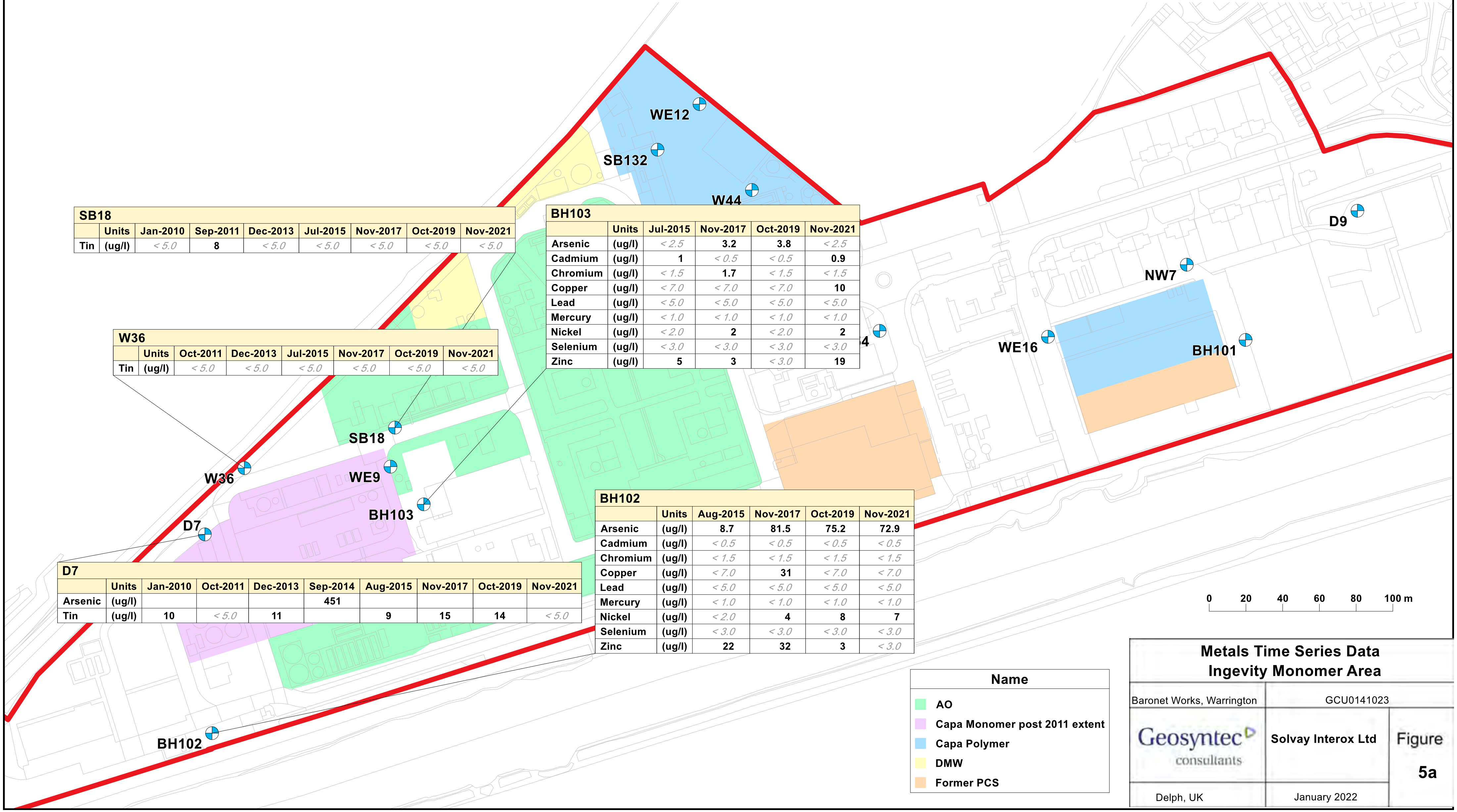
BH102 ⊕	Shallow Groundwater Monitoring Well
—	Site Boundary
5.0 →	Inferred shallow groundwater head contours and indicative groundwater flow direction
5.132	Groundwater Elevation (mAOD)

0m 50m 100m

Inferred Deep Groundwater Flow Regime, 16th November 2021

Warrington	GCU0141023
Geosyntec consultants	Ingevity
Delph, UK	January 2022

Figure 4



SB18

	Units	Jan-2010	Sep-2011	Dec-2013	Jul-2015	Nov-2017	Oct-2019	Nov-2021
Tin	(ug/l)	< 5.0	8	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

BH103

	Units	Jul-2015	Nov-2017	Oct-2019	Nov-2021
Arsenic	(ug/l)	< 2.5	3.2	3.8	< 2.5
Cadmium	(ug/l)	1	< 0.5	< 0.5	0.9
Chromium	(ug/l)	< 1.5	1.7	< 1.5	< 1.5
Copper	(ug/l)	< 7.0	< 7.0	< 7.0	10
Lead	(ug/l)	< 5.0	< 5.0	< 5.0	< 5.0
Mercury	(ug/l)	< 1.0	< 1.0	< 1.0	< 1.0
Nickel	(ug/l)	< 2.0	2	< 2.0	2
Selenium	(ug/l)	< 3.0	< 3.0	< 3.0	< 3.0
Zinc	(ug/l)	5	3	< 3.0	19

W36

	Units	Oct-2011	Dec-2013	Jul-2015	Nov-2017	Oct-2019	Nov-2021
Tin	(ug/l)	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

BH102

	Units	Aug-2015	Nov-2017	Oct-2019	Nov-2021
Arsenic	(ug/l)	8.7	81.5	75.2	72.9
Cadmium	(ug/l)	< 0.5	< 0.5	< 0.5	< 0.5
Chromium	(ug/l)	< 1.5	< 1.5	< 1.5	< 1.5
Copper	(ug/l)	< 7.0	31	< 7.0	< 7.0
Lead	(ug/l)	< 5.0	< 5.0	< 5.0	< 5.0
Mercury	(ug/l)	< 1.0	< 1.0	< 1.0	< 1.0
Nickel	(ug/l)	< 2.0	4	8	7
Selenium	(ug/l)	< 3.0	< 3.0	< 3.0	< 3.0
Zinc	(ug/l)	22	32	3	< 3.0

D7

	Units	Jan-2010	Oct-2011	Dec-2013	Sep-2014	Aug-2015	Nov-2017	Oct-2019	Nov-2021
Arsenic	(ug/l)				451				
Tin	(ug/l)	10	< 5.0	11		9	15	14	< 5.0

Name

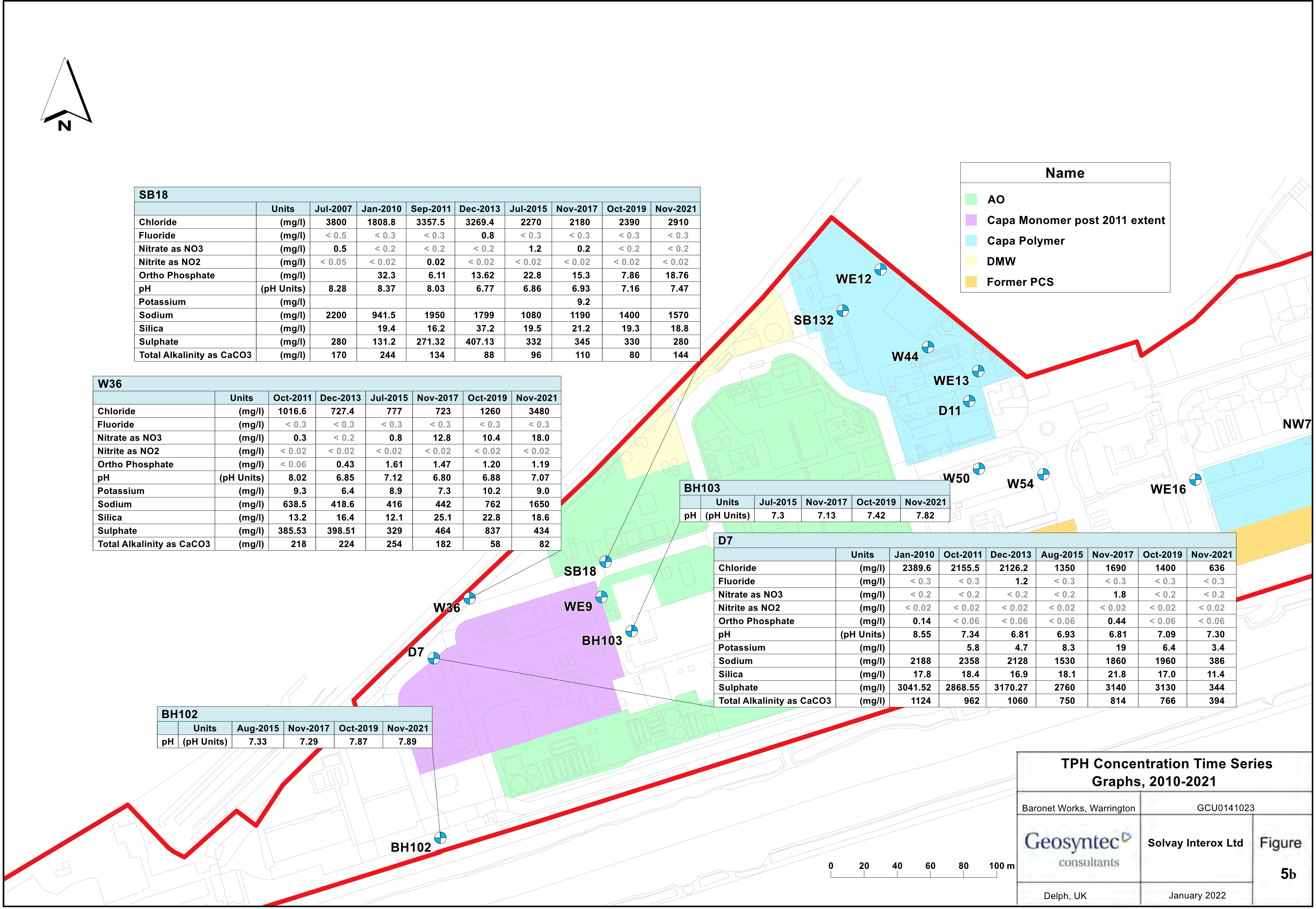
- 🟩 AO
- 🟪 Capa Monomer post 2011 extent
- 🟦 Capa Polymer
- 🟨 DMW
- 🟧 Former PCS

Metals Time Series Data
Ingevity Monomer Area

Baronet Works, Warrington	GCU0141023
Geosyntec consultants	Solvay Interox Ltd
Delph, UK	January 2022

Figure

5a



Name

- 🟩 AO
- 🟪 Capa Monomer post 2011 extent
- 🟦 Capa Polymer
- 🟨 DMW
- 🟧 Former PCS

SB18

	Units	Jul-2007	Jan-2010	Sep-2011	Dec-2013	Jul-2015	Nov-2017	Oct-2019	Nov-2021
Chloride	(mg/l)	3800	1808.8	3357.5	3269.4	2270	2180	2390	2910
Fluoride	(mg/l)	< 0.5	< 0.3	< 0.3	0.8	< 0.3	< 0.3	< 0.3	< 0.3
Nitrate as NO3	(mg/l)	0.5	< 0.2	< 0.2	< 0.2	1.2	0.2	< 0.2	< 0.2
Nitrite as NO2	(mg/l)	< 0.05	< 0.02	0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Ortho Phosphate	(mg/l)		32.3	6.11	13.62	22.8	15.3	7.86	18.76
pH	(pH Units)	8.28	8.37	8.03	6.77	6.86	6.93	7.16	7.47
Potassium	(mg/l)						9.2		
Sodium	(mg/l)	2200	941.5	1950	1799	1080	1190	1400	1570
Silica	(mg/l)		19.4	16.2	37.2	19.5	21.2	19.3	18.8
Sulphate	(mg/l)	280	131.2	271.32	407.13	332	345	330	280
Total Alkalinity as CaCO3	(mg/l)	170	244	134	88	96	110	80	144

W36

	Units	Oct-2011	Dec-2013	Jul-2015	Nov-2017	Oct-2019	Nov-2021
Chloride	(mg/l)	1016.6	727.4	777	723	1260	3480
Fluoride	(mg/l)	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nitrate as NO3	(mg/l)	0.3	< 0.2	0.8	12.8	10.4	18.0
Nitrite as NO2	(mg/l)	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Ortho Phosphate	(mg/l)	< 0.06	0.43	1.61	1.47	1.20	1.19
pH	(pH Units)	8.02	6.85	7.12	6.80	6.88	7.07
Potassium	(mg/l)	9.3	6.4	8.9	7.3	10.2	9.0
Sodium	(mg/l)	638.5	418.6	416	442	762	1650
Silica	(mg/l)	13.2	16.4	12.1	25.1	22.8	18.6
Sulphate	(mg/l)	385.53	398.51	329	464	837	434
Total Alkalinity as CaCO3	(mg/l)	218	224	254	182	58	82

BH103

	Units	Jul-2015	Nov-2017	Oct-2019	Nov-2021
pH	(pH Units)	7.3	7.13	7.42	7.82

D7

	Units	Jan-2010	Oct-2011	Dec-2013	Aug-2015	Nov-2017	Oct-2019	Nov-2021
Chloride	(mg/l)	2389.6	2155.5	2126.2	1350	1690	1400	636
Fluoride	(mg/l)	< 0.3	< 0.3	1.2	< 0.3	< 0.3	< 0.3	< 0.3
Nitrate as NO3	(mg/l)	< 0.2	< 0.2	< 0.2	< 0.2	1.8	< 0.2	< 0.2
Nitrite as NO2	(mg/l)	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Ortho Phosphate	(mg/l)	0.14	< 0.06	< 0.06	< 0.06	0.44	< 0.06	< 0.06
pH	(pH Units)	8.55	7.34	6.81	6.93	6.81	7.09	7.30
Potassium	(mg/l)		5.8	4.7	8.3	19	6.4	3.4
Sodium	(mg/l)	2188	2358	2128	1530	1860	1960	386
Silica	(mg/l)	17.8	18.4	16.9	18.1	21.8	17.0	11.4
Sulphate	(mg/l)	3041.52	2868.55	3170.27	2760	3140	3130	344
Total Alkalinity as CaCO3	(mg/l)	1124	962	1060	750	814	766	394

BH102

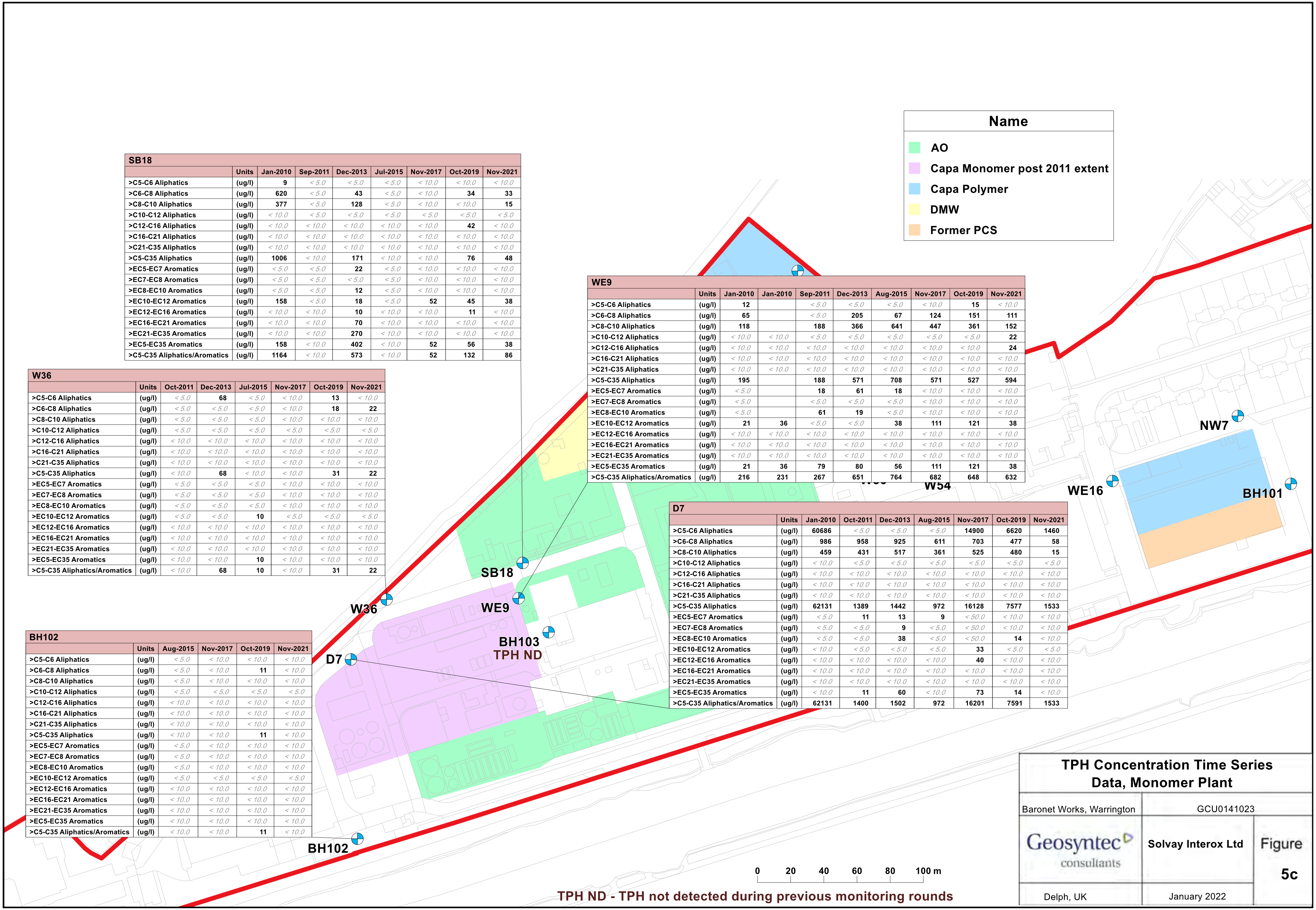
	Units	Aug-2015	Nov-2017	Oct-2019	Nov-2021
pH	(pH Units)	7.33	7.29	7.87	7.89

TPH Concentration Time Series Graphs, 2010-2021

Baronet Works, Warrington
GCU0141023

Geosyntec consultants
Solvay Interox Ltd
Figure
5b

Delph, UK
January 2022



TPH ND - TPH not detected during previous monitoring rounds

SB18

	Units	Jan-2010	Sep-2011	Dec-2013	Jul-2015	Nov-2017	Oct-2019	Nov-2021
>C5-C6 Aliphatics	(ug/l)	9	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>C6-C8 Aliphatics	(ug/l)	620	< 5.0	43	< 5.0	< 10.0	34	33
>C8-C10 Aliphatics	(ug/l)	377	< 5.0	128	< 5.0	< 10.0	< 10.0	15
>C10-C12 Aliphatics	(ug/l)	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C12-C16 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	42	< 10.0
>C16-C21 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C21-C35 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C5-C35 Aliphatics	(ug/l)	1006	< 10.0	171	< 10.0	< 10.0	76	48
>EC5-EC7 Aromatics	(ug/l)	< 5.0	< 5.0	22	< 5.0	< 10.0	< 10.0	< 10.0
>EC7-EC8 Aromatics	(ug/l)	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>EC8-EC10 Aromatics	(ug/l)	< 5.0	< 5.0	12	< 5.0	< 10.0	< 10.0	< 10.0
>EC10-EC12 Aromatics	(ug/l)	158	< 5.0	18	< 5.0	52	45	38
>EC12-EC16 Aromatics	(ug/l)	< 10.0	< 10.0	10	< 10.0	< 10.0	11	< 10.0
>EC16-EC21 Aromatics	(ug/l)	< 10.0	< 10.0	70	< 10.0	< 10.0	< 10.0	< 10.0
>EC21-EC35 Aromatics	(ug/l)	< 10.0	< 10.0	270	< 10.0	< 10.0	< 10.0	< 10.0
>EC5-EC35 Aromatics	(ug/l)	158	< 10.0	402	< 10.0	52	56	38
>C5-C35 Aliphatics/Aromatics	(ug/l)	1164	< 10.0	573	< 10.0	52	132	86

W36

	Units	Oct-2011	Dec-2013	Jul-2015	Nov-2017	Oct-2019	Nov-2021
>C5-C6 Aliphatics	(ug/l)	< 5.0	68	< 5.0	< 10.0	13	< 10.0
>C6-C8 Aliphatics	(ug/l)	< 5.0	< 5.0	< 5.0	< 10.0	18	22
>C8-C10 Aliphatics	(ug/l)	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>C10-C12 Aliphatics	(ug/l)	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C12-C16 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C16-C21 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C21-C35 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C5-C35 Aliphatics	(ug/l)	< 10.0	68	< 10.0	< 10.0	31	22
>EC5-EC7 Aromatics	(ug/l)	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>EC7-EC8 Aromatics	(ug/l)	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>EC8-EC10 Aromatics	(ug/l)	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>EC10-EC12 Aromatics	(ug/l)	< 5.0	< 5.0	10	< 5.0	< 5.0	< 5.0
>EC12-EC16 Aromatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>EC16-EC21 Aromatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>EC21-EC35 Aromatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>EC5-EC35 Aromatics	(ug/l)	< 10.0	< 10.0	10	< 10.0	< 10.0	< 10.0
>C5-C35 Aliphatics/Aromatics	(ug/l)	< 10.0	68	10	< 10.0	31	22

WE9

	Units	Jan-2010	Jan-2010	Sep-2011	Dec-2013	Aug-2015	Nov-2017	Oct-2019	Nov-2021
>C5-C6 Aliphatics	(ug/l)	12		< 5.0	< 5.0	< 5.0	< 10.0	15	< 10.0
>C6-C8 Aliphatics	(ug/l)	65		< 5.0	205	67	124	151	111
>C8-C10 Aliphatics	(ug/l)	118		188	366	641	447	361	152
>C10-C12 Aliphatics	(ug/l)	< 10.0	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	22
>C12-C16 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	24
>C16-C21 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C21-C35 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C5-C35 Aliphatics	(ug/l)	195		188	571	708	571	527	594
>EC5-EC7 Aromatics	(ug/l)	< 5.0		18	61	18	< 10.0	< 10.0	< 10.0
>EC7-EC8 Aromatics	(ug/l)	< 5.0		< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>EC8-EC10 Aromatics	(ug/l)	< 5.0		61	19	< 5.0	< 10.0	< 10.0	< 10.0
>EC10-EC12 Aromatics	(ug/l)	21	36	< 5.0	< 5.0	38	111	121	38
>EC12-EC16 Aromatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>EC16-EC21 Aromatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>EC21-EC35 Aromatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>EC5-EC35 Aromatics	(ug/l)	21	36	79	80	56	111	121	38
>C5-C35 Aliphatics/Aromatics	(ug/l)	216	231	267	651	764	682	648	632

D7

	Units	Jan-2010	Oct-2011	Dec-2013	Aug-2015	Nov-2017	Oct-2019	Nov-2021
>C5-C6 Aliphatics	(ug/l)	60686	< 5.0	< 5.0	< 5.0	14900	6620	1460
>C6-C8 Aliphatics	(ug/l)	986	958	925	611	703	477	58
>C8-C10 Aliphatics	(ug/l)	459	431	517	361	525	480	15
>C10-C12 Aliphatics	(ug/l)	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C12-C16 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C16-C21 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C21-C35 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C5-C35 Aliphatics	(ug/l)	62131	1389	1442	972	16128	7577	1533
>EC5-EC7 Aromatics	(ug/l)	< 5.0	11	13	9	< 50.0	< 10.0	< 10.0
>EC7-EC8 Aromatics	(ug/l)	< 5.0	< 5.0	9	< 5.0	< 50.0	< 10.0	< 10.0
>EC8-EC10 Aromatics	(ug/l)	< 5.0	< 5.0	38	< 5.0	< 50.0	14	< 10.0
>EC10-EC12 Aromatics	(ug/l)	< 10.0	< 5.0	< 5.0	< 5.0	33	< 5.0	< 5.0
>EC12-EC16 Aromatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	40	< 10.0	< 10.0
>EC16-EC21 Aromatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>EC21-EC35 Aromatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>EC5-EC35 Aromatics	(ug/l)	< 10.0	11	60	< 10.0	73	14	< 10.0
>C5-C35 Aliphatics/Aromatics	(ug/l)	62131	1400	1502	972	16201	7591	1533

BH102

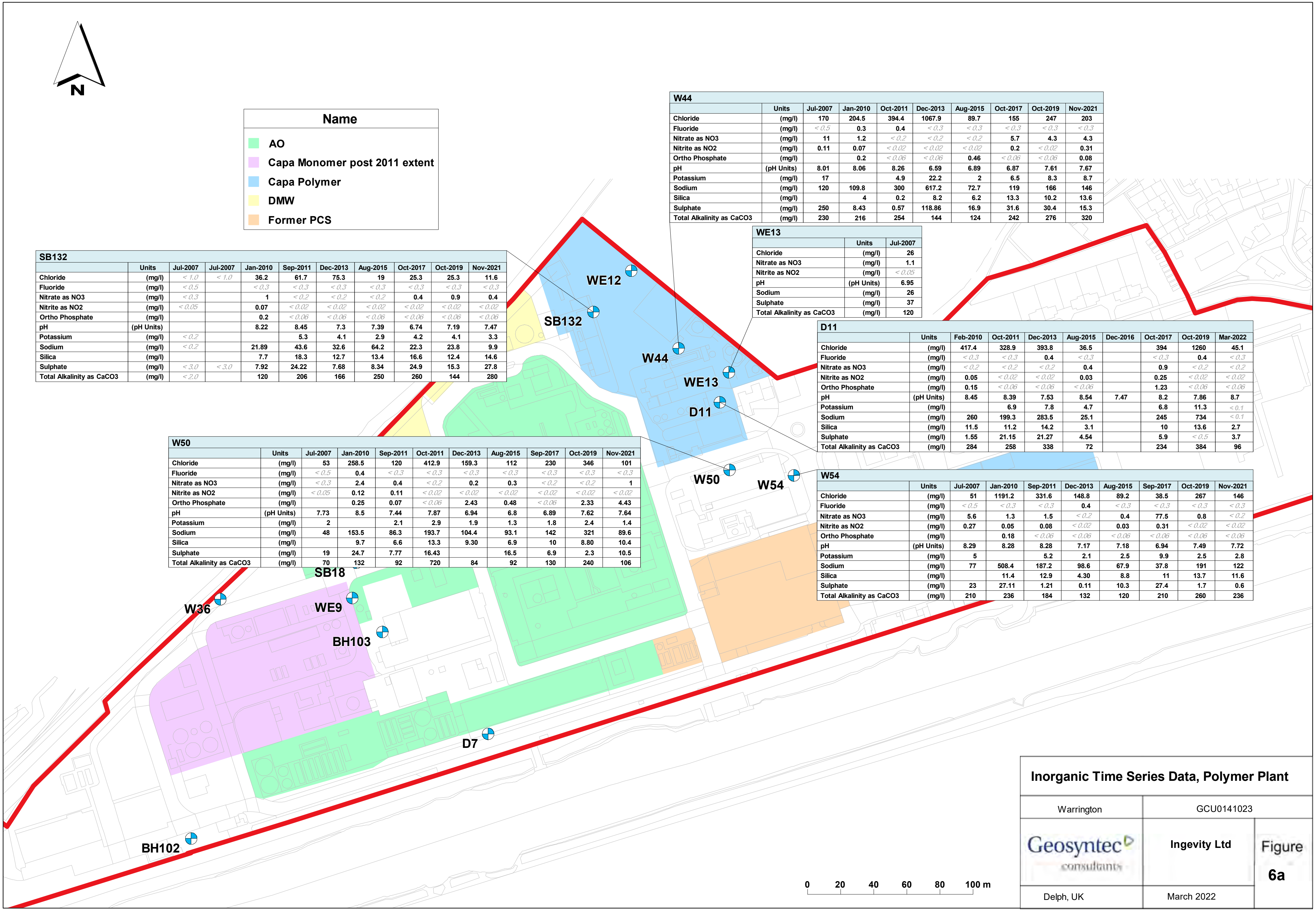
	Units	Aug-2015	Nov-2017	Oct-2019	Nov-2021
>C5-C6 Aliphatics	(ug/l)	< 5.0	< 10.0	< 10.0	< 10.0
>C6-C8 Aliphatics	(ug/l)	< 5.0	< 10.0	11	< 10.0
>C8-C10 Aliphatics	(ug/l)	< 5.0	< 10.0	< 10.0	< 10.0
>C10-C12 Aliphatics	(ug/l)	< 5.0	< 5.0	< 5.0	< 5.0
>C12-C16 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0
>C16-C21 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0
>C21-C35 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0
>C5-C35 Aliphatics	(ug/l)	< 10.0	< 10.0	11	< 10.0
>EC5-EC7 Aromatics	(ug/l)	< 5.0	< 10.0	< 10.0	< 10.0
>EC7-EC8 Aromatics	(ug/l)	< 5.0	< 10.0	< 10.0	< 10.0
>EC8-EC10 Aromatics	(ug/l)	< 5.0	< 10.0	< 10.0	< 10.0
>EC10-EC12 Aromatics	(ug/l)	< 5.0	< 5.0	< 5.0	< 5.0
>EC12-EC16 Aromatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0
>EC16-EC21 Aromatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0
>EC21-EC35 Aromatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0
>EC5-EC35 Aromatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0
>C5-C35 Aliphatics/Aromatics	(ug/l)	< 10.0	< 10.0	11	< 10.0

TPH Concentration Time Series Data, Monomer Plant

Baronet Works, Warrington
GCU0141023

Geosyntec consultants
Solvay Interox Ltd
Figure 5c

Delph, UK
January 2022



W44

	Units	Jul-2007	Jan-2010	Oct-2011	Dec-2013	Aug-2015	Oct-2017	Oct-2019	Nov-2021
Chloride	(mg/l)	170	204.5	394.4	1067.9	89.7	155	247	203
Fluoride	(mg/l)	< 0.5	0.3	0.4	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nitrate as NO3	(mg/l)	11	1.2	< 0.2	< 0.2	< 0.2	5.7	4.3	4.3
Nitrite as NO2	(mg/l)	0.11	0.07	< 0.02	< 0.02	< 0.02	0.2	< 0.02	0.31
Ortho Phosphate	(mg/l)		0.2	< 0.06	< 0.06	0.46	< 0.06	< 0.06	0.08
pH	(pH Units)	8.01	8.06	8.26	6.59	6.89	6.87	7.61	7.67
Potassium	(mg/l)	17		4.9	22.2	2	6.5	8.3	8.7
Sodium	(mg/l)	120	109.8	300	617.2	72.7	119	166	146
Silica	(mg/l)		4	0.2	8.2	6.2	13.3	10.2	13.6
Sulphate	(mg/l)	250	8.43	0.57	118.86	16.9	31.6	30.4	15.3
Total Alkalinity as CaCO3	(mg/l)	230	216	254	144	124	242	276	320

WE13

	Units	Jul-2007
Chloride	(mg/l)	26
Nitrate as NO3	(mg/l)	1.1
Nitrite as NO2	(mg/l)	< 0.05
pH	(pH Units)	6.95
Sodium	(mg/l)	26
Sulphate	(mg/l)	37
Total Alkalinity as CaCO3	(mg/l)	120

SB132

	Units	Jul-2007	Jul-2007	Jan-2010	Sep-2011	Dec-2013	Aug-2015	Oct-2017	Oct-2019	Nov-2021
Chloride	(mg/l)	< 1.0	< 1.0	36.2	61.7	75.3	19	25.3	25.3	11.6
Fluoride	(mg/l)	< 0.5		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nitrate as NO3	(mg/l)	< 0.3		1	< 0.2	< 0.2	< 0.2	0.4	0.9	0.4
Nitrite as NO2	(mg/l)	< 0.05		0.07	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Ortho Phosphate	(mg/l)			0.2	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
pH	(pH Units)			8.22	8.45	7.3	7.39	6.74	7.19	7.47
Potassium	(mg/l)	< 0.2			5.3	4.1	2.9	4.2	4.1	3.3
Sodium	(mg/l)	< 0.2		21.89	43.6	32.6	64.2	22.3	23.8	9.9
Silica	(mg/l)			7.7	18.3	12.7	13.4	16.6	12.4	14.6
Sulphate	(mg/l)	< 3.0	< 3.0	7.92	24.22	7.68	8.34	24.9	15.3	27.8
Total Alkalinity as CaCO3	(mg/l)	< 2.0		120	206	166	250	260	144	280

D11

	Units	Feb-2010	Oct-2011	Dec-2013	Aug-2015	Dec-2016	Oct-2017	Oct-2019	Mar-2022
Chloride	(mg/l)	417.4	328.9	393.8	36.5		394	1260	45.1
Fluoride	(mg/l)	< 0.3	< 0.3	0.4	< 0.3		< 0.3	0.4	< 0.3
Nitrate as NO3	(mg/l)	< 0.2	< 0.2	< 0.2	0.4		0.9	< 0.2	< 0.2
Nitrite as NO2	(mg/l)	0.05	< 0.02	< 0.02	0.03		0.25	< 0.02	< 0.02
Ortho Phosphate	(mg/l)	0.15	< 0.06	< 0.06	< 0.06		1.23	< 0.06	< 0.06
pH	(pH Units)	8.45	8.39	7.53	8.54	7.47	8.2	7.86	8.7
Potassium	(mg/l)		6.9	7.8	4.7		6.8	11.3	< 0.1
Sodium	(mg/l)	260	199.3	283.5	25.1		245	734	< 0.1
Silica	(mg/l)	11.5	11.2	14.2	3.1		10	13.6	2.7
Sulphate	(mg/l)	1.55	21.15	21.27	4.54		5.9	< 0.5	3.7
Total Alkalinity as CaCO3	(mg/l)	284	258	338	72		234	384	96

W50

	Units	Jul-2007	Jan-2010	Sep-2011	Oct-2011	Dec-2013	Aug-2015	Sep-2017	Oct-2019	Nov-2021
Chloride	(mg/l)	53	258.5	120	412.9	159.3	112	230	346	101
Fluoride	(mg/l)	< 0.5	0.4	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nitrate as NO3	(mg/l)	< 0.3	2.4	0.4	< 0.2	0.2	0.3	< 0.2	< 0.2	1
Nitrite as NO2	(mg/l)	< 0.05	0.12	0.11	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Ortho Phosphate	(mg/l)		0.25	0.07	< 0.06	2.43	0.48	< 0.06	2.33	4.43
pH	(pH Units)	7.73	8.5	7.44	7.87	6.94	6.8	6.89	7.62	7.64
Potassium	(mg/l)	2		2.1	2.9	1.9	1.3	1.8	2.4	1.4
Sodium	(mg/l)	48	153.5	86.3	193.7	104.4	93.1	142	321	89.6
Silica	(mg/l)		9.7	6.6	13.3	9.30	6.9	10	8.80	10.4
Sulphate	(mg/l)	19	24.7	7.77	16.43		16.5	6.9	2.3	10.5
Total Alkalinity as CaCO3	(mg/l)	70	132	92	720	84	92	130	240	106

W54

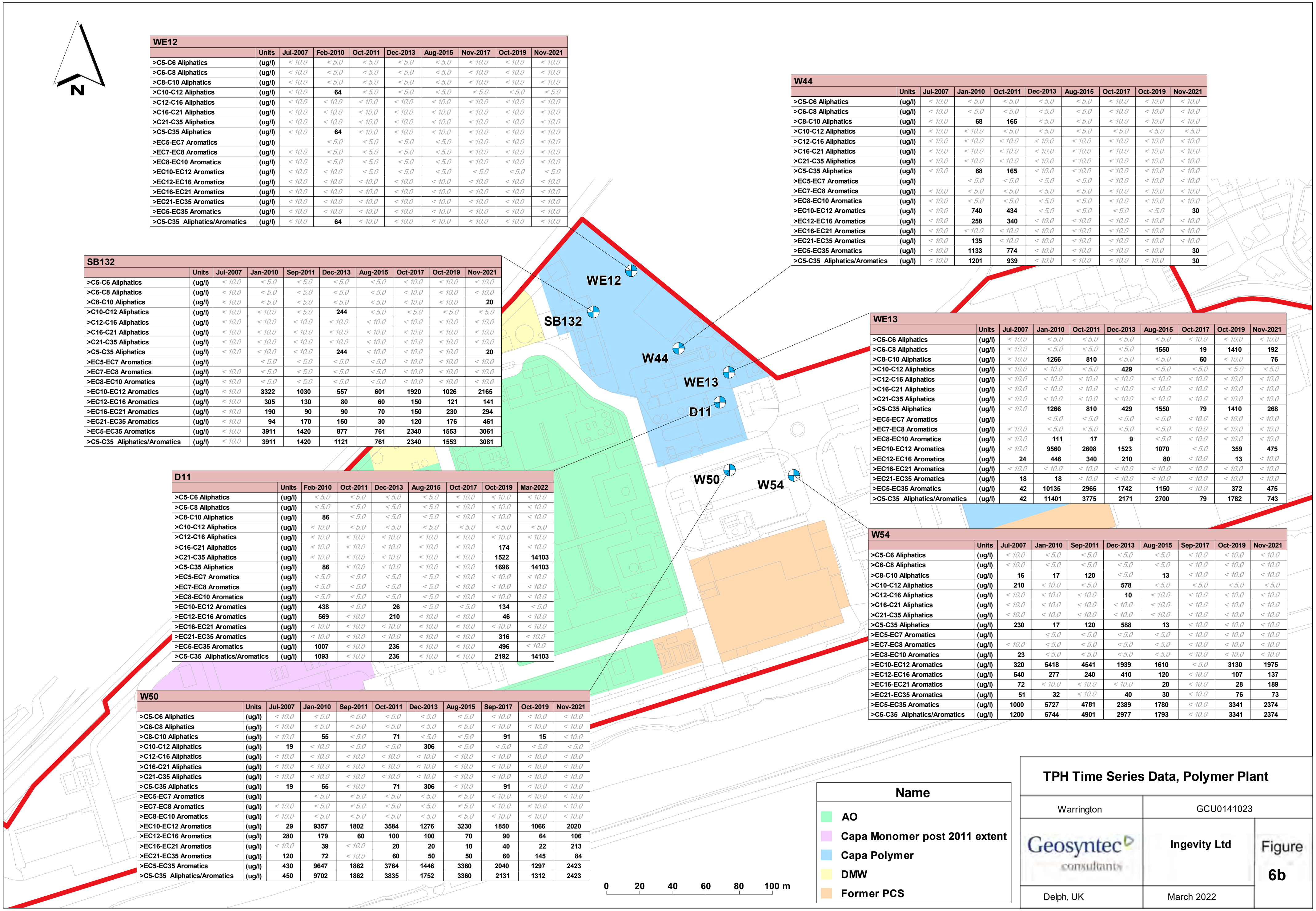
	Units	Jul-2007	Jan-2010	Sep-2011	Dec-2013	Aug-2015	Sep-2017	Oct-2019	Nov-2021
Chloride	(mg/l)	51	1191.2	331.6	148.8	89.2	38.5	267	146
Fluoride	(mg/l)	< 0.5	< 0.3	< 0.3	0.4	< 0.3	< 0.3	< 0.3	< 0.3
Nitrate as NO3	(mg/l)	5.6	1.3	1.5	< 0.2	0.4	77.5	0.8	< 0.2
Nitrite as NO2	(mg/l)	0.27	0.05	0.08	< 0.02	0.03	0.31	< 0.02	< 0.02
Ortho Phosphate	(mg/l)		0.18	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
pH	(pH Units)	8.29	8.28	8.28	7.17	7.18	6.94	7.49	7.72
Potassium	(mg/l)	5		5.2	2.1	2.5	9.9	2.5	2.8
Sodium	(mg/l)	77	508.4	187.2	98.6	67.9	37.8	191	122
Silica	(mg/l)		11.4	12.9	4.30	8.8	11	13.7	11.6
Sulphate	(mg/l)	23	27.11	1.21	0.11	10.3	27.4	1.7	0.6
Total Alkalinity as CaCO3	(mg/l)	210	236	184	132	120	210	260	236

Inorganic Time Series Data, Polymer Plant

Warrington
GCU0141023

Geosyntec consultants
Ingevity Ltd
Figure
6a

Delph, UK
March 2022



WE12

	Units	Jul-2007	Feb-2010	Oct-2011	Dec-2013	Aug-2015	Nov-2017	Oct-2019	Nov-2021
>C5-C6 Aliphatics	(ug/l)	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>C6-C8 Aliphatics	(ug/l)	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>C8-C10 Aliphatics	(ug/l)	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>C10-C12 Aliphatics	(ug/l)	< 10.0	64	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C12-C16 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C16-C21 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C21-C35 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C5-C35 Aliphatics	(ug/l)	< 10.0	64	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>EC5-EC7 Aromatics	(ug/l)		< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>EC7-EC8 Aromatics	(ug/l)	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>EC8-EC10 Aromatics	(ug/l)	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>EC10-EC12 Aromatics	(ug/l)	< 10.0	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>EC12-EC16 Aromatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>EC16-EC21 Aromatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>EC21-EC35 Aromatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>EC5-EC35 Aromatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C5-C35 Aliphatics/Aromatics	(ug/l)	< 10.0	64	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0

W44

	Units	Jul-2007	Jan-2010	Oct-2011	Dec-2013	Aug-2015	Oct-2017	Oct-2019	Nov-2021
>C5-C6 Aliphatics	(ug/l)	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>C6-C8 Aliphatics	(ug/l)	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>C8-C10 Aliphatics	(ug/l)	< 10.0	68	165	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>C10-C12 Aliphatics	(ug/l)	< 10.0	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C12-C16 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C16-C21 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C21-C35 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C5-C35 Aliphatics	(ug/l)	< 10.0	68	165	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>EC5-EC7 Aromatics	(ug/l)		< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>EC7-EC8 Aromatics	(ug/l)	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>EC8-EC10 Aromatics	(ug/l)	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>EC10-EC12 Aromatics	(ug/l)	< 10.0	740	434	< 5.0	< 5.0	< 5.0	< 5.0	30
>EC12-EC16 Aromatics	(ug/l)	< 10.0	258	340	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>EC16-EC21 Aromatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>EC21-EC35 Aromatics	(ug/l)	< 10.0	135	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>EC5-EC35 Aromatics	(ug/l)	< 10.0	1133	774	< 10.0	< 10.0	< 10.0	< 10.0	30
>C5-C35 Aliphatics/Aromatics	(ug/l)	< 10.0	1201	939	< 10.0	< 10.0	< 10.0	< 10.0	30

SB132

	Units	Jul-2007	Jan-2010	Sep-2011	Dec-2013	Aug-2015	Oct-2017	Oct-2019	Nov-2021
>C5-C6 Aliphatics	(ug/l)	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>C6-C8 Aliphatics	(ug/l)	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>C8-C10 Aliphatics	(ug/l)	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	20
>C10-C12 Aliphatics	(ug/l)	< 10.0	< 10.0	< 5.0	244	< 5.0	< 5.0	< 5.0	< 5.0
>C12-C16 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C16-C21 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C21-C35 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C5-C35 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	244	< 10.0	< 10.0	< 10.0	20
>EC5-EC7 Aromatics	(ug/l)		< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>EC7-EC8 Aromatics	(ug/l)	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>EC8-EC10 Aromatics	(ug/l)	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>EC10-EC12 Aromatics	(ug/l)	< 10.0	3322	1030	557	601	1920	1026	2165
>EC12-EC16 Aromatics	(ug/l)	< 10.0	305	130	80	60	150	121	141
>EC16-EC21 Aromatics	(ug/l)	< 10.0	190	90	90	70	150	230	294
>EC21-EC35 Aromatics	(ug/l)	< 10.0	94	170	150	30	120	176	461
>EC5-EC35 Aromatics	(ug/l)	< 10.0	3911	1420	877	761	2340	1553	3061
>C5-C35 Aliphatics/Aromatics	(ug/l)	< 10.0	3911	1420	1121	761	2340	1553	3081

WE13

	Units	Jul-2007	Jan-2010	Oct-2011	Dec-2013	Aug-2015	Oct-2017	Oct-2019	Nov-2021
>C5-C6 Aliphatics	(ug/l)	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>C6-C8 Aliphatics	(ug/l)	< 10.0	< 5.0	< 5.0	< 5.0	1550	19	1410	192
>C8-C10 Aliphatics	(ug/l)	< 10.0	1266	810	< 5.0	< 5.0	60	< 10.0	76
>C10-C12 Aliphatics	(ug/l)	< 10.0	< 10.0	< 5.0	429	< 5.0	< 5.0	< 5.0	< 5.0
>C12-C16 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C16-C21 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C21-C35 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C5-C35 Aliphatics	(ug/l)	< 10.0	1266	810	429	1550	79	1410	268
>EC5-EC7 Aromatics	(ug/l)		< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>EC7-EC8 Aromatics	(ug/l)	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>EC8-EC10 Aromatics	(ug/l)	< 10.0	111	17	9	< 5.0	< 10.0	< 10.0	< 10.0
>EC10-EC12 Aromatics	(ug/l)	< 10.0	9560	2608	1523	1070	< 5.0	359	475
>EC12-EC16 Aromatics	(ug/l)	24	446	340	210	80	< 10.0	13	< 10.0
>EC16-EC21 Aromatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>EC21-EC35 Aromatics	(ug/l)	18	18	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>EC5-EC35 Aromatics	(ug/l)	42	10135	2965	1742	1150	< 10.0	372	475
>C5-C35 Aliphatics/Aromatics	(ug/l)	42	11401	3775	2171	2700	79	1782	743

D11

	Units	Feb-2010	Oct-2011	Dec-2013	Aug-2015	Oct-2017	Oct-2019	Mar-2022
>C5-C6 Aliphatics	(ug/l)	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>C6-C8 Aliphatics	(ug/l)	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>C8-C10 Aliphatics	(ug/l)	86	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>C10-C12 Aliphatics	(ug/l)	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C12-C16 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C16-C21 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	174	< 10.0
>C21-C35 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	1522	14103
>C5-C35 Aliphatics	(ug/l)	86	< 10.0	< 10.0	< 10.0	< 10.0	1696	14103
>EC5-EC7 Aromatics	(ug/l)	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>EC7-EC8 Aromatics	(ug/l)	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>EC8-EC10 Aromatics	(ug/l)	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>EC10-EC12 Aromatics	(ug/l)	438	< 5.0	26	< 5.0	< 5.0	134	< 5.0
>EC12-EC16 Aromatics	(ug/l)	569	< 10.0	210	< 10.0	< 10.0	46	< 10.0
>EC16-EC21 Aromatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>EC21-EC35 Aromatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	316	< 10.0
>EC5-EC35 Aromatics	(ug/l)	1007	< 10.0	236	< 10.0	< 10.0	496	< 10.0
>C5-C35 Aliphatics/Aromatics	(ug/l)	1093	< 10.0	236	< 10.0	< 10.0	2192	14103

W54

	Units	Jul-2007	Jan-2010	Sep-2011	Dec-2013	Aug-2015	Sep-2017	Oct-2019	Nov-2021
>C5-C6 Aliphatics	(ug/l)	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>C6-C8 Aliphatics	(ug/l)	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>C8-C10 Aliphatics	(ug/l)	16	17	120	< 5.0	13	< 10.0	< 10.0	< 10.0
>C10-C12 Aliphatics	(ug/l)	210	< 10.0	< 5.0	578	< 5.0	< 5.0	< 5.0	< 5.0
>C12-C16 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	10	< 10.0	< 10.0	< 10.0	< 10.0
>C16-C21 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C21-C35 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C5-C35 Aliphatics	(ug/l)	230	17	120	588	13	< 10.0	< 10.0	< 10.0
>EC5-EC7 Aromatics	(ug/l)		< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>EC7-EC8 Aromatics	(ug/l)	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>EC8-EC10 Aromatics	(ug/l)	23	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>EC10-EC12 Aromatics	(ug/l)	320	5418	4541	1939	1610	< 5.0	3130	1975
>EC12-EC16 Aromatics	(ug/l)	540	277	240	410	120	< 10.0	107	137
>EC16-EC21 Aromatics	(ug/l)	72	< 10.0	< 10.0	< 10.0	20	< 10.0	28	189
>EC21-EC35 Aromatics	(ug/l)	51	32	< 10.0	40	30	< 10.0	76	73
>EC5-EC35 Aromatics	(ug/l)	1000	5727	4781	2389	1780	< 10.0	3341	2374
>C5-C35 Aliphatics/Aromatics	(ug/l)	1200	5744	4901	2977	1793	< 10.0	3341	2374

W50

	Units	Jul-2007	Jan-2010	Sep-2011	Oct-2011	Dec-2013	Aug-2015	Sep-2017	Oct-2019	Nov-2021
>C5-C6 Aliphatics	(ug/l)	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>C6-C8 Aliphatics	(ug/l)	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>C8-C10 Aliphatics	(ug/l)	< 10.0	55	< 5.0	71	< 5.0	< 5.0	91	15	< 10.0
>C10-C12 Aliphatics	(ug/l)	19	< 10.0	< 5.0	< 5.0	306	< 5.0	< 5.0	< 5.0	< 5.0
>C12-C16 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C16-C21 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C21-C35 Aliphatics	(ug/l)	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
>C5-C35 Aliphatics	(ug/l)	19	55	< 10.0	71	306	< 10.0	91	< 10.0	< 10.0
>EC5-EC7 Aromatics	(ug/l)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>EC7-EC8 Aromatics	(ug/l)	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>EC8-EC10 Aromatics	(ug/l)	< 10.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10.0	< 10.0	< 10.0
>EC10-EC12 Aromatics	(ug/l)	29	9357	1802	3584	1276	3230	1850	1066	2020
>EC12-EC16 Aromatics	(ug/l)	280	179	60	100	100	70	90	64	106
>EC16-EC21 Aromatics	(ug/l)	< 10.0	39	< 10.0	20	20	10	40	22	213
>EC21-EC35 Aromatics	(ug/l)	120	72	< 10.0	60	50	50	60	145	84
>EC5-EC35 Aromatics	(ug/l)	430	9647	1862	3764	1446	3360	2040	1297	2423
>C5-C35 Aliphatics/Aromatics	(ug/l)	450	9702	1862	3835	1752	3360	2131	1312	2423

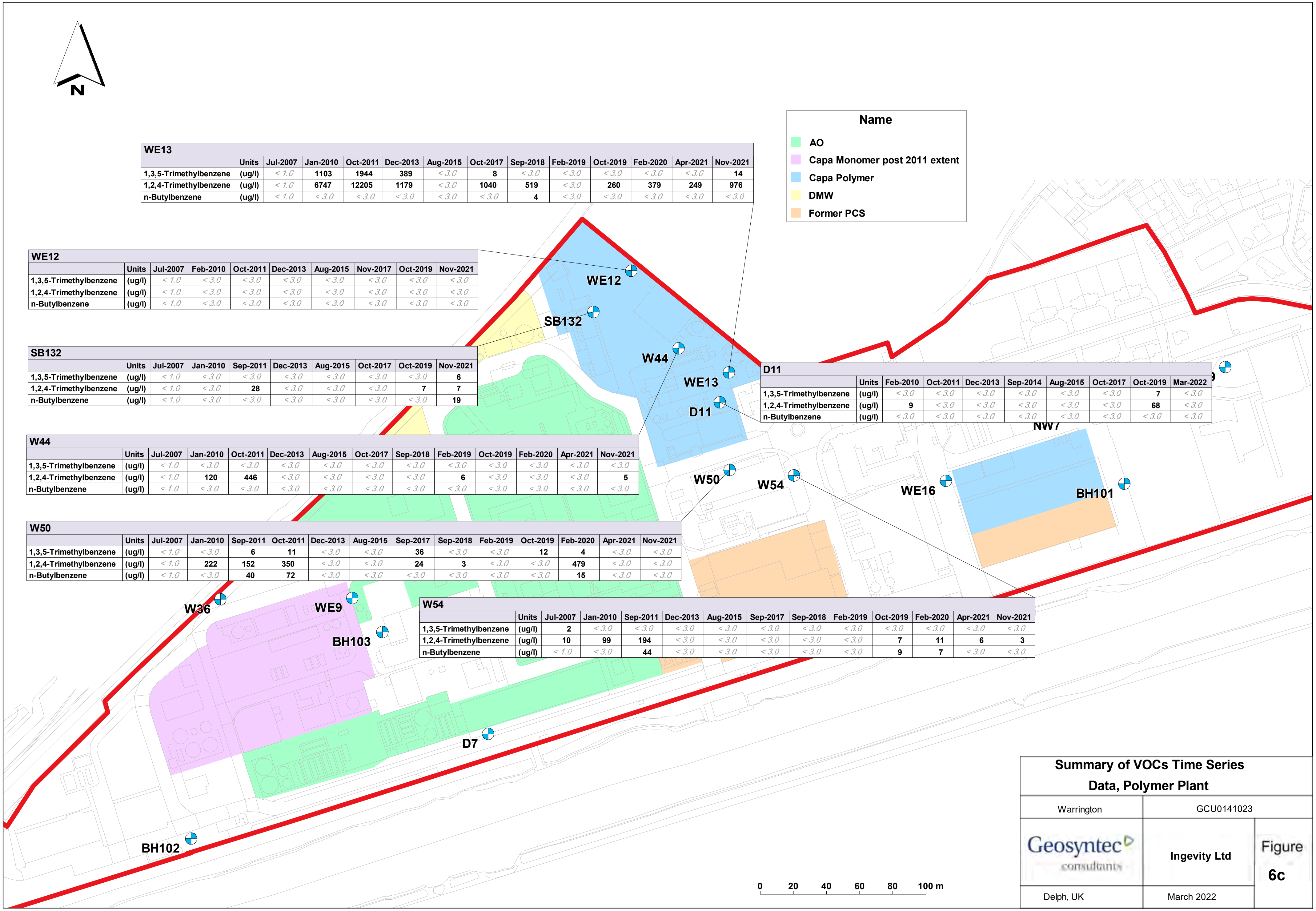
Name

🟩 AO
🟪 Capa Monomer post 2011 extent
🟦 Capa Polymer
🟨 DMW
🟧 Former PCS

TPH Time Series Data, Polymer Plant

Warrington	GCU0141023
Geosyntec consultants	Ingevity Ltd
Delph, UK	March 2022

Figure
6b



WE13

	Units	Jul-2007	Jan-2010	Oct-2011	Dec-2013	Aug-2015	Oct-2017	Sep-2018	Feb-2019	Oct-2019	Feb-2020	Apr-2021	Nov-2021
1,3,5-Trimethylbenzene	(ug/l)	< 1.0	1103	1944	389	< 3.0	8	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	14
1,2,4-Trimethylbenzene	(ug/l)	< 1.0	6747	12205	1179	< 3.0	1040	519	< 3.0	260	379	249	976
n-Butylbenzene	(ug/l)	< 1.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	4	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0

WE12

	Units	Jul-2007	Feb-2010	Oct-2011	Dec-2013	Aug-2015	Nov-2017	Oct-2019	Nov-2021
1,3,5-Trimethylbenzene	(ug/l)	< 1.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
1,2,4-Trimethylbenzene	(ug/l)	< 1.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
n-Butylbenzene	(ug/l)	< 1.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0

SB132

	Units	Jul-2007	Jan-2010	Sep-2011	Dec-2013	Aug-2015	Oct-2017	Oct-2019	Nov-2021
1,3,5-Trimethylbenzene	(ug/l)	< 1.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	6
1,2,4-Trimethylbenzene	(ug/l)	< 1.0	< 3.0	28	< 3.0	< 3.0	< 3.0	7	7
n-Butylbenzene	(ug/l)	< 1.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	19

D11

	Units	Feb-2010	Oct-2011	Dec-2013	Sep-2014	Aug-2015	Oct-2017	Oct-2019	Mar-2022
1,3,5-Trimethylbenzene	(ug/l)	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	7	< 3.0
1,2,4-Trimethylbenzene	(ug/l)	9	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	68	< 3.0
n-Butylbenzene	(ug/l)	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0

W44

	Units	Jul-2007	Jan-2010	Oct-2011	Dec-2013	Aug-2015	Oct-2017	Sep-2018	Feb-2019	Oct-2019	Feb-2020	Apr-2021	Nov-2021
1,3,5-Trimethylbenzene	(ug/l)	< 1.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
1,2,4-Trimethylbenzene	(ug/l)	< 1.0	120	446	< 3.0	< 3.0	< 3.0	< 3.0	6	< 3.0	< 3.0	< 3.0	5
n-Butylbenzene	(ug/l)	< 1.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0

W50

	Units	Jul-2007	Jan-2010	Sep-2011	Oct-2011	Dec-2013	Aug-2015	Sep-2017	Sep-2018	Feb-2019	Oct-2019	Feb-2020	Apr-2021	Nov-2021
1,3,5-Trimethylbenzene	(ug/l)	< 1.0	< 3.0	6	11	< 3.0	< 3.0	36	< 3.0	< 3.0	12	4	< 3.0	< 3.0
1,2,4-Trimethylbenzene	(ug/l)	< 1.0	222	152	350	< 3.0	< 3.0	24	3	< 3.0	< 3.0	479	< 3.0	< 3.0
n-Butylbenzene	(ug/l)	< 1.0	< 3.0	40	72	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	15	< 3.0	< 3.0

W54

	Units	Jul-2007	Jan-2010	Sep-2011	Dec-2013	Aug-2015	Sep-2017	Sep-2018	Feb-2019	Oct-2019	Feb-2020	Apr-2021	Nov-2021
1,3,5-Trimethylbenzene	(ug/l)	2	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
1,2,4-Trimethylbenzene	(ug/l)	10	99	194	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	7	11	6	3
n-Butylbenzene	(ug/l)	< 1.0	< 3.0	44	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	9	7	< 3.0	< 3.0

Summary of VOCs Time Series Data, Polymer Plant

Warrington
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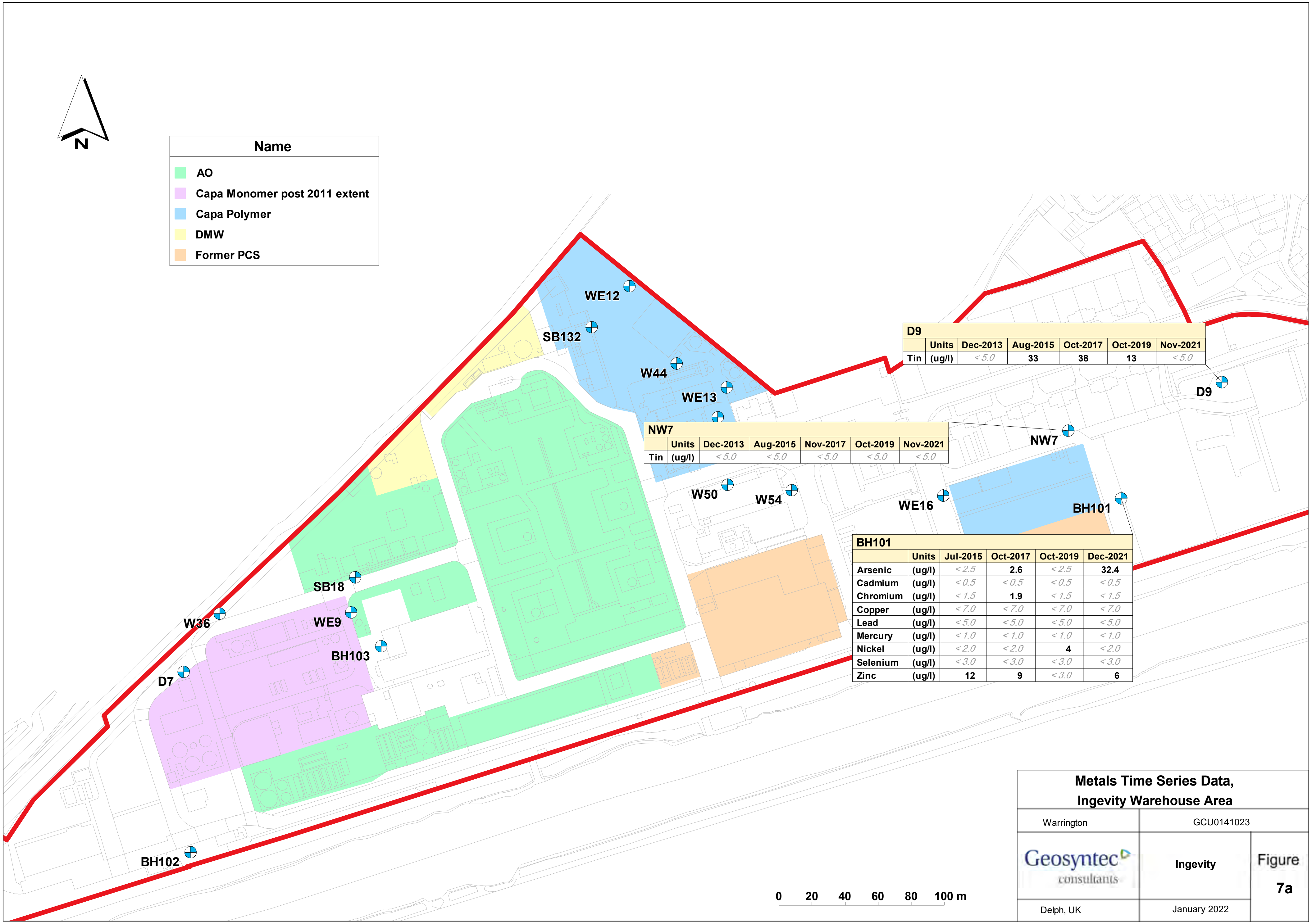
Geosyntec consultants
Ingevity Ltd
Figure
6c

Delph, UK
March 2022



D9

	Units	Dec-2013	Aug-2015	Oct-2017	Oct-2019	Nov-2021
Tin	(ug/l)	< 5.0	33	38	13	< 5.0

NW7

	Units	Dec-2013	Aug-2015	Nov-2017	Oct-2019	Nov-2021
Tin	(ug/l)	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

BH101

	Units	Jul-2015	Oct-2017	Oct-2019	Dec-2021
Arsenic	(ug/l)	< 2.5	2.6	< 2.5	32.4
Cadmium	(ug/l)	< 0.5	< 0.5	< 0.5	< 0.5
Chromium	(ug/l)	< 1.5	1.9	< 1.5	< 1.5
Copper	(ug/l)	< 7.0	< 7.0	< 7.0	< 7.0
Lead	(ug/l)	< 5.0	< 5.0	< 5.0	< 5.0
Mercury	(ug/l)	< 1.0	< 1.0	< 1.0	< 1.0
Nickel	(ug/l)	< 2.0	< 2.0	4	< 2.0
Selenium	(ug/l)	< 3.0	< 3.0	< 3.0	< 3.0
Zinc	(ug/l)	12	9	< 3.0	6

Metals Time Series Data, Ingevity Warehouse Area

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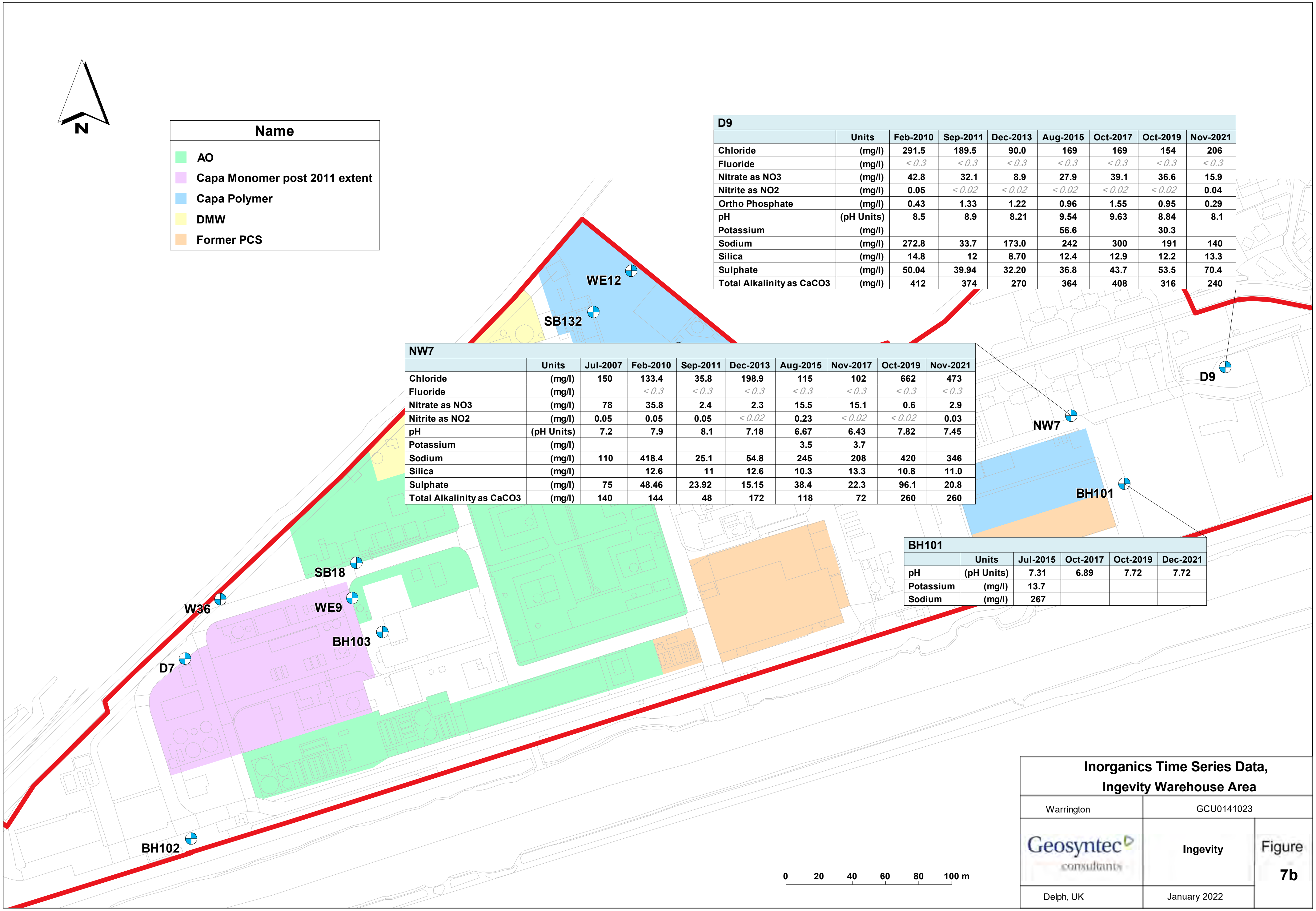
Figure 7a

Delph, UK

January 2022



D9

	Units	Feb-2010	Sep-2011	Dec-2013	Aug-2015	Oct-2017	Oct-2019	Nov-2021
Chloride	(mg/l)	291.5	189.5	90.0	169	169	154	206
Fluoride	(mg/l)	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nitrate as NO3	(mg/l)	42.8	32.1	8.9	27.9	39.1	36.6	15.9
Nitrite as NO2	(mg/l)	0.05	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.04
Ortho Phosphate	(mg/l)	0.43	1.33	1.22	0.96	1.55	0.95	0.29
pH	(pH Units)	8.5	8.9	8.21	9.54	9.63	8.84	8.1
Potassium	(mg/l)				56.6		30.3	
Sodium	(mg/l)	272.8	33.7	173.0	242	300	191	140
Silica	(mg/l)	14.8	12	8.70	12.4	12.9	12.2	13.3
Sulphate	(mg/l)	50.04	39.94	32.20	36.8	43.7	53.5	70.4
Total Alkalinity as CaCO3	(mg/l)	412	374	270	364	408	316	240

NW7

	Units	Jul-2007	Feb-2010	Sep-2011	Dec-2013	Aug-2015	Nov-2017	Oct-2019	Nov-2021
Chloride	(mg/l)	150	133.4	35.8	198.9	115	102	662	473
Fluoride	(mg/l)		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nitrate as NO3	(mg/l)	78	35.8	2.4	2.3	15.5	15.1	0.6	2.9
Nitrite as NO2	(mg/l)	0.05	0.05	0.05	< 0.02	0.23	< 0.02	< 0.02	0.03
pH	(pH Units)	7.2	7.9	8.1	7.18	6.67	6.43	7.82	7.45
Potassium	(mg/l)					3.5	3.7		
Sodium	(mg/l)	110	418.4	25.1	54.8	245	208	420	346
Silica	(mg/l)		12.6	11	12.6	10.3	13.3	10.8	11.0
Sulphate	(mg/l)	75	48.46	23.92	15.15	38.4	22.3	96.1	20.8
Total Alkalinity as CaCO3	(mg/l)	140	144	48	172	118	72	260	260

BH101

	Units	Jul-2015	Oct-2017	Oct-2019	Dec-2021
pH	(pH Units)	7.31	6.89	7.72	7.72
Potassium	(mg/l)	13.7			
Sodium	(mg/l)	267			

Inorganics Time Series Data, Ingevity Warehouse Area

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Figure 7b

Delph, UK

January 2022

TABLES

Table 1: Groundwater Sampling and Analysis Inventory, Ingevity SPMP 2021

	TPH CWG ABN	VOC + TIC	SVOC + TIC ABN	Diss. Silica	Alk	K	Na	NO_3	NO_2	SO_4	Cl	F	PO_4	pH	Metals	Sn
D7	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
D11	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
WE9	X	X	X													
WE12	X	X	X													
WE13	X	X	X													
W44	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
SB18	X	X	X	X	X		X	X	X	X	X	X	X	X		X
SB132	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
W36	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
Joint Solvay & Ingevity Wells																
NW7	X	X	X	X	X		X	X	X	X	X	X		X		X
WE16	X	X	X													
D9	X	X	X	X	X		X	X	X	X	X	X	X	X		X
W50	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
W54	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
BH101	X	X	X											X	X	
BH102	X	X	X											X	X	
BH103	X	X	X											X	X	
Duplicate 3 (BH103)	X	X	X											X	X	
Total	15	15	15	10	10	7	10	10	10	10	10	10	9	11	1	10

Notes:

TPH CWG	Total Petroleum Hydrocarbons Criteria Working Group
SVOC	Semi-Volatile Organic Compounds
VOC	Volatile Organic Compounds
TIC	Tentatively Identified Compound
Diss.	Dissolved
Alk	Total Alkalinity as $CaCO_3$
Metals	As, Cd, Cr, Cu, Hg, Ni, Pb, Zn, Se

Table 2: Groundwater Elevations, Sampling Notes and Hydro-chemical Parameters, Ingevity SPMP 2021

Monitoring Location	Date Sampled	Depth to Groundwater (mbct)	Depth to Base (mbct)	Well casing elevation (mAOD)	Groundwater Elevation (mAOD)	Well Diameter (mm)	Calculated Purge volume (L)	Actual Purge Volume (L)	pH	Specific Electrical Conductivity (uS cm^{-1})	Oxidation/Reduction Potential (mV)	Temperature (°C)	Dissolved Oxygen (mg/l)	Notes
Deep Wells														
D7	19/11/21	-	-	9.306	-	100	-	-	6.84	3,105	-43.5	12.2	4.4	Grab sample. Clear, colourless, NDO.
D11*	2/3/22	0.74	11.86	7.902	7.162	100	264	~300	8.40	805	-249	14.0	1.1	Clear, fine brown/black precipitate. Slight irridescent sheen. Very strong reducing odour.
Shallow Wells														
SB132	18/11/21	1.30	3.98	8.025	6.725	25	8	9	6.77	665	-66.8	13.9	1.9	Clear, colourless, fine brown and black precipitate, NDO.
SB18	18/11/21	0.57	3.33	7.853	7.285	25	8	8	7.03	8,861	-124.1	16.3	1.4	Clear, colourless, reducing odour.
W36	19/11/21	2.36	4.57	9.068	6.708	100	52	60	6.93	10,280	-46.7	14.9	5.2	Cloudy, orange, NDO.
W44	18/11/21	1.01	4.53	7.584	6.572	100	83	96	6.92	1,250	-114.1	13.7	1.7	Clear, colourless, fine orange precipitate, strong reducing odour.
WE9	18/11/21	1.03	2.90	8.387	7.357	50	11	12	6.82	7,203	-161.7	15.4	0.9	Dark brown, medium black and brown precipitate, reducing odour.
WE12	18/11/21	2.30	11.54	8.022	5.722	50	55	8	6.97	1,118	-105.8	13.0	1.2	Clear, colourless, very fine brown precipitate, NDO.
WE13	18/11/21	1.65	2.63	8.115	6.463	50	6	7	6.60	794	-98.8	13.6	1.5	Opaque, brown tint, silty, NDO.
Joint Solvay & Ingevity Wells														
NW7	18/11/21	4.05	8.33	9.701	5.654	50	7	92	7.16	194	-108.7	13.1	2.1	Light orangish brown, strong reducing odour.
D9 (Deep)	18/11/21	2.57	16.52	8.350	5.776	100	330	300	7.3	1,257	102	13.2	4.52	Clear colourless, NDO.
WE16	17/11/21	2.61	3.53	8.543	5.938	50	6	6	6.97	793	46	14.0	4.30	Brown tint, fine brown precipitate, NDO.
W50	18/11/21	1.68	5.37	8.167	6.484	100	87	-	7.2	564	-131	14.3	2.74	Clear, colourless, black precipitate, reducing odour.
W54	18/11/21	1.81	4.29	8.088	6.276	100	59	57	7.09	836	-131	13.9	0.75	**DUP-4** Clear, colourless, reducing odour.
BH101	8/12/21	3.44	5.25	8.957	5.517	50	11	12	7.07	3,126	-85.7	14.8	3.32	Slightly cloudy, NDO.
BH102 (Deep)	17/11/21	4.50	17.86	9.000	4.504	50	80	80	7.12	2166	-150.8	11.4	1.33	Clear, colourless, reducing odour.
BH103	18/11/21	1.08	3.80	8.372	7.290	50	16	18	7.14	7319	-66.7	15.1	2.37	**DUP-3** Brown, very cloudy, NDO.

Notes:

mbct	metres below well casing top
uS cm^{-1}	micro Siemens per centimetre
mV	milli volts
mAOD	metres above ordnance datum
D11*	In November 2021 an adjacent shallow well was sampled in error. D11 was re-sampled on 2nd March 2022.

Table 3: Laboratory Analytical Results, Ingevity Monomer Area, SPMP 2021

	Area	Ingevity Monomer												
	Location	BH102		BH103			D7		SB18		W36		WE9	
	Sample ID	Baseline 2015	BH102-171121	Baseline 2015	BH103-181121	DUP-3-181121	Baseline 2007	D7-191121	Baseline 2007	SB18-181121	Baseline 2011	W36-191121	Baseline 2007	WE9-181121
Analyte	Units													
Metals														
Arsenic	ug/l	8.7	72.9	< 2.5	< 2.5	< 2.5								
Cadmium	ug/l	< 0.5	< 0.5	1	0.9	< 0.5								
Chromium	ug/l	< 1.5	< 1.5	< 1.5	< 1.5	1.8								
Copper	ug/l	< 7	< 7	< 7	10	12								
Lead	ug/l	< 5	< 5	< 5	< 5	< 5								
Mercury	ug/l	< 1	< 1	< 1	< 1	< 1								
Nickel	ug/l	< 2	7	< 2	2	< 2								
Selenium	ug/l	< 3	< 3	< 3	< 3	< 3								
Tin	ug/l						<1	< 5	<1	< 5	< 5	< 5	<1	
Zinc	ug/l	22	< 3	5	19	13								
Inorganics														
Chloride	mg/l						2400	636	3800	2910	1016.6	3480	32	
Fluoride	mg/l						0.7	< 0.3	<0.5	< 0.3	< 0.3	< 0.3	-	
Nitrate as NO3	mg/l						<0.3	< 0.2	0.5	< 0.2	0.3	18.0	<0.3	
Nitrite as NO2	mg/l						<0.05	< 0.02	<0.05	< 0.02	< 0.02	< 0.02	<0.05	
Ortho Phosphate	mg/l						<0.08	< 0.06	6	18.76	< 0.06	1.19	<0.08	
pH	pH Units	7.33	7.89	7.3	7.82	7.91	8.05	7.30	8.28	7.47	8.02	7.07	7.76	
Potassium	mg/l						6.2	3.4	-		9.3	9.0	-	
Silica	mg/l						9.4	11.4	8.9	18.8	13.2	18.6	8.4	
Sodium	mg/l						2300	386	2200	1570	638.5	1650	31	
Sulphate	mg/l						2700	344	280	280	385.53	434	21	
Total Alkalinity as CaCO3	mg/l						530	394	170	144	218	82	250	
TPH														
>C5-C6 Aliphatics	mg/l	< 0.005	< 0.01	< 0.005	< 0.01	< 0.01	63000	1.46	<10	< 0.01	< 0.005	< 0.01	1200	< 0.01
>C6-C8 Aliphatics	mg/l	< 0.005	< 0.01	< 0.005	< 0.01	< 0.01	1500	0.058	180	0.033	< 0.005	0.022	1000	0.111
>C8-C10 Aliphatics	mg/l	< 0.005	< 0.01	< 0.005	< 0.01	< 0.01	39	0.015	15	0.015	< 0.005	< 0.01	110	0.152
>C10-C12 Aliphatics	mg/l	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<10	< 0.005	490	< 0.005	< 0.005	< 0.005	<10	0.022
>C12-C16 Aliphatics	mg/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<10	< 0.01	<10	< 0.01	< 0.01	< 0.01	<10	0.024
>C16-C21 Aliphatics	mg/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<10	< 0.01	<10	< 0.01	< 0.01	< 0.01	<10	< 0.01
>C21-C35 Aliphatics	mg/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<10	< 0.01	<10	< 0.01	< 0.01	< 0.01	<10	< 0.01
>C5-C35 Aliphatics	mg/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	65000	1.533	690	0.048	< 0.01	0.022	2400	0.594
>EC5-EC7 Aromatics	mg/l	< 0.005	< 0.01	< 0.005	< 0.01	< 0.01	<10	< 0.01	27	< 0.01	< 0.005	< 0.01	70	< 0.01
>EC7-EC8 Aromatics	mg/l	< 0.005	< 0.01	< 0.005	< 0.01	< 0.01	<10	< 0.01	<10	< 0.01	< 0.005	< 0.01	<10	< 0.01
>EC8-EC10 Aromatics	mg/l	< 0.005	< 0.01	< 0.005	< 0.01	< 0.01	58	< 0.01	22	< 0.01	< 0.005	< 0.01	160	< 0.01
>EC10-EC12 Aromatics	mg/l	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<10	< 0.005	730	0.038	< 0.005	< 0.005	<10	0.038
>EC12-EC16 Aromatics	mg/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	150	< 0.01	110	< 0.01	< 0.01	< 0.01	660	< 0.01
>EC16-EC21 Aromatics	mg/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	10	< 0.01	96	< 0.01	< 0.01	< 0.01	30	< 0.01
>EC21-EC35 Aromatics	mg/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<10	< 0.01	<10	< 0.01	< 0.01	< 0.01	<10	< 0.01
>EC5-EC35 Aromatics	mg/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	220	< 0.01	980	0.038	< 0.01	< 0.01	920	0.038
>C5-C35 Aliphatics/Aromatics	mg/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	65000	1.533	1700	0.086	< 0.01	0.022	3300	0.632

Table 3: Laboratory Analytical Results, Ingevity Monomer Area, SPMP 2021

	Area	Ingevity Monomer												
	Location	BH102		BH103			D7		SB18		W36		WE9	
	Sample ID	Baseline 2015	BH102-171121	Baseline 2015	BH103-181121	DUP-3-181121	Baseline 2007	D7-191121	Baseline 2007	SB18-181121	Baseline 2011	W36-191121	Baseline 2007	WE9-181121
SVOCs														
1,2,4-Trichlorobenzene	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
1,2-Dichlorobenzene	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
1,3-Dichlorobenzene	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
1,4-Dichlorobenzene	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
2,4,5-Trichlorophenol	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
2,4,6-Trichlorophenol	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
2,4-Dichlorophenol	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
2,4-Dimethylphenol	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
2,4-Dinitrotoluene	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
2,6-Dinitrotoluene	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
2-Chloronaphthalene	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
2-Chlorophenol	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
2-Methylnaphthalene	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
2-Methylphenol	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
2-Nitroaniline	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
2-Nitrophenol	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
3-Nitroaniline	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
4-Bromophenyl phenyl ether	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
4-Chloro-3-methylphenol	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
4-Chloroaniline	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
4-Chlorophenyl phenyl ether	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
4-Methylphenol	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
4-Nitroaniline	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
4-Nitrophenol	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Acenaphthene	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Acenaphthylene	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Anthracene	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Azobenzene	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Benzo(a)anthracene	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Benzo(a)pyrene	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Benzo(bk)fluoranthene	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Benzo(ghi)perylene	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Bis(2-chloroethoxy)methane	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Bis(2-chloroethyl)ether	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Bis(2-ethylhexyl) phthalate	ug/l	< 10	< 10	< 10	< 10	< 10	29	< 10	12	< 10	< 10	< 10	<4	< 10
Butylbenzyl phthalate	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Carbazole	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Chrysene	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Dibenzo(ah)anthracene	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Dibenzofuran	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Diethyl phthalate	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Dimethyl phthalate	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Di-n-butyl phthalate	ug/l	< 10	94	< 10	< 10	< 10	<1	< 10	2	< 10	< 10	< 10	<2	< 10
Di-n-Octyl phthalate	ug/l	< 10	< 10	< 10	< 10	< 10	<5	< 10	<5	< 10	< 10	< 10	<10	< 10
Fluoranthene	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Fluorene	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Hexachlorobenzene	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Hexachlorobutadiene	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Hexachlorocyclopentadiene	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Hexachloroethane	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Indeno(123cd)pyrene	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Isophorone	ug/l	< 10	< 10	< 10	< 10	< 10	4	< 10	<1	< 10	< 10	< 10	<2	< 10
Naphthalene	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Nitrobenzene	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
N-nitrosodi-n-propylamine	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Pentachlorophenol	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Phenanthrene	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Phenol	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10
Pyrene	ug/l	< 10	< 10	< 10	< 10	< 10	<1	< 10	<1	< 10	< 10	< 10	<2	< 10

Table 3: Laboratory Analytical Results, Ingevity Monomer Area, SPMP 2021

	Area	Ingevity Monomer												
	Location	BH102		BH103			D7		SB18		W36		WE9	
	Sample ID	Baseline 2015	BH102-171121	Baseline 2015	BH103-181121	DUP-3-181121	Baseline 2007	D7-191121	Baseline 2007	SB18-181121	Baseline 2011	W36-191121	Baseline 2007	WE9-181121
VOCs														
1,1,1-Trichloroethane	ug/l	< 2	< 2	< 2	< 2	< 2	<1	< 2	<1	< 2	< 2	< 2	<1	< 2
1,1,2,2-Tetrachloroethane	ug/l	< 4	< 4	< 4	< 4	< 4	<1	< 4	<1	< 4	< 4	< 4	<1	< 4
1,1-Dichloroethane	ug/l	< 3	10	< 3	< 3	< 3	110	15	<1	< 3	< 3	< 3	<1	< 3
1,1-Dichloroethene	ug/l	< 3	< 3	< 3	< 3	< 3	3	< 3	<1	< 3	< 3	< 3	<1	< 3
1,1-Dichloropropene	ug/l	< 3	< 3	< 3	< 3	< 3	<1	< 3	<1	< 3	< 3	< 3	<1	< 3
1,2,3-Trichlorobenzene	ug/l	< 3	< 3	< 3	< 3	< 3	<1	< 3	<1	< 3	< 3	< 3	<1	< 3
1,2,3-Trichloropropane	ug/l	< 3	< 3	< 3	< 3	< 3	<1	< 3	<1	< 3	< 3	< 3	<1	< 3
1,2,4-Trichlorobenzene	ug/l	< 3	< 3	< 3	< 3	< 3	<1	< 3	<1	< 3	< 3	< 3	<1	< 3
1,2,4-Trimethylbenzene	ug/l	< 3	< 3	< 3	< 3	< 3	<1	< 3	<1	< 3	< 3	< 3	6	< 3
1,2-Dibromo-3-Chloropropane	ug/l	< 2	< 2	< 2	< 2	< 2	<1	< 2	<1	< 2	< 2	< 2	<1	< 2
1,2-Dichlorobenzene	ug/l	< 3	< 3	< 3	< 3	< 3	<1	< 3	<1	< 3	< 3	< 3	<1	< 3
1,2-Dichloroethane	ug/l	< 2	< 2	< 2	< 2	< 2	<1	< 2	<1	< 2	< 2	< 2	<1	< 2
1,2-Dichloropropane	ug/l	< 2	< 2	< 2	< 2	< 2	<1	< 2	<1	< 2	< 2	< 2	<1	< 2
1,3,5-Trimethylbenzene	ug/l	< 3	< 3	< 3	< 3	< 3	<1	< 3	<1	< 3	< 3	< 3	3	< 3
1,3-Dichlorobenzene	ug/l	< 3	< 3	< 3	< 3	< 3	<1	< 3	<1	< 3	< 3	< 3	<1	< 3
1,3-Dichloropropane	ug/l	< 2	< 2	< 2	< 2	< 2	<1	< 2	<1	< 2	< 2	< 2	<1	< 2
1,4-Dichlorobenzene	ug/l	< 3	< 3	< 3	< 3	< 3	<1	< 3	<1	< 3	< 3	< 3	<1	< 3
2,2-Dichloropropane	ug/l	< 1	< 1	< 1	< 1	< 1	<1	< 1	<1	< 1	< 1	< 1	<1	< 1
2-Chlorotoluene	ug/l	< 3	< 3	< 3	< 3	< 3	<1	< 3	<1	< 3	< 3	< 3	<1	< 3
4-Chlorotoluene	ug/l	< 3	< 3	< 3	< 3	< 3	<1	< 3	<1	< 3	< 3	< 3	<1	< 3
Benzene	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	7	< 0.5	25	< 0.5	< 1	< 0.5	76	1.9
Bromobenzene	ug/l	< 2	< 2	< 2	< 2	< 2	<1	< 2	<1	< 2	< 2	< 2	<1	< 2
Bromochloromethane	ug/l	< 2	< 2	< 2	< 2	< 2	<1	< 2	<1	< 2	< 2	< 2	<1	< 2
Bromodichloromethane	ug/l	< 2	< 2	< 2	< 2	< 2	<1	< 2	<1	< 2	< 2	< 2	<1	< 2
Bromoform	ug/l	< 2	< 2	< 2	< 2	< 2	<1	< 2	<1	< 2	< 2	< 2	<1	< 2
Bromomethane	ug/l	< 1	< 1	< 1	< 1	< 1	<1	< 1	<1	< 1	< 1	< 1	<1	< 1
Chloroethane	ug/l	< 3	< 3	< 3	< 3	< 3	<1	< 3	<1	< 3	< 3	< 3	<1	< 3
Chloroform	ug/l	7	< 2	< 2	< 2	< 2	<1	< 2	<1	< 2	< 2	5	<1	< 2
Chloromethane	ug/l	< 3	< 3	< 3	< 3	< 3	<1	< 3	<1	< 3	< 3	< 3	<1	< 3
Cis-1,2-Dichloroethene	ug/l	< 3	< 3	< 3	< 3	< 3	<1	< 3	<1	< 3	< 3	< 3	<1	< 3
Cis-1,3-Dichloropropene	ug/l	< 2	< 2	< 2	< 2	< 2	<1	< 2	<1	< 2	< 2	< 2	<1	< 2
Dibromochloromethane	ug/l	< 2	< 2	< 2	< 2	< 2	<1	< 2	<1	< 2	< 2	< 2	<1	< 2
Dibromomethane	ug/l	< 3	< 3	< 3	< 3	< 3	<1	< 3	<1	< 3	< 3	< 3	<1	< 3
Dichlorodifloromethane	ug/l	< 2	< 2	< 2	< 2	< 2	<1	< 2	<1	< 2	< 2	< 2	<1	< 2
Dichloromethane	ug/l	< 3	< 3	< 3	< 5	< 5	<1	< 3	<1	< 3	< 3	< 3	<1	< 3
Ethylbenzene	ug/l	< 0.5	< 1	< 0.5	< 1	< 1	<1	< 1	<1	< 1	< 2	< 1	<1	< 1
Hexachlorobutadiene	ug/l	< 3	< 3	< 3	< 3	< 3	<1	< 3	<1	< 3	< 3	< 3	<1	< 3
Isopropylbenzene	ug/l	< 3	< 3	< 3	< 3	< 3	<1	< 3	<1	< 3	< 3	< 3	<1	< 3
Methyl Tertiary Butyl Ether	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	140	7.1	<1	< 0.1	< 1	< 0.1	<1	< 0.1
Naphthalene	ug/l	< 2	< 2	< 2	< 2	< 2	<1	< 2	<1	< 2	< 2	< 2	<1	< 2
n-Butylbenzene	ug/l	< 3	< 3	< 3	< 3	< 3	<1	< 3	<1	< 3	< 3	< 3	<1	< 3
o-Xylene	ug/l	< 0.5	< 1	< 0.5	< 1	< 1	<1	< 1	<1	< 1	< 2	< 1	<1	< 1
p/m-Xylene	ug/l	< 1	< 3	< 1	< 2	< 2	<1	< 3	<1	< 3	< 3	< 3	3	< 3
Propylbenzene	ug/l	< 3	< 3	< 3	< 3	< 3	<1	< 3	<1	< 3	< 3	< 3	<1	< 3
Sec-Butylbenzene	ug/l	< 3	< 3	< 3	< 3	< 3	<1	< 3	<1	< 3	< 3	< 3	<1	< 3
Styrene	ug/l	< 2	< 2	< 2	< 2	< 2	<1	< 2	<1	< 2	< 2	< 2	<1	< 2
Tert-Butylbenzene	ug/l	< 3	< 3	< 3	< 3	< 3	<1	< 3	<1	< 3	< 3	< 3	<1	< 3
Tetrachloroethene	ug/l	< 3	< 3	< 3	< 3	< 3	<1	< 3	<1	< 3	< 3	< 3	<1	< 3
Tetrachloromethane	ug/l	< 2	< 2	< 2	< 2	< 2	<1	< 2	<1	< 2	< 2	< 2	<1	< 2
Toluene	ug/l	< 0.5	< 5	< 0.5	< 5	< 5	<1	< 5	<1	< 5	< 2	< 5	<1	< 5
Trans-1,2-Dichloroethene	ug/l	< 3	< 3	< 3	< 3	< 3	<1	< 3	<1	< 3	< 3	< 3	<1	< 3
Trans-1,3-Dichloropropene	ug/l	< 2	< 2	< 2	< 2	< 2	<1	< 2	<1	< 2	< 2	< 2	<1	< 2
Trichloroethene	ug/l	< 3	< 3	< 3	< 3	< 3	<1	< 3	<1	< 3	< 3	< 3	<1	< 3
Trichlorofloromethane	ug/l	< 3	< 3	< 3	< 3	< 3	<1	< 3	<1	< 3	< 3	< 3	<1	< 3
Vinyl Chloride	ug/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<1	0.2	<1	< 0.1	< 2	< 0.1	<1	< 0.1

Table 4: Laboratory Analytical Results, Ingevity Polymer Area, SPMP 2021

	Area	Ingevity Polymer								Ingevity Polymer						
	Location	D11		SB132		W44		W50		W54			WE12		WE13	
	Sample ID	Baseline 2007	D11-020322	Baseline 2007	SB132-181121	Baseline 2007	W44-181121	Baseline 2007	W50-181121	Baseline 2007	W54-181121	DUP4-181121	Baseline 2007	WE12-181121	Baseline 2007	WE13-181121
Analyte	Units															
Metals																
Tin	ug/l	<1	< 5	<1	< 5	<1	< 5	<1	< 5	<1	< 5	< 5	<1		<1	
Inorganics																
Chloride	mg/l	200	45.1	19	11.6	170	203	53	101	51	146	138	34		26	
Fluoride	mg/l	<0.5	< 0.3	<0.5	< 0.3	<0.5	< 0.3	<0.5	< 0.3	<0.5	< 0.3	< 0.3	-		-	
Nitrate as NO3	mg/l	<0.3	< 0.2	<0.3	0.4	11	4.3	<0.3	1	5.6	< 0.2	< 0.2	3.8		1.1	
Nitrite as NO2	mg/l	<0.05	< 0.02	0.07	< 0.02	0.11	0.31	<0.05	< 0.02	0.27	< 0.02	< 0.02	0.16		<0.05	
Ortho Phosphate	mg/l	0.23	< 0.06	<0.08	< 0.06	<0.08	0.08	0.72	4.43	0.1	< 0.06	< 0.06	<0.08		<0.08	
pH	pH Units	7.98	8.7	8.24	7.47	8.01	7.67	7.73	7.64	8.29	7.72	7.73	6.77		6.95	
Potassium	mg/l	8	< 0.1	6.2	3.3	17	8.7	2	1.4	5	2.8	2.7	-		-	
Silica	mg/l	3.3	2.7	7	14.6	5.9	13.6	13	10.4	6.9	11.6	13	7.2		7.8	
Sodium	mg/l	100	< 0.1	19	9.9	120	146	48	89.6	77	122	119	38		26	
Sulphate	mg/l	5	3.7	74	27.8	250	15.3	19	10.5	23	0.6	< 0.5	140		37	
Total Alkalinity as CaCO3	mg/l	120	96	80	280	230	320	70	106	210	236	244	200		120	
TPH																
>C5-C6 Aliphatics	mg/l	<10	< 0.01	<10	< 0.01	<10	< 0.01	<10	< 0.01	<10	< 0.01	< 0.01	<10	< 0.01	<10	< 0.01
>C6-C8 Aliphatics	mg/l	<10	< 0.01	<10	< 0.01	<10	< 0.01	<10	< 0.01	<10	< 0.01	< 0.01	<10	< 0.01	<10	0.192
>C8-C10 Aliphatics	mg/l	<10	< 0.01	18	0.02	<10	< 0.01	<10	< 0.01	16	< 0.01	< 0.01	<10	< 0.01	<10	0.076
>C10-C12 Aliphatics	mg/l	<10	< 0.005	990	< 0.005	<10	< 0.005	19	< 0.005	210	< 0.005	< 0.005	<10	< 0.005	<10	< 0.005
>C12-C16 Aliphatics	mg/l	<10	< 0.01	29	< 0.01	<10	< 0.01	<10	< 0.01	<10	< 0.01	< 0.01	<10	< 0.01	<10	< 0.01
>C16-C21 Aliphatics	mg/l	<10	< 0.01	<10	< 0.01	<10	< 0.01	<10	< 0.01	<10	< 0.01	< 0.01	<10	< 0.01	<10	< 0.01
>C21-C35 Aliphatics	mg/l	<10	14.103	<10	< 0.01	<10	< 0.01	<10	< 0.01	<10	< 0.01	< 0.01	<10	< 0.01	<10	< 0.01
>C5-C35 Aliphatics	mg/l	<10	14.103	1000	0.02	<10	< 0.01	19	< 0.01	230	< 0.01	< 0.01	<10	< 0.01	<10	0.268
>EC5-EC7 Aromatics	mg/l	<10	< 0.01	<10	< 0.01	<10	< 0.01	<10	< 0.01	<10	< 0.01	< 0.01	<10	< 0.01	<10	< 0.01
>EC7-EC8 Aromatics	mg/l	<10	< 0.01	<10	< 0.01	<10	< 0.01	<10	< 0.01	<10	< 0.01	< 0.01	<10	< 0.01	<10	< 0.01
>EC8-EC10 Aromatics	mg/l	<10	< 0.01	28	< 0.01	<10	< 0.01	<10	< 0.01	23	< 0.01	< 0.01	<10	< 0.01	<10	< 0.01
>EC10-EC12 Aromatics	mg/l	<10	< 0.005	1500	2.165	<10	0.03	29	2.02	320	1.975	2.279	<10	< 0.005	<10	0.475
>EC12-EC16 Aromatics	mg/l	44	< 0.01	1300	0.141	<10	< 0.01	280	0.106	540	0.137	0.228	<10	< 0.01	24	< 0.01
>EC16-EC21 Aromatics	mg/l	<10	< 0.01	38	0.294	<10	< 0.01	<10	0.213	72	0.189	0.207	<10	< 0.01	<10	< 0.01
>EC21-EC35 Aromatics	mg/l	<10	< 0.01	550	0.461	<10	< 0.01	120	0.084	51	0.073	0.108	<10	< 0.01	18	< 0.01
>EC5-EC35 Aromatics	mg/l	44	< 0.01	3400	3.061	<10	0.03	430	2.423	1000	2.374	2.822	<10	< 0.01	42	0.475
>C5-C35 Aliphatics/Aromatics	mg/l	44	14.103	4400	3.081	<10	0.03	450	2.423	1200	2.374	2.822	<10	< 0.01	42	0.743

Table 4: Laboratory Analytical Results, Ingevity Polymer Area, SPMP 2021

	Area	Ingevity Polymer											Ingevity Polymer			
	Location	D11		SB132		W44		W50		W54			WE12		WE13	
	Sample ID	Baseline 2007	D11-020322	Baseline 2007	SB132-181121	Baseline 2007	W44-181121	Baseline 2007	W50-181121	Baseline 2007	W54-181121	DUP4-181121	Baseline 2007	WE12-181121	Baseline 2007	WE13-181121
Analyte	Units															
SVOCs																
1,2,4-Trichlorobenzene	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
1,2-Dichlorobenzene	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
1,3-Dichlorobenzene	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
1,4-Dichlorobenzene	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
2,4,5-Trichlorophenol	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
2,4,6-Trichlorophenol	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
2,4-Dichlorophenol	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
2,4-Dimethylphenol	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
2,4-Dinitrotoluene	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
2,6-Dinitrotoluene	ug/l	1	< 10	<1	< 10	<1	< 10	13	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
2-Chloronaphthalene	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
2-Chlorophenol	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
2-Methylnaphthalene	ug/l	<1	< 10	2	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
2-Methylphenol	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
2-Nitroaniline	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
2-Nitrophenol	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
3-Nitroaniline	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
4-Bromophenyl phenyl ether	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
4-Chloro-3-methylphenol	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
4-Chloroaniline	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
4-Chlorophenyl phenyl ether	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
4-Methylphenol	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
4-Nitroaniline	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
4-Nitrophenol	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Acenaphthene	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Acenaphthylene	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Anthracene	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Azobenzene	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Benzo(a)anthracene	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Benzo(a)pyrene	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Benzo(bk)fluoranthene	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Benzo(ghi)perylene	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Bis(2-chloroethoxy)methane	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Bis(2-chloroethyl)ether	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Bis(2-ethylhexyl) phthalate	ug/l	4	< 10	<2	< 10	<2	< 10	<2	< 10	<2	< 10	< 10	<2	< 10	<2	< 10
Butylbenzyl phthalate	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Carbazole	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Chrysene	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Dibenzo(ah)anthracene	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Dibenzofuran	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Diethyl phthalate	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	1	< 10	< 10	<1	< 10	<1	< 10
Dimethyl phthalate	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Di-n-butyl phthalate	ug/l	<1	< 10	1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	109	<1	< 10
Di-n-Octyl phthalate	ug/l	<5	< 10	<5	< 10	<5	< 10	<5	< 10	<5	< 10	< 10	<5	< 10	<5	< 10
Fluoranthene	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Fluorene	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Hexachlorobenzene	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Hexachlorobutadiene	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Hexachlorocyclopentadiene	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Hexachloroethane	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Indeno(123cd)pyrene	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Isophorone	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Naphthalene	ug/l	<1	< 10	130	< 10	<1	< 10	18	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Nitrobenzene	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
N-nitrosodi-n-propylamine	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Pentachlorophenol	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Phenanthrene	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Phenol	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10
Pyrene	ug/l	<1	< 10	<1	< 10	<1	< 10	<1	< 10	<1	< 10	< 10	<1	< 10	<1	< 10

Table 4: Laboratory Analytical Results, Ingevity Polymer Area, SPMP 2021

Area		Ingevity Polymer								Ingevity Polymer						
Location		D11		SB132		W44		W50		W54			WE12		WE13	
Sample ID		Baseline 2007	D11-020322	Baseline 2007	SB132-181121	Baseline 2007	W44-181121	Baseline 2007	W50-181121	Baseline 2007	W54-181121	DUP4-181121	Baseline 2007	WE12-181121	Baseline 2007	WE13-181121
Analyte	Units															
VOCs																
1,1,1-Trichloroethane	ug/l	<1	< 2	<1	< 2	<1	< 2	<1	< 2	<1	< 2	< 2	<1	< 2	<1	< 2
1,1,2,2-Tetrachloroethane	ug/l	<1	< 4	<1	< 4	<1	< 4	<1	< 4	<1	< 4	< 4	<1	< 4	<1	< 4
1,1-Dichloroethane	ug/l	<1	< 3	<1	< 3	<1	< 3	<1	< 3	<1	< 3	< 3	<1	< 3	<1	< 3
1,1-Dichloroethene	ug/l	<1	< 3	<1	< 3	<1	< 3	<1	< 3	<1	< 3	< 3	<1	< 3	<1	< 3
1,1-Dichloropropene	ug/l	<1	< 3	<1	< 3	<1	< 3	<1	< 3	<1	< 3	< 3	<1	< 3	<1	< 3
1,2,3-Trichlorobenzene	ug/l	<1	< 3	<1	< 3	<1	< 3	<1	< 3	<1	< 3	< 3	<1	< 3	<1	< 3
1,2,3-Trichloropropane	ug/l	<1	< 3	<1	< 3	<1	< 3	<1	< 3	<1	< 3	< 3	<1	< 3	<1	< 3
1,2,4-Trichlorobenzene	ug/l	<1	< 3	<1	< 3	<1	< 3	<1	< 3	<1	< 3	< 3	<1	< 3	<1	< 3
1,2,4-Trimethylbenzene	ug/l	<1	< 3	<1	7	<1	5	<1	< 3	10	3	3	<1	< 3	<1	976
1,2-Dibromo-3-Chloropropane	ug/l	<1	< 2	<1	< 2	<1	< 2	<1	< 2	<1	< 2	< 2	<1	< 2	<1	< 2
1,2-Dichlorobenzene	ug/l	<1	< 3	<1	< 3	<1	< 3	<1	< 3	<1	< 3	< 3	<1	< 3	<1	< 3
1,2-Dichloroethane	ug/l	<1	< 2	<1	< 2	<1	< 2	<1	< 2	<1	< 2	< 2	<1	< 2	<1	< 2
1,2-Dichloropropane	ug/l	<1	< 2	<1	< 2	<1	< 2	<1	< 2	<1	< 2	< 2	<1	< 2	<1	< 2
1,3,5-Trimethylbenzene	ug/l	<1	< 3	7	6	<1	< 3	<1	< 3	2	< 3	< 3	<1	< 3	<1	14
1,3-Dichlorobenzene	ug/l	<1	< 3	<1	< 3	<1	< 3	<1	< 3	<1	< 3	< 3	<1	< 3	<1	< 3
1,3-Dichloropropane	ug/l	<1	< 2	<1	< 2	<1	< 2	<1	< 2	<1	< 2	< 2	<1	< 2	<1	< 2
1,4-Dichlorobenzene	ug/l	<1	< 3	<1	< 3	<1	< 3	<1	< 3	<1	< 3	< 3	<1	< 3	<1	< 3
2,2-Dichloropropane	ug/l	<1	< 1	<1	< 1	<1	< 1	<1	< 1	<1	< 1	< 1	<1	< 1	<1	< 1
2-Chlorotoluene	ug/l	<1	< 3	<1	< 3	<1	< 3	<1	< 3	<1	< 3	< 3	<1	< 3	<1	< 3
4-Chlorotoluene	ug/l	<1	< 3	<1	< 3	<1	< 3	<1	< 3	<1	< 3	< 3	<1	< 3	<1	< 3
Benzene	ug/l	<1	< 0.5	<1	< 0.5	<1	< 0.5	<1	< 0.5	<1	< 0.5	< 0.5	<1	< 0.5	<1	< 0.5
Bromobenzene	ug/l	<1	< 2	<1	< 2	<1	< 2	<1	< 2	<1	< 2	< 2	<1	< 2	<1	< 2
Bromochloromethane	ug/l	<1	< 2	<1	< 2	<1	< 2	<1	< 2	<1	< 2	< 2	<1	< 2	<1	< 2
Bromodichloromethane	ug/l	<1	< 2	<1	< 2	<1	< 2	<1	< 2	<1	< 2	< 2	<1	< 2	<1	< 2
Bromoform	ug/l	<1	< 2	<1	< 2	<1	< 2	<1	< 2	<1	< 2	< 2	<1	< 2	<1	< 2
Bromomethane	ug/l	<1	< 1	<1	< 1	<1	< 1	<1	< 1	<1	< 1	< 1	<1	< 1	<1	< 1
Chloroethane	ug/l	<1	< 3	<1	< 3	<1	< 3	<1	< 3	<1	< 3	< 3	<1	< 3	<1	< 3
Chloroform	ug/l	<1	< 2	<1	< 2	<1	< 2	<1	< 2	<1	< 2	< 2	<1	< 2	<1	< 2
Chloromethane	ug/l	<1	< 3	<1	< 3	<1	< 3	<1	< 3	<1	< 3	< 3	<1	< 3	<1	< 3
Cis-1,2-Dichloroethene	ug/l	<1	< 3	<1	< 3	<1	< 3	<1	< 3	<1	< 3	< 3	<1	< 3	<1	< 3
Cis-1,3-Dichloropropene	ug/l	<1	< 2	<1	< 2	<1	< 2	<1	< 2	<1	< 2	< 2	<1	< 2	<1	< 2
Dibromochloromethane	ug/l	<1	< 2	<1	< 2	<1	< 2	<1	< 2	<1	< 2	< 2	<1	< 2	<1	< 2
Dibromomethane	ug/l	<1	< 3	<1	< 3	<1	< 3	<1	< 3	<1	< 3	< 3	<1	< 3	<1	< 3
Dichlorodifloromethane	ug/l	<1	< 2	<1	< 2	<1	< 2	<1	< 2	<1	< 2	< 2	<1	< 2	<1	< 2
Dichloromethane	ug/l	<1	< 3	<1	< 3	<1	< 3	<1	< 3	<1	< 3	< 3	<1	< 3	<1	< 3
Ethylbenzene	ug/l	<1	< 1	<1	< 1	<1	< 1	<1	< 1	<1	< 1	< 1	<1	< 1	<1	< 1
Hexachlorobutadiene	ug/l	<1	< 3	<1	< 3	<1	< 3	<1	< 3	<1	< 3	< 3	<1	< 3	<1	< 3
Isopropylbenzene	ug/l	<1	< 3	<1	< 3	<1	< 3	<1	< 3	<1	< 3	< 3	<1	< 3	<1	< 3
Methyl Tertiary Butyl Ether	ug/l	<1	< 0.1	<1	< 0.1	<1	< 0.1	<1	< 0.1	<1	< 0.1	< 0.1	<1	< 0.1	<1	< 0.1
Naphthalene	ug/l	<1	< 2	<1	< 2	<1	< 2	<1	13	<1	< 2	< 2	<1	< 2	<1	5
n-Butylbenzene	ug/l	<1	< 3	<1	19	<1	< 3	<1	< 3	<1	< 3	< 3	<1	< 3	<1	< 3
o-Xylene	ug/l	<1	< 1	<1	1	<1	< 1	<1	2	<1	< 1	< 1	<1	< 1	<1	< 1
p/m-Xylene	ug/l	<1	< 3	<1	< 3	<1	< 3	<1	< 3	<1	< 3	< 3	<1	< 3	<1	< 3
Propylbenzene	ug/l	<1	< 3	<1	< 3	<1	< 3	<1	< 3	<1	< 3	< 3	<1	< 3	<1	< 3
Sec-Butylbenzene	ug/l	<1	< 3	<1	< 3	<1	< 3	<1	< 3	<1	< 3	< 3	<1	< 3	<1	< 3
Styrene	ug/l	<1	< 2	<1	< 2	<1	< 2	<1	< 2	<1	< 2	< 2	<1	< 2	<1	< 2
Tert-Butylbenzene	ug/l	<1	< 3	<1	< 3	<1	< 3	<1	< 3	<1	< 3	< 3	<1	< 3	<1	< 3
Tetrachloroethene	ug/l	<1	< 3	<1	< 3	<1	< 3	<1	< 3	<1	< 3	< 3	<1	< 3	<1	< 3
Tetrachloromethane	ug/l	<1	< 2	<1	< 2	<1	< 2	<1	< 2	<1	< 2	< 2	<1	< 2	<1	< 2
Toluene	ug/l	<1	< 5	<1	< 5	<1	< 5	<1	< 5	<1	< 5	< 5	<1	< 5	<1	< 5
Trans-1,2-Dichloroethene	ug/l	<1	< 3	<1	< 3	<1	< 3	<1	< 3	<1	< 3	< 3	<1	< 3	<1	< 3
Trans-1,3-Dichloropropene	ug/l	<1	< 2	<1	< 2	<1	< 2	<1	< 2	<1	< 2	< 2	<1	< 2	<1	< 2
Trichloroethene	ug/l	<1	< 3	<1	< 3	<1	< 3	<1	< 3	<1	< 3	< 3	<1	< 3	<1	< 3
Trichlorofloromethane	ug/l	<1	< 3	<1	< 3	<1	< 3	<1	< 3	<1	< 3	< 3	<1	< 3	<1	< 3
Vinyl Chloride	ug/l	<1	< 0.1	<1	< 0.1	<1	< 0.1	<1	< 0.1	<1	< 0.1	< 0.1	<1	< 0.1	<1	< 0.1
VOC TICs																
1,3,5-Trimethylbenzene	ug/l								544							
SVOC TICs																
1,3,5-Trimethylbenzene	ug/l				128				199							

Table 5: Laboratory Analytical Results, Site Warehouse Area, SPMP 2021

	Location	BH101		D9		NW7		WE16	
	Sample ID	Baseline 2015	BH101-081221	Baseline 2007	D9-181121	Baseline 2007	NW7-101019	Baseline 2007	WE16-091019
Analyte	Units								
Metals									
Arsenic	ug/l	< 2.5	32.4	na	na	na	na	na	na
Boron	ug/l	na	366	na	na	na	na	na	na
Cadmium	ug/l	< 0.5	< 0.5	na	na	na	na	na	na
Chromium	ug/l	< 1.5	< 1.5	na	na	na	na	na	na
Copper	ug/l	< 7	< 7	na	na	na	na	na	na
Lead	ug/l	< 5	< 5	na	na	na	na	na	na
Mercury	ug/l	< 1	< 1	na	na	na	na	na	na
Nickel	ug/l	< 2	< 2	na	na	na	na	na	na
Selenium	ug/l	< 3	< 3	na	na	na	na	na	na
Tin	ug/l	na	na	<1	<5	<1	< 5	<1	na
Zinc	ug/l	12	6	na	na	na	na	na	na
Inorganics									
Chloride	mg/l	na	na	150	206	150	473	90	na
Fluoride	mg/l	na	na	<0.5	< 0.3	na	< 0.3	na	na
Nitrate as NO3	mg/l	na	na	37	15.9	78	2.9	11	na
Nitrite as NO2	mg/l	na	na	0.14	0.04	0.05	0.03	0.51	na
Ortho Phosphate	mg/l	na	na	1.2	0.29	<0.08		<0.08	na
pH	pH Units	7.31	7.72	8.88	8.1	7.2	7.45	8.05	na
Potassium	mg/l	13.7	na	na		na		na	na
Silica	mg/l	na	na	8	13.3	8	11.0	4	na
Sodium	mg/l	267	na	260	140	110	346	92	na
Sulphate	mg/l	na	na	33	70.4	75	20.8	48	na
Total Alkalinity as CaCO3	mg/l	na	na	440	240	140	260	350	na
TPH									
>C5-C6 Aliphatics	mg/l	< 0.005	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C6-C8 Aliphatics	mg/l	< 0.005	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C8-C10 Aliphatics	mg/l	< 0.005	0.034	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C10-C12 Aliphatics	mg/l	< 0.005	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
>C12-C16 Aliphatics	mg/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C16-C21 Aliphatics	mg/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C21-C35 Aliphatics	mg/l	< 0.01	< 0.01	< 0.01	< 0.01	0.032	< 0.01	< 0.01	< 0.01
>C5-C35 Aliphatics	mg/l	< 0.01	0.034	< 0.01	< 0.01	0.032	< 0.01	< 0.01	< 0.01
>EC5-EC7 Aromatics	mg/l	< 0.005	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>EC7-EC8 Aromatics	mg/l	< 0.005	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>EC8-EC10 Aromatics	mg/l	< 0.005	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>EC10-EC12 Aromatics	mg/l	< 0.005	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
>EC12-EC16 Aromatics	mg/l	< 0.01	< 0.01	< 0.01	< 0.01	0.015	< 0.01	< 0.01	< 0.01
>EC16-EC21 Aromatics	mg/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>EC21-EC35 Aromatics	mg/l	< 0.01	< 0.01	< 0.01	< 0.01	0.015	< 0.01	< 0.01	< 0.01
>EC5-EC35 Aromatics	mg/l	< 0.01	< 0.01	< 0.01	< 0.01	0.030	< 0.01	< 0.01	< 0.01
>C5-C35 Aliphatics/Aromatics	mg/l	< 0.01	0.034	< 0.01	< 0.01	0.062	< 0.01	< 0.01	< 0.01

Table 5: Laboratory Analytical Results, Site Warehouse Area, SPMP 2021

Location		BH101		D9		NW7		WE16	
Sample ID		Baseline 2015	BH101-081221	Baseline 2007	D9-181121	Baseline 2007	NW7-101019	Baseline 2007	WE16-091019
Analyte	Units								
SVOCs									
1,2,4-Trichlorobenzene	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
1,2-Dichlorobenzene	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
1,3-Dichlorobenzene	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
1,4-Dichlorobenzene	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
2,4,5-Trichlorophenol	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
2,4,6-Trichlorophenol	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
2,4-Dichlorophenol	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
2,4-Dimethylphenol	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
2,4-Dinitrotoluene	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
2,6-Dinitrotoluene	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
2-Chloronaphthalene	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
2-Chlorophenol	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
2-Methylnaphthalene	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
2-Methylphenol	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
2-Nitroaniline	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
2-Nitrophenol	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
3-Nitroaniline	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
4-Bromophenyl phenyl ether	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
4-Chloro-3-methylphenol	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
4-Chloroaniline	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
4-Chlorophenyl phenyl ether	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
4-Methylphenol	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
4-Nitroaniline	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
4-Nitrophenol	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Acenaphthene	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Acenaphthylene	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Anthracene	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Azobenzene	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Benzo(a)anthracene	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Benzo(a)pyrene	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Benzo(bk)fluoranthene	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Benzo(ghi)perylene	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Bis(2-chloroethoxy)methane	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Bis(2-chloroethyl)ether	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Bis(2-ethylhexyl) phthalate	ug/l	< 10	< 10	<2	< 10	<2	< 10	<2	< 10
Butylbenzyl phthalate	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Carbazole	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Chrysene	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Dibenzo(ah)anthracene	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Dibenzofuran	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Diethyl phthalate	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Dimethyl phthalate	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Di-n-butyl phthalate	ug/l	< 10	< 10	<1	94	1	< 10	1	< 10
Di-n-Octyl phthalate	ug/l	< 10	< 10	<5	< 10	<5	< 10	<5	< 10
Fluoranthene	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Fluorene	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Hexachlorobenzene	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Hexachlorobutadiene	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Hexachlorocyclopentadiene	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Hexachloroethane	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Indeno(123cd)pyrene	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Isophorone	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Naphthalene	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Nitrobenzene	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
N-nitrosodi-n-propylamine	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Pentachlorophenol	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Phenanthrene	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Phenol	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10
Pyrene	ug/l	< 10	< 10	<1	< 10	<1	< 10	<1	< 10

Table 5: Laboratory Analytical Results, Site Warehouse Area, SPMP 2021

	Location	BH101		D9		NW7		WE16	
	Sample ID	Baseline 2015	BH101-081221	Baseline 2007	D9-181121	Baseline 2007	NW7-101019	Baseline 2007	WE16-091019
Analyte	Units								
VOCs									
1,1,1-Trichloroethane	ug/l	< 2	< 2	<1	< 2	<1	< 2	<1	< 2
1,1,2,2-Tetrachloroethane	ug/l	< 4	< 4	<1	< 4	<1	< 4	<1	< 4
1,1-Dichloroethane	ug/l	< 3	< 3	<1	< 3	<1	< 3	<1	< 3
1,1-Dichloroethene	ug/l	< 3	< 3	<1	< 3	<1	< 3	<1	< 3
1,1-Dichloropropene	ug/l	< 3	< 3	<1	< 3	<1	< 3	<1	< 3
1,2,3-Trichlorobenzene	ug/l	< 3	< 3	<1	< 3	<1	< 3	<1	< 3
1,2,3-Trichloropropane	ug/l	< 3	< 3	<1	< 3	<1	< 3	<1	< 3
1,2,4-Trichlorobenzene	ug/l	< 3	< 3	<1	< 3	<1	< 3	<1	< 3
1,2,4-Trimethylbenzene	ug/l	< 3	< 3	<1	< 3	<1	< 3	<1	< 3
1,2-Dibromo-3-Chloropropane	ug/l	< 2	< 2	<1	< 2	<1	< 2	<1	< 2
1,2-Dichlorobenzene	ug/l	< 3	< 3	<1	< 3	<1	< 3	<1	< 3
1,2-Dichloroethane	ug/l	< 2	< 2	<1	< 2	<1	< 2	<1	< 2
1,2-Dichloropropane	ug/l	< 2	< 2	<1	< 2	<1	< 2	<1	< 2
1,3,5-Trimethylbenzene	ug/l	< 3	< 3	<1	< 3	<1	< 3	<1	< 3
1,3-Dichlorobenzene	ug/l	< 3	< 3	<1	< 3	<1	< 3	<1	< 3
1,3-Dichloropropane	ug/l	< 2	< 2	<1	< 2	<1	< 2	<1	< 2
1,4-Dichlorobenzene	ug/l	< 3	< 3	<1	< 3	<1	< 3	<1	< 3
2,2-Dichloropropane	ug/l	< 1	< 1	<1	< 1	<1	< 1	<1	< 1
2-Chlorotoluene	ug/l	< 3	< 3	<1	< 3	<1	< 3	<1	< 3
4-Chlorotoluene	ug/l	< 3	< 3	<1	< 3	<1	< 3	<1	< 3
Benzene	ug/l	< 0.5	< 0.5	<1	< 0.5	<1	< 0.5	<1	< 0.5
Bromobenzene	ug/l	< 2	< 2	<1	< 2	<1	< 2	<1	< 2
Bromochloromethane	ug/l	< 2	< 2	<1	< 2	<1	< 2	<1	< 2
Bromodichloromethane	ug/l	< 2	< 2	<1	< 2	<1	< 2	<1	< 2
Bromoform	ug/l	< 2	< 2	<1	< 2	<1	< 2	<1	< 2
Bromomethane	ug/l	< 1	< 1	<1	< 1	<1	< 1	<1	< 1
Chloroethane	ug/l	< 3	< 3	<1	< 3	<1	< 3	<1	< 3
Chloroform	ug/l	< 2	< 2	<1	< 2	<1	< 2	<1	5
Chloromethane	ug/l	< 3	< 3	<1	< 3	<1	< 3	<1	< 3
Cis-1,2-Dichloroethene	ug/l	< 3	< 3	<1	< 3	<1	< 3	<1	< 3
Cis-1,3-Dichloropropene	ug/l	< 2	< 2	<1	< 2	<1	< 2	<1	< 2
Dibromochloromethane	ug/l	< 2	< 2	<1	< 2	<1	< 2	<1	< 2
Dibromomethane	ug/l	< 3	< 3	<1	< 3	<1	< 3	<1	< 3
Dichlorodifloromethane	ug/l	< 2	< 2	<1	< 2	<1	< 2	<1	< 2
Dichloromethane	ug/l	< 3	< 3	<1	< 5	<1	< 3	<1	< 3
Ethylbenzene	ug/l	< 0.5	< 1	<1	< 1	<1	< 1	<1	< 1
Hexachlorobutadiene	ug/l	< 3	< 3	<1	< 3	<1	< 3	<1	< 3
Isopropylbenzene	ug/l	< 3	< 3	<1	< 3	<1	< 3	<1	< 3
Methyl Tertiary Butyl Ether	ug/l	< 0.1	< 0.1	<1	< 0.1	<1	< 0.1	<1	< 0.1
Naphthalene	ug/l	< 2	< 2	<1	< 2	<1	< 2	<1	< 2
n-Butylbenzene	ug/l	< 3	< 3	<1	< 3	<1	< 3	<1	< 3
o-Xylene	ug/l	< 0.5	< 1	<1	< 1	<1	< 1	<1	< 1
p/m-Xylene	ug/l	< 1	< 3	<1	< 2	<1	< 3	<1	< 3
Propylbenzene	ug/l	< 3	< 3	<1	< 3	<1	< 3	<1	< 3
Sec-Butylbenzene	ug/l	< 3	< 3	<1	< 3	<1	< 3	<1	< 3
Styrene	ug/l	< 2	< 2	<1	< 2	<1	< 2	<1	< 2
Tert-Butylbenzene	ug/l	< 3	< 3	<1	< 3	<1	< 3	<1	< 3
Tetrachloroethene	ug/l	< 3	< 3	<1	< 3	<1	< 3	<1	< 3
Tetrachloromethane	ug/l	< 2	< 2	<1	< 2	<1	< 2	<1	< 2
Toluene	ug/l	< 0.5	< 5	<1	< 5	<1	< 5	<1	< 5
Trans-1,2-Dichloroethene	ug/l	< 3	< 3	<1	< 3	<1	< 3	<1	< 3
Trans-1,3-Dichloropropene	ug/l	< 2	< 2	<1	< 2	<1	< 2	<1	< 2
Trichloroethene	ug/l	< 3	< 3	<1	< 3	<1	< 3	<1	< 3
Trichlorofloromethane	ug/l	< 3	< 3	<1	< 3	<1	< 3	<1	< 3
Vinyl Chloride	ug/l	< 0.1	< 0.1	<1	< 0.1	<1	< 0.1	<1	< 0.1

Appendix A

Site Surface Water and Effluent Drainage Information

Site Warrington Drainage Schematics

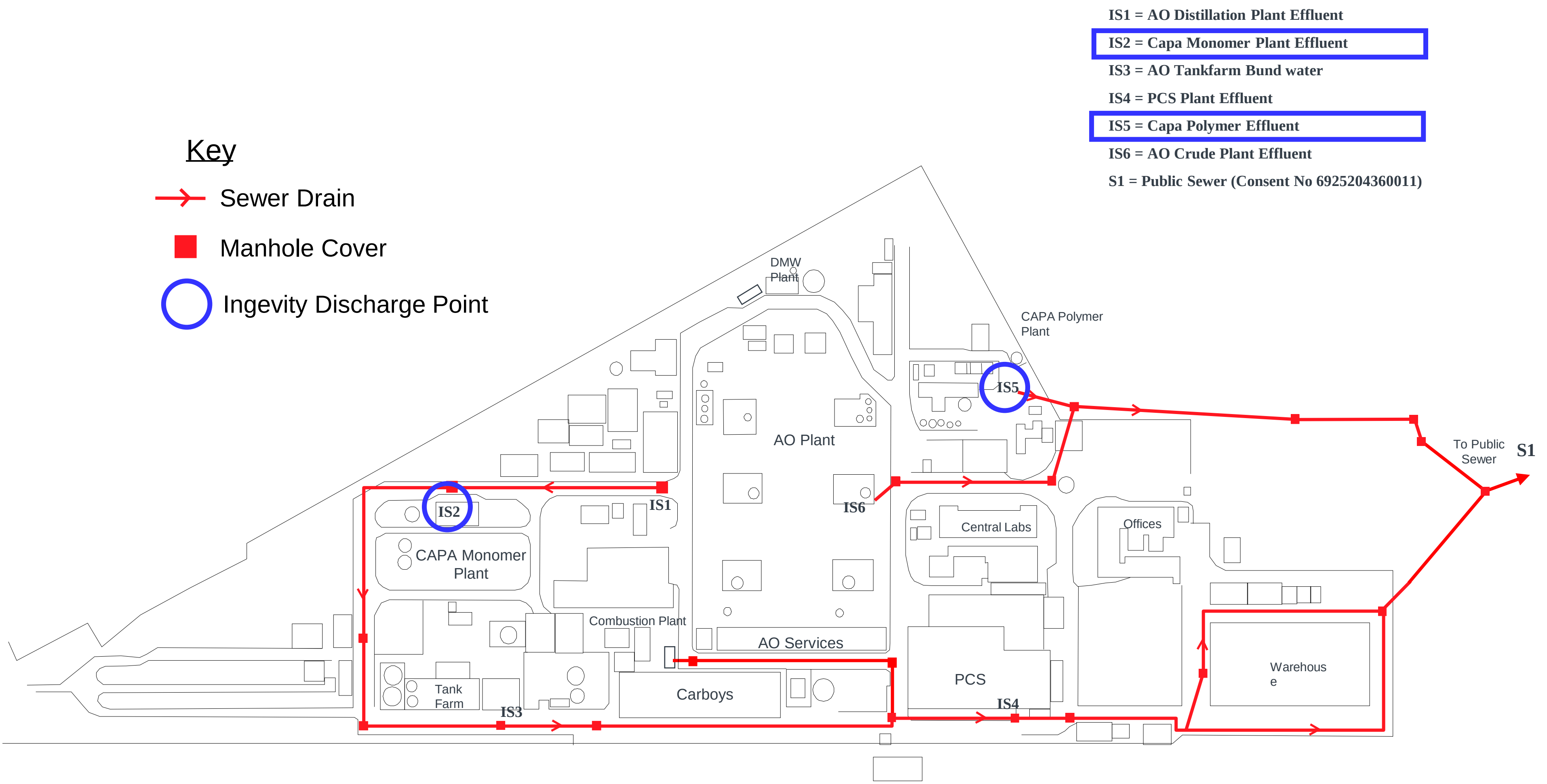
June 2019

Site Warrington Drainage Schematics

Index

Solvay Interox – Reference Information Only

Solvay Interox & Ingevity – Internal (IS) & Public Sewer Discharge Points Site Sewer Drains



Key

- Sewer Drain
- 🟥 Manhole Cover
- ○ Ingevity Discharge Point

IS1 = AO Distillation Plant Effluent

IS2 = Capa Monomer Plant Effluent

IS3 = AO Tankfarm Bund water

IS4 = PCS Plant Effluent

IS5 = Capa Polymer Effluent

IS6 = AO Crude Plant Effluent

S1 = Public Sewer (Consent No 6925204360011)

Solvay Interox – Reference Information Only

Solvay Interox& Ingevity PPC Installation – Internal (IW) Surface Water Discharges leading to Mersey Estuary Outfall (W1)

IW1 = DMW Plant effluent

IW2 = Capa Polymer once used cooling water

IW3 =AO Cooling Tower Blowdown

IW4 = Capa Monomer once used cooling water

IW5 = Combustion Plant Blowdown effluent

IW6 = Capa Monomer Cooling Tower Blowdown

W1 = Mersey Outfall (Consent No016990683)

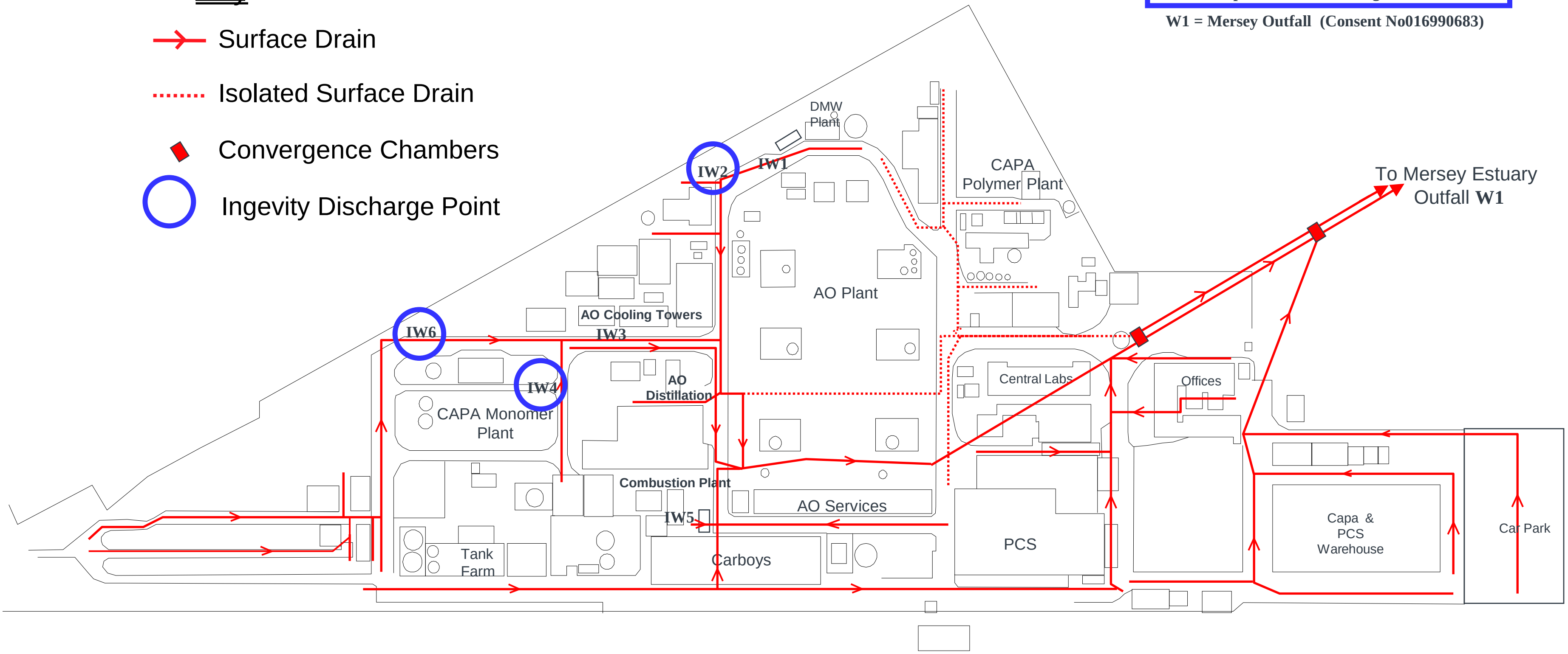
Key

→ Surface Drain

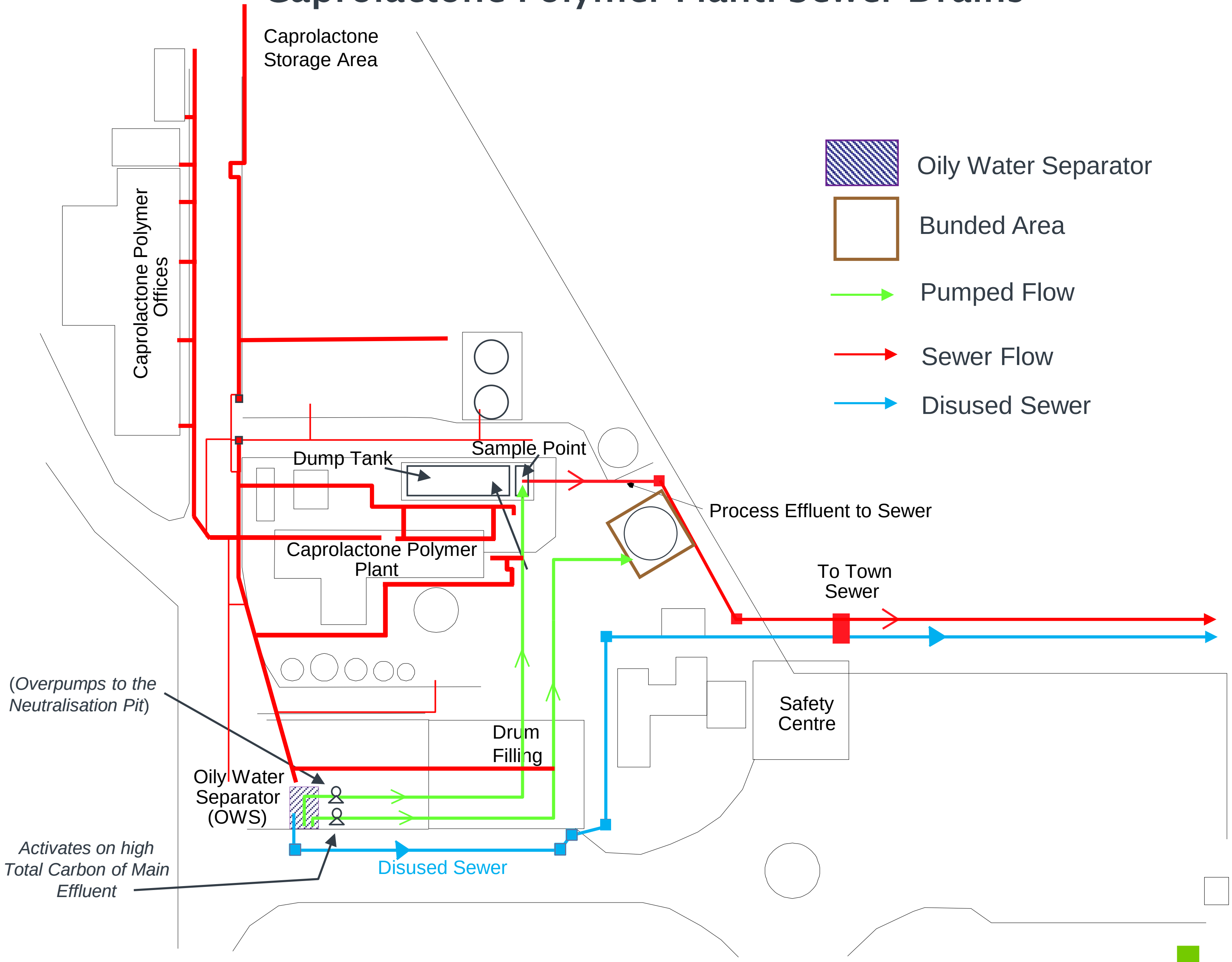
┈ Isolated Surface Drain

◆ Convergence Chambers

○ Ingevity Discharge Point



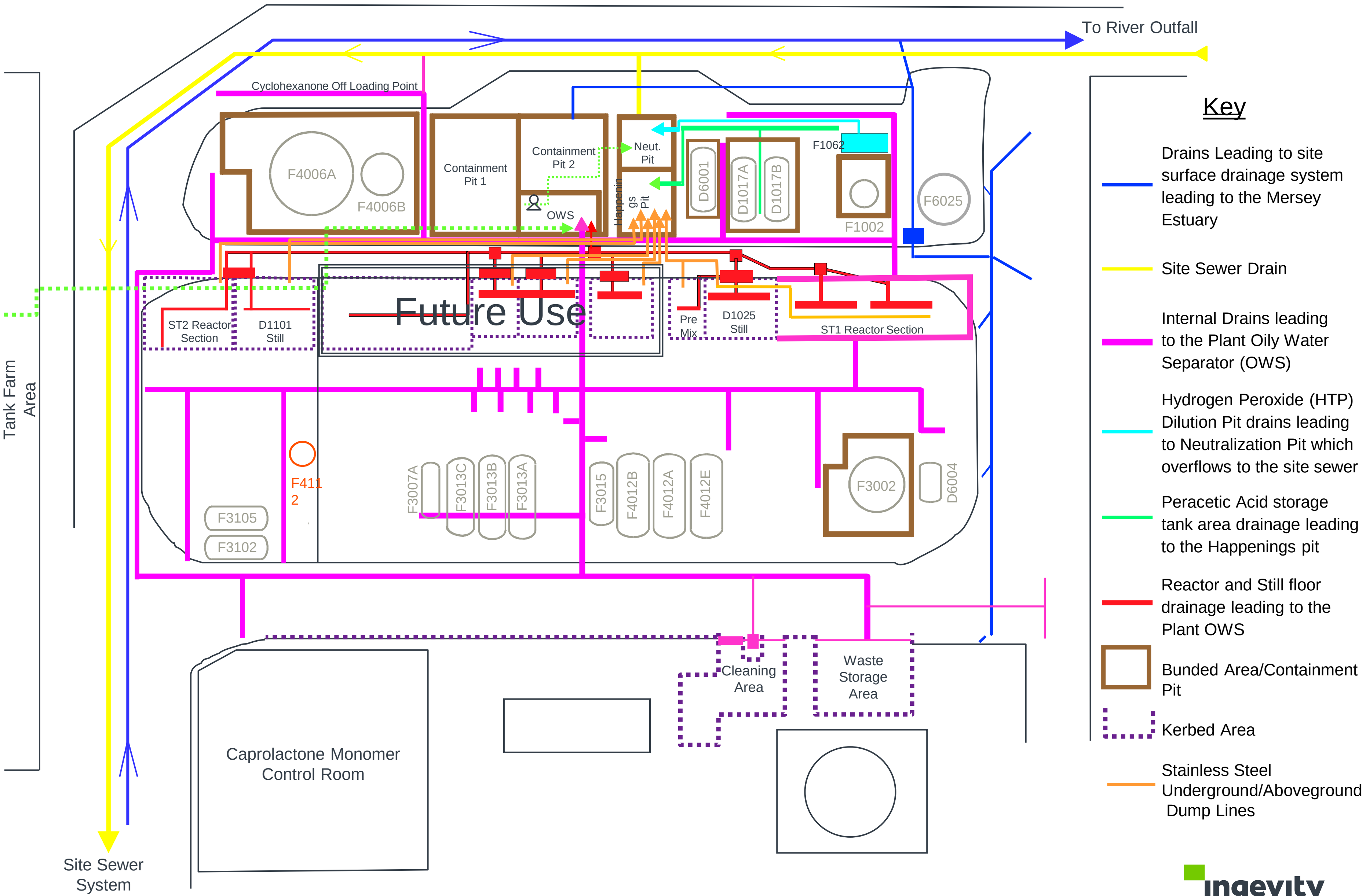
Caprolactone Polymer Plant: Sewer Drains



(Overpumps to the Neutralisation Pit)

Activates on high Total Carbon of Main Effluent

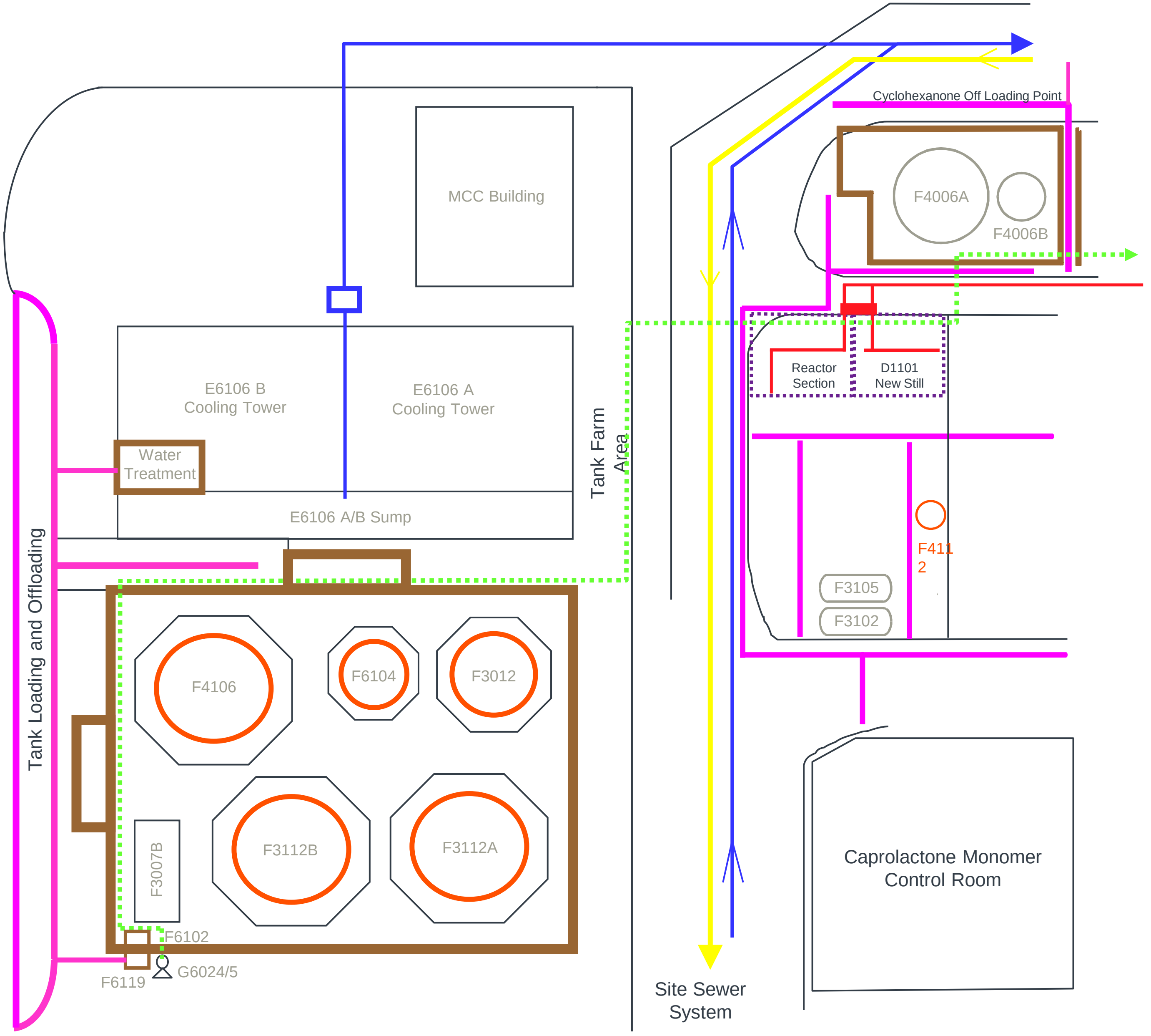
Caprolactone Monomer Plant: Drainage



Key

- — Drains Leading to site surface drainage system leading to the Mersey Estuary
- — Site Sewer Drain
- — Internal Drains leading to the Plant Oily Water Separator (OWS)
- — Hydrogen Peroxide (HTP) Dilution Pit drains leading to Neutralization Pit which overflows to the site sewer
- — Peracetic Acid storage tank area drainage leading to the Happenings pit
- — Reactor and Still floor drainage leading to the Plant OWS
- ▢ Bunded Area/Containment Pit
- ⬚ Kerbed Area
- — Stainless Steel Underground/Aboveground Dump Lines

Caprolactone Monomer Plant Tank Farm: Drainage

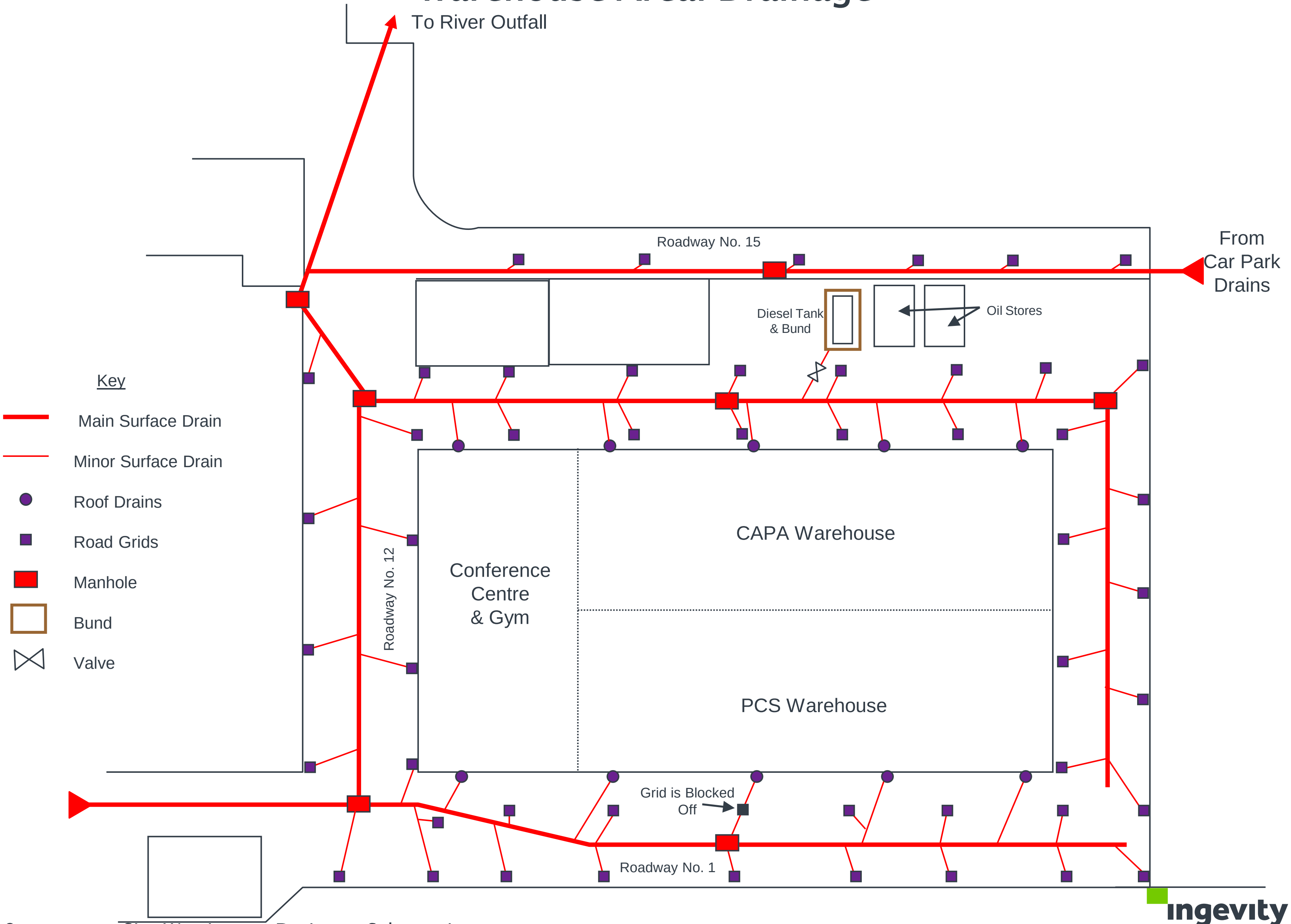


Key

- Drains Leading to site surface drainage system leading to the Mersey Estuary
- Site Sewer Drain
- Internal Drains leading to the Plant Oily Water Separator (OWS)
- Hydrogen Peroxide (HTP) Dilution Pit drains leading to Neutralization Pit which overflows to the site sewer
- Peracetic Acid storage tank area drainage leading to the Happenings pit
- Reactor and Still floor drainage leading to the Plant OWS
- Bunded Area/Containment Pit
- Kerbed Area
- Stainless Steel Underground Dump Lines

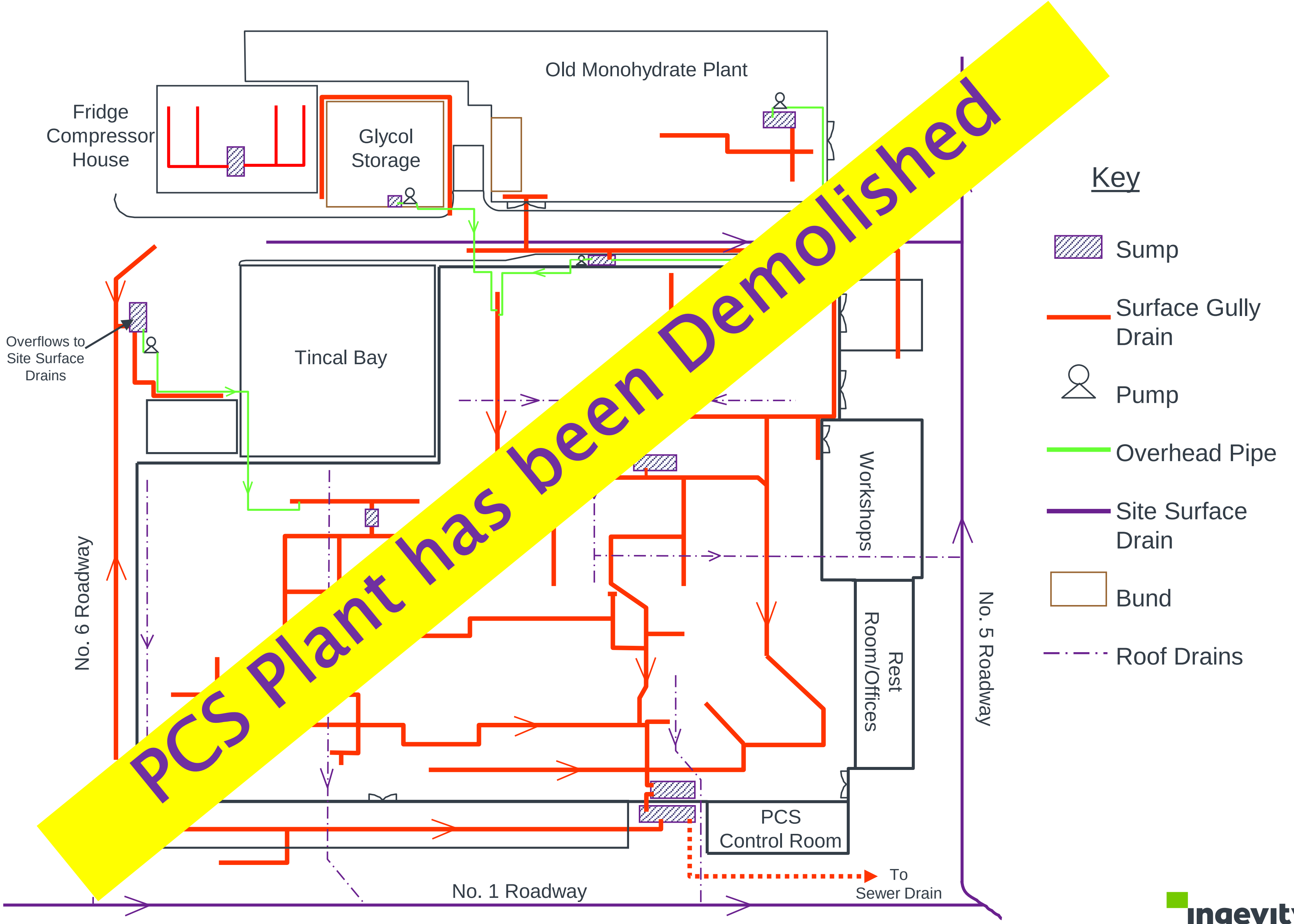
ingevity

Warehouse Area: Drainage



Solvay Interox – Reference Information Only

PCS Plant: Drainage Diagram

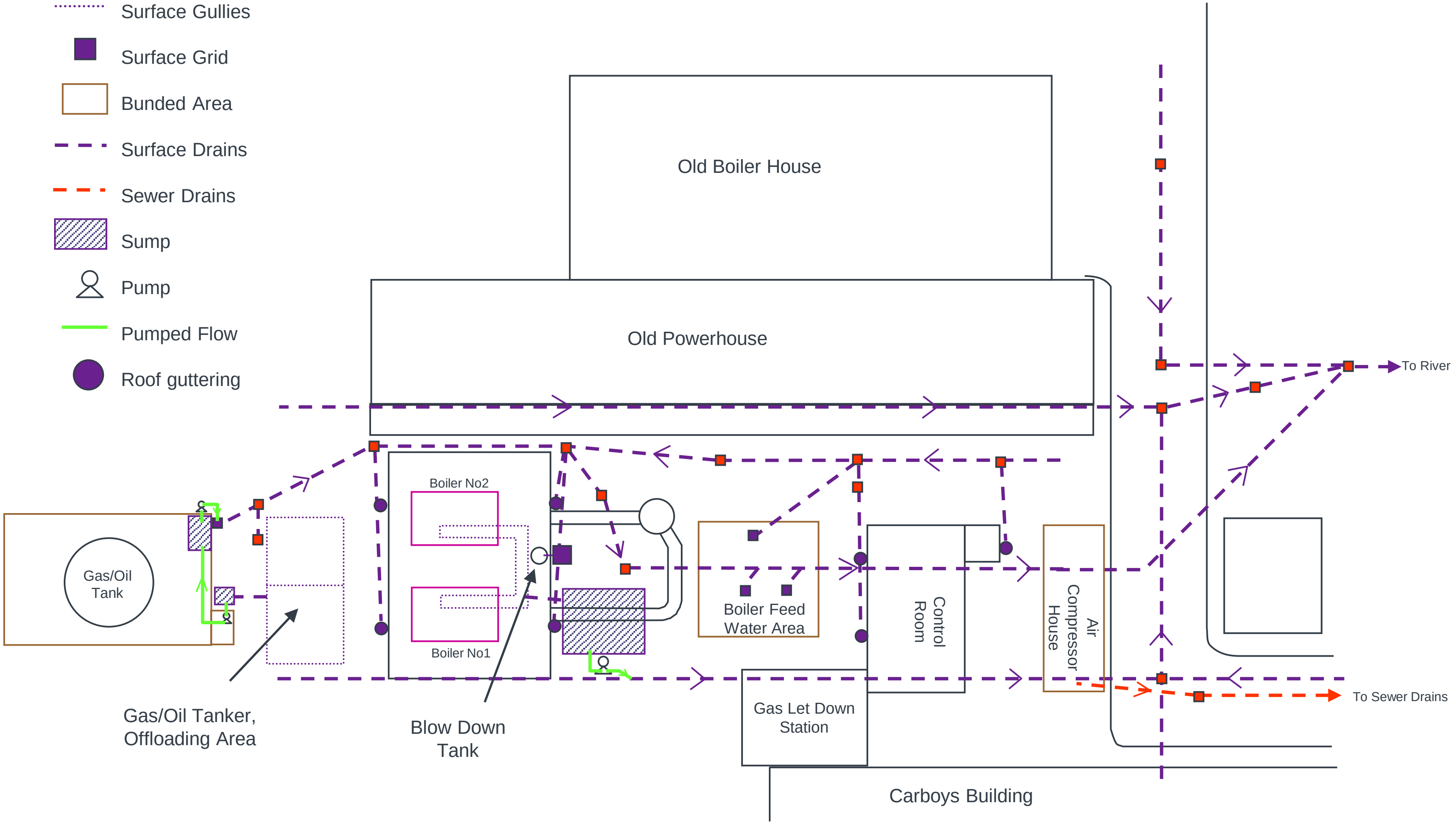


PCS Plant has been Demolished

Combustion Plant: Drainage

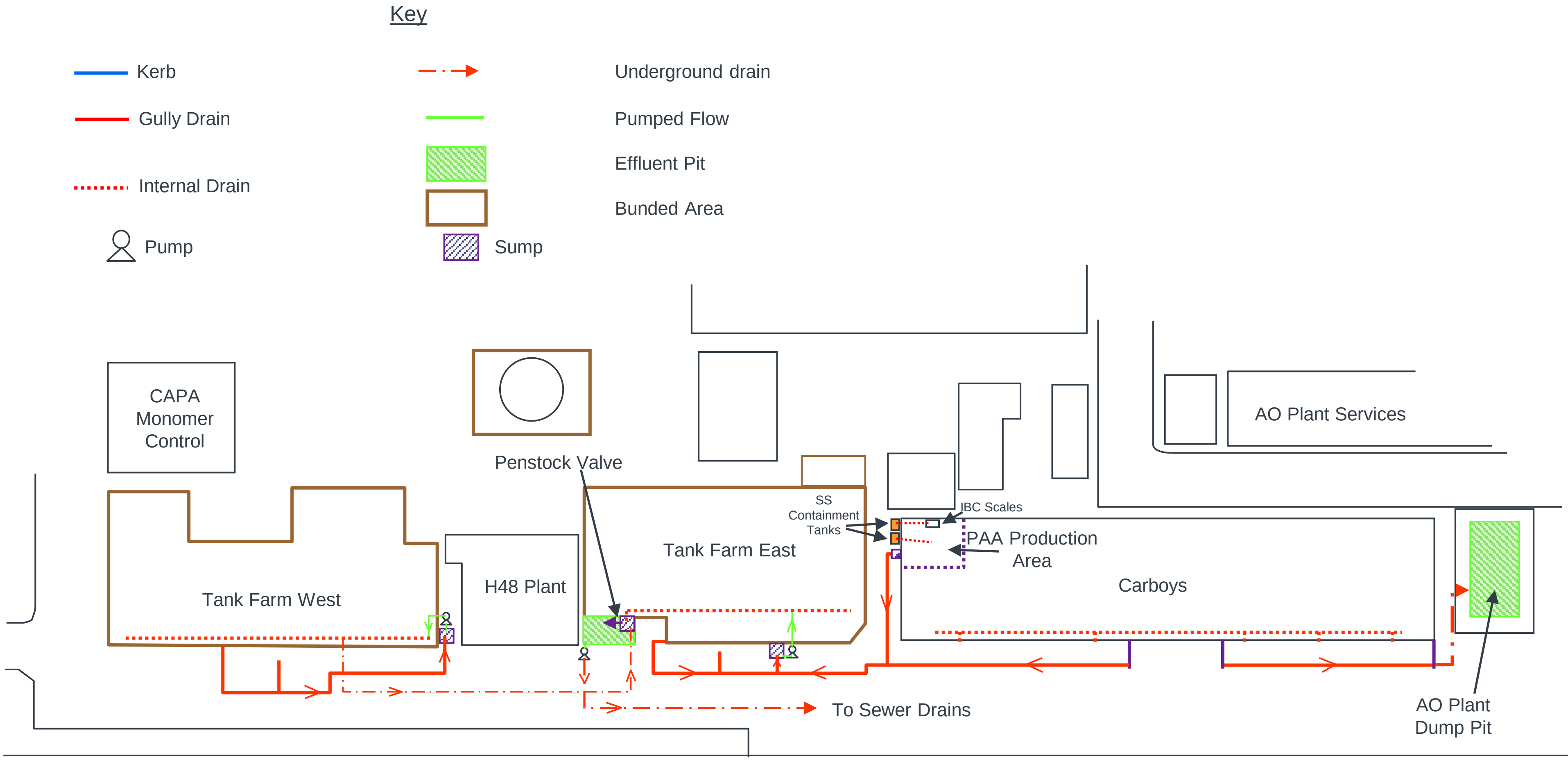
Key

- 🟥 Manhole
- ········ Surface Gullies
- ■ Surface Grid
- ☐ Bunded Area
- – – Surface Drains
- – – Sewer Drains
- ▨ Sump
- Pump
- — Pumped Flow
- ● Roof guttering



Solvay Interox – Reference Information Only

Carboys & Tank Farm: Drainage and Containment System



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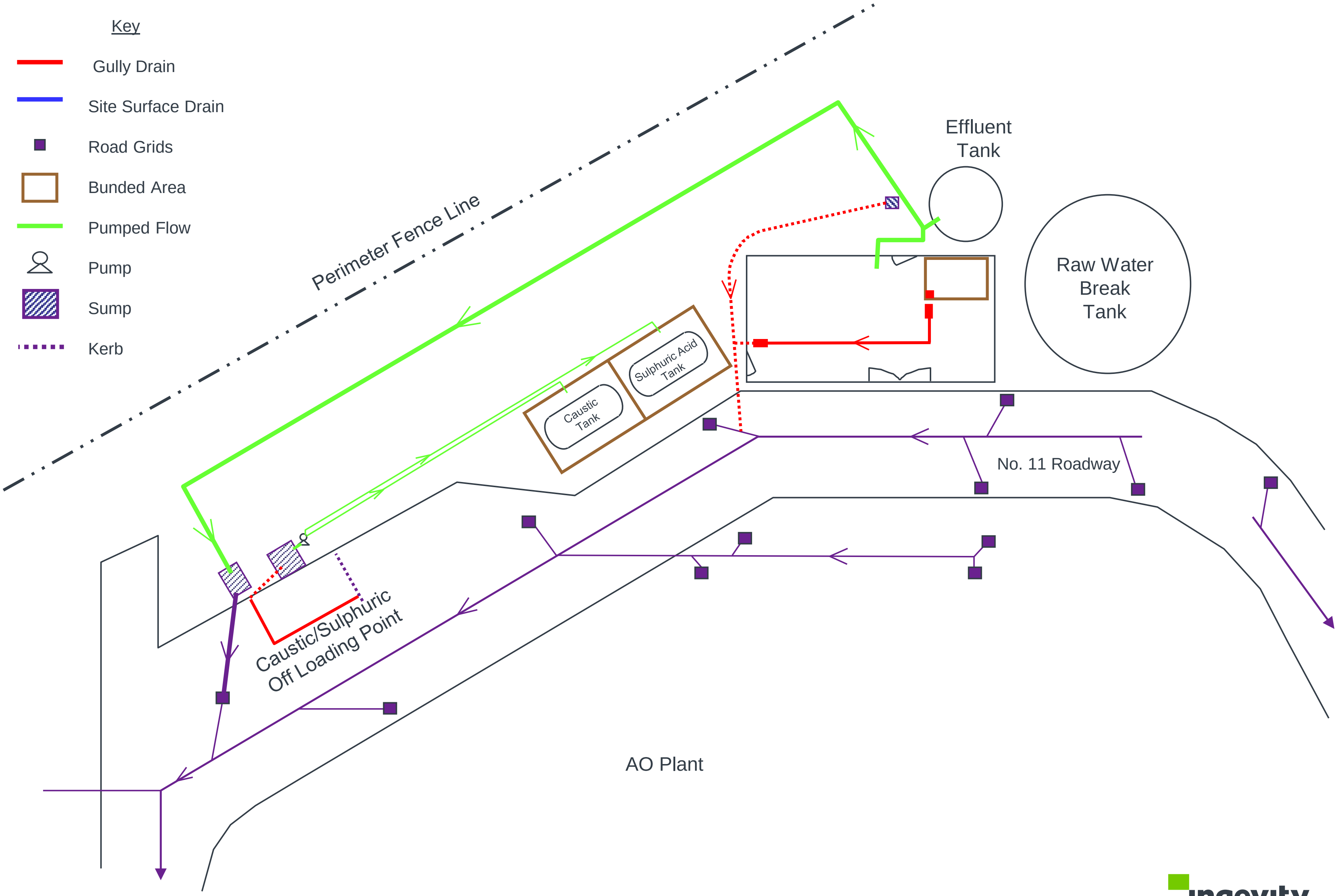
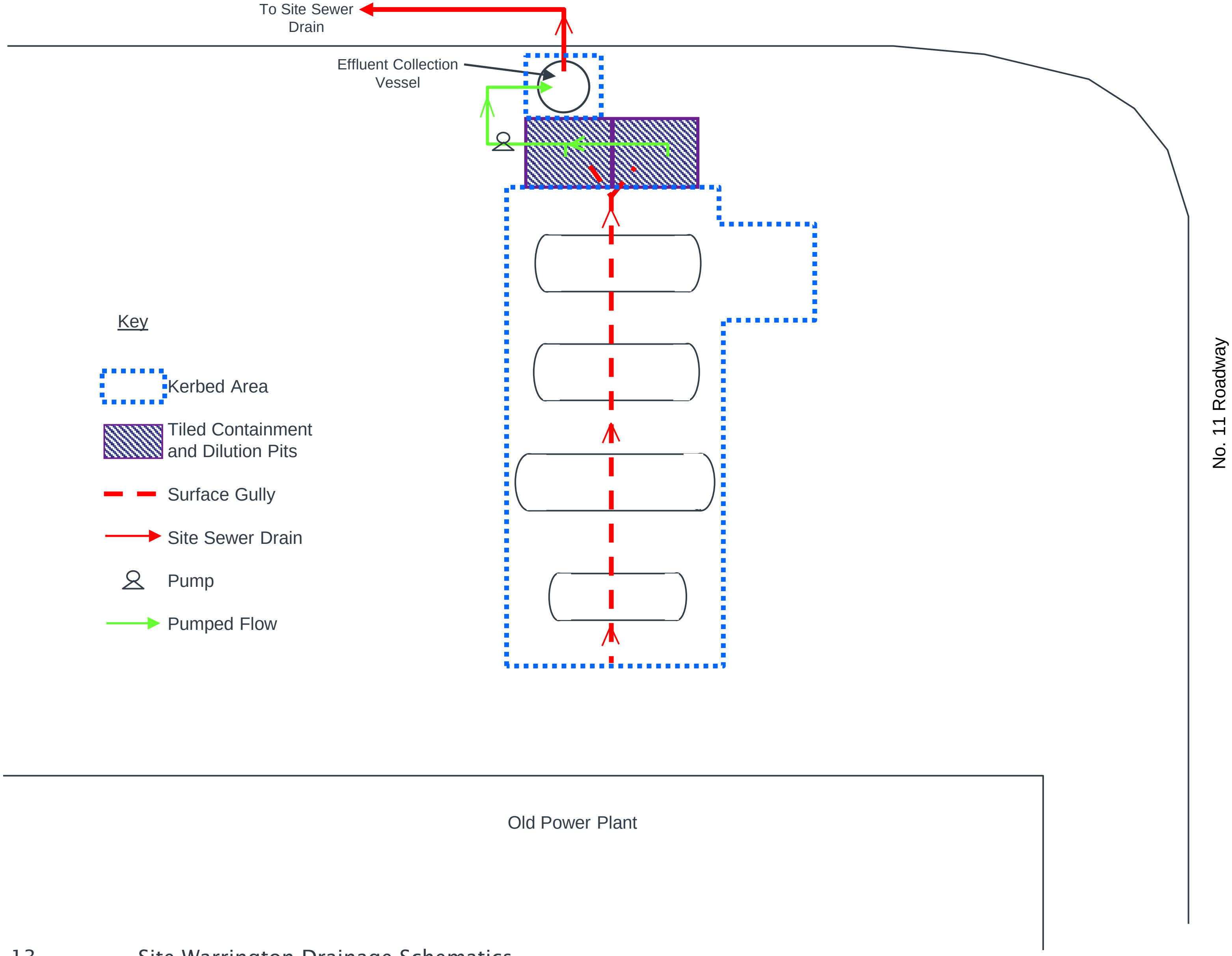
DMW Plant: Drainage



Solvay Interox – Reference Information Only

AO Distillation Drainage System: General Arrangement



Site Warrington Drainage Schematics

June 2019

Effluent Treatment – Monomer Plant

The process areas and associated roadway for the Caprolactone plant are all designed so that any spillages are directed to a comprehensive effluent handling system. The effluent treatment equipment is itemised below:

- Happenings Pit
- Oily Water Separator
- Effluent Neutralisation Tank
- Containment Pit

Happenings Pit

The happenings pit is part of the hazard protection system for the Caprolactone Plant. When any of the relevant equipment significantly deviates from the normal operating condition, hence creating a potential hazardous situation, the affected vessel is "dumped".

This entails the vessel contents being transferred to the happenings pit which always contains a level of water. The potential hazardous situation is thus removed by the cooling and dilution effects of the quench water. Examples of hazardous situations are hydrogen peroxide decomposition, runaway exothermic reactions and the potential formation of detonable mixtures between acetic acid and hydrogen peroxide.

As the vessels have the potential to create hazardous situations they are controlled with a high level of instrumentation and interlock systems. When an incident occurs, (i.e. a vessel dump), it is standard operating procedure to blanket the happenings pit with foam. This reduces the vapour pressure of chemicals above the vessel so that they cannot ignite and as there is minimal release of chemicals to air.

After an incident the happenings pit contents is either gradually transferred to the oily water separator or transferred to the containment pit system where the control strategy ensures that the ultimate discharge to sewer from the neutralisation tank is within the consent conditions. When the level is below the low-level probe the pit is refilled to its standard douse level with well water.

There are two ways a vessel can dump its contents:

1. Automatic control system
2. Manual push button operating an automated valve.

Therefore the plant is considered to be well protected against hazardous situations.

Oily Water Separator

The oily water separator (OWS) receives effluent from all sources within the process and plot drainage as listed below;

- All drainage gulleys in equipment areas
- Hydrogen peroxide overflow vessel dilution water
- Acetic acid distillation column bursting disc quench water
- Occasional Wash down hoses
- Bund emptying of rainwater
- Safety showers
- Condensate from minor steam traps
- Accidental spillages
- All drainage gulleys within Caprolactone Plot area - this includes rainwater from the plot area
- Happenings pit ejector
- Containment Pit rework effluent
- Aqueous effluent separated in the 400 Section
- Monomer process ejector rundown water
- Peracetic acid reactor purge ex purge recovery system
- DMW from purge cooler
- Sample dilution water
- Caprolactone and Peracetic acid reactor buildings floor drains

The OWS is designed to contain any major spillage of Cyclohexanone. This is achieved by a series of two underflow weirs which allow the aqueous phase to pass and contain any oil phase. The outlet section of the separator over-pumps to the neutralisation tank at a controlled rate to ensure consent flow rates are not breached. Over pumping security is provided by duty/standby pumps.

The total Carbon content (TC), pH and final flow of this effluent is continuously monitored and the TC load integrated. If the TC load or TC concentration and pH are within an acceptable range the effluent is pumped to the neutralisation tank and then by gravity discharges to the sewer. If the TC analyser and flow monitor detects a high TC load the pump transferring the effluent from the OWS stops automatically. The effluent feeding the OWS will continue. The level in the OWS will rise until it overflows into one of two

Containment Pits located next to the OWS. As the TC load drops to an acceptable level the transfer pump will restart. When the TC is out of specification operating procedures instruct the plant technicians to investigate the source of the problem. Whilst this is happening if the problem clears the system will re-start. The same sequence of events occur for a high (i.e. alkaline) pH. Two TC analysers are installed to maintain the reliability of the spill protection system.

If a problem occurs with the pump or in the case of excessive rainfall the excess effluent will overflow to the Containment Pit. Significant spills of Cyclohexanone or oil can be skimmed from the surface of the OWS and subsequently disposed of. The separator can also periodically be pumped out into a road tanker to remove any solids/sludge formed. Disposal is in accordance with the Site Waste Management Procedures.

Neutralisation Tank

The neutralisation tank is divided into two sections. The first receive the inlet flow and is well mixed by an agitator. The pH is monitored and caustic soda dosed so that the final effluent is controlled between a pH of 6-10.

The second section is a stilling chamber to calm the surface of the effluent so that the flow over a V notch' weir plate can be measured. The Neutralisation Tank discharges effluent to the sewer site system.

The effluent is continuously measured for pH and flow and an effluent sampler takes a composite sample for subsequent daily collection and analysis by the laboratory.

Containment Pit System

The containment pit system is to protect the sewer from excessive flows of effluent and provide containment of effluent outside consent limits. The effluent contained in the pit is emptied into the Oily Water Separator at a controlled rate.

The containment pit system is divided into two pits which can overflow into each other. The total capacity of the system is 330m^3 and has been sized to contain 35 mm of rainfall across the whole plot (i.e. worse case rainfall over, 24 hours once every two years), this will also provide 110% containment for the largest vessel on the Caprolactone plot area including all storage tanks and contain 20 minutes of firewater for the highest deluge rate from 2 adjacent zones on plot. The containment pit includes an emergency overflow which in connected to the site surface water drainage system which leads to the Mersey Estuary.

Effluent Treatment – Polymer Plant

The process areas and internal roadways on the plant are all designed so that any spillages are directed to an effluent handling system.

The Caprolactone polymer plant drains all feed into an oily water separator (OWS) which is designed to contain any free phase organics, e.g. liquid polymer grades, heating system oil. The oily water separator (OWS) receives effluent from all sources within the process and plot drainage as listed below:

- All drainage gullies in equipment areas
- Occasional Wash down hoses
- Bund emptying of rainwater
- Safety showers
- Condensate from minor steam traps
- Accidental spillages
- All drainage gullies within Caprolactone Plot area this includes rainwater from the plot area
- Process ejector rundown water
- Monomer bund rework effluent

From the OWS the aqueous effluent is pumped to an effluent pit where it is continuously analysed for pH and total carbon before overflowing to sewer. If the pH measurement is outside the consent limits of 6 – 10 alarms will prompt the plant technicians to take action. If the total carbon (TC) measurement is >1,000ppm an alarm will sound on the plant DCS and an interlock stops the pump on the OWS so that OWS discharge to the neutralisation stops. The effluent feeding the OWS will continue. The level in the OWS will rise until a high level is reached and a second pump automatically starts which pumps the clean side of the OWS to the 150m^3 bund around the monomer storage tank. Therefore providing secondary containment of any large quantities of spilled organic materials. The contents of the bund can either be disposed of off-site in accordance with site waste management procedures or slowly pumped back to the process area surface drainage system and controlled discharged to sewer. Once the neutralisation pit effluent TC returns below 1,000ppm the OWS pump automatically restarts.

Effluent System Monitoring and Maintenance

The effluent treatment systems on both plants are controlled and monitored by the plant Distributed Control System (DCS) where appropriate alarms points are set, parameters monitored and recorded, e.g. flow, pH, TC, feedback rates etc. Some specific activities are manually activated in the field, e.g. containment pit and monomer tank bund emptying. Calibrations are routinely undertaken on the treatment system pH probes and TC analysers to ensure consent compliance is maintained. Pumps are also routinely inspected and greased as part of the plant routine maintenance programme. Reviews are undertaken of relevant process parameters (e.g. effluent quantity and quality; containment pit availability; TC analyser on-line time; pH limit compliance) and are monitored as part of the weekly plant environmental performance measures and targets system which cover the specific environmental related indicators targeted for control and improvement.

Well Water Supply

Well water is abstracted locally from 5 deep boreholes. Abstraction is covered by a licence managed by the Environment Agency (licence ref No 25/69/24/13). Four of the boreholes are located on the site: Well 1 on Roadway 1 adjacent to the PCS Plant, Well 2 to the west of the Transco Gas Letdown Station, Well 11 on the Main Car Park at the east end of the site and Well 12 north of the Caprolactone Monomer Plant. The remaining two wells are off site at Moore; Well 6 is located on the corner of Lapwing Lane and Well 5 approximately 1 km to the east along the road serving the warehouses and landfill site.

Submersible pumps down the boreholes deliver the water to a distribution network covering the site. The flow from each well is measured at the outlet of the well (except well 6 where the meter is located at well 5). Distribution system pressures are measured on the two main headers. The pressure and flow information is available on the Peroxygens and Utilities DCS. Well level dips and meter readings are done on a weekly basis. The volume of water abstracted and level dips are reported to the EA annually.

Typically four of the six wells are operated providing approximately 500 m^3/hr of water.

The main users of the well water are listed below:

- Caprolactone Monomer for process cooling. Return water is discharged to the Surface Water Drainage system into the drain in Roadway 4 and into the TBM trench alongside Roadway 4.
- Caprolactone Polymer for process cooling. Return water is discharged to the Surface Water Drainage system via the Hotwell in the old Peroxide Distillation building.
- Peroxide Cooling Towers for makeup water.

Appendix B

Summary of Historical Site Soil and Groundwater Pollution

ENVIRONMENTAL INVESTIGATION
INTEROX CHEMICAL LTD
WARRINGTON, UNITED KINGDOM

FINAL REPORT

VOLUME 2

September 1992

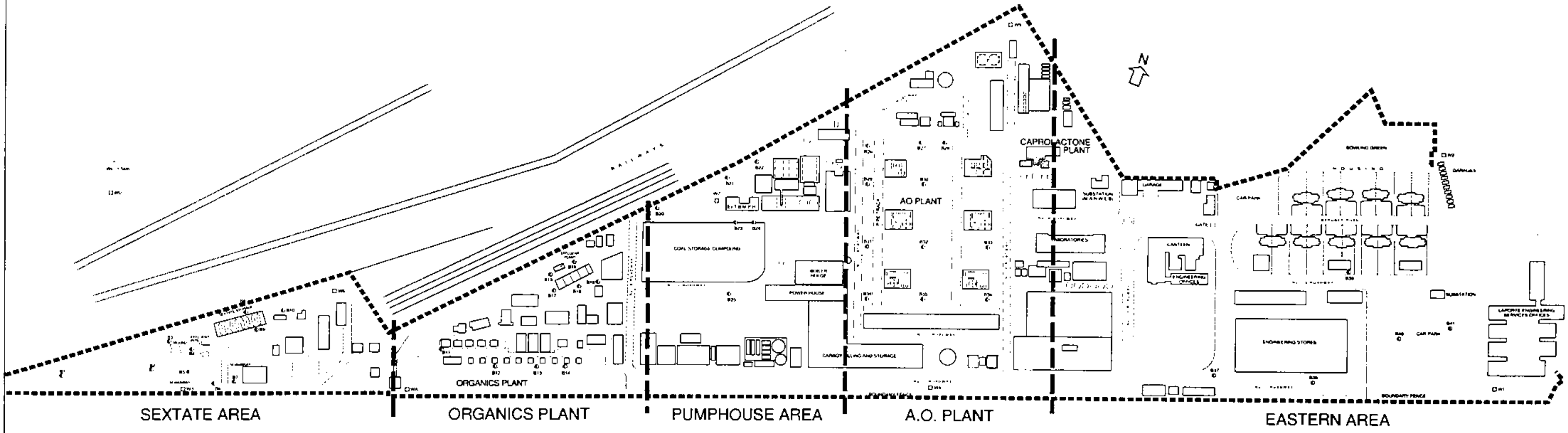
PREPARED BY

ENVIRONMENTAL STRATEGIES

PREPARED FOR

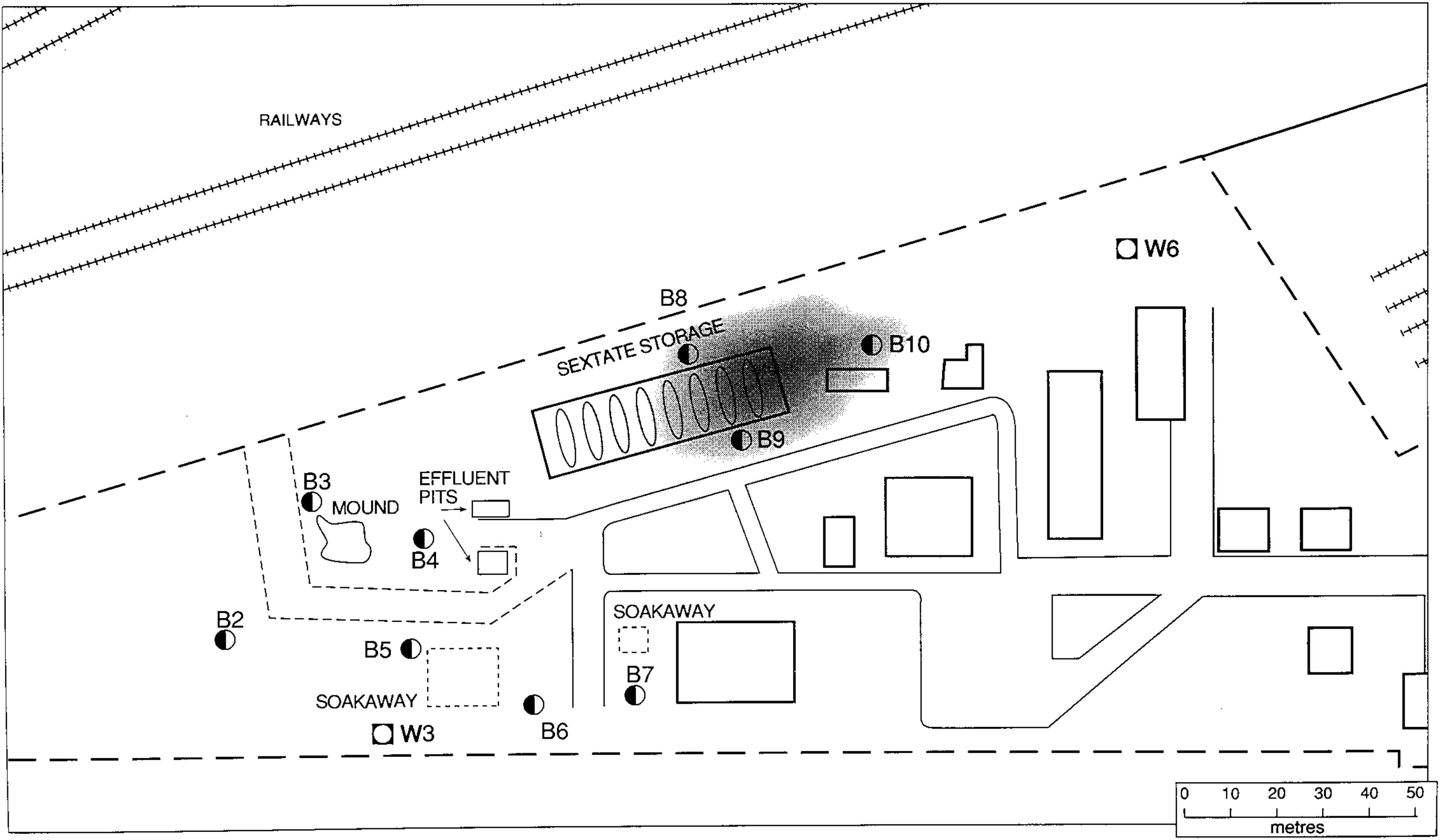
FRESHFIELD, WHITEFRIARS, 65 FLEET STREET
LONDON, ECY 1HS

PRIVILEGED AND CONFIDENTIAL



ENVIRONMENTAL STRATEGIES
15-16 Grosvenor Court, Foregate Street,
Chester CH1 1HG.
Telephone: 0244 350727

Figure 2
Areas of Investigation
Interox Facility
Warrington, United Kingdom



Environmental Strategies
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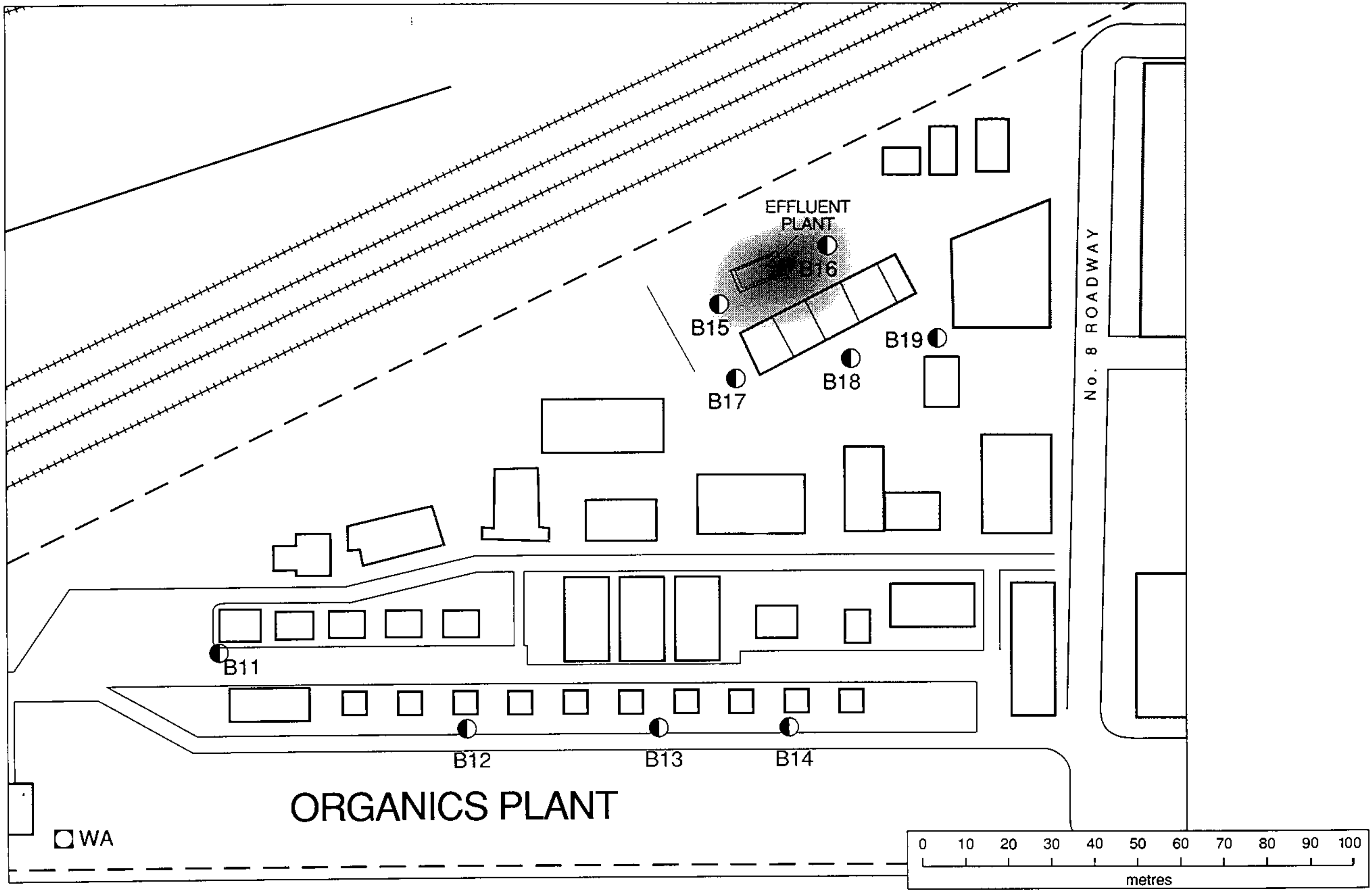
Figure 9
Sextate Area
Interox Facility
Warrington, United Kingdom

◐ BOREHOLE
☐ WELL
● AREA OF CONTAMINATION



Environmental Strategies
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Chester CH1 1HG.
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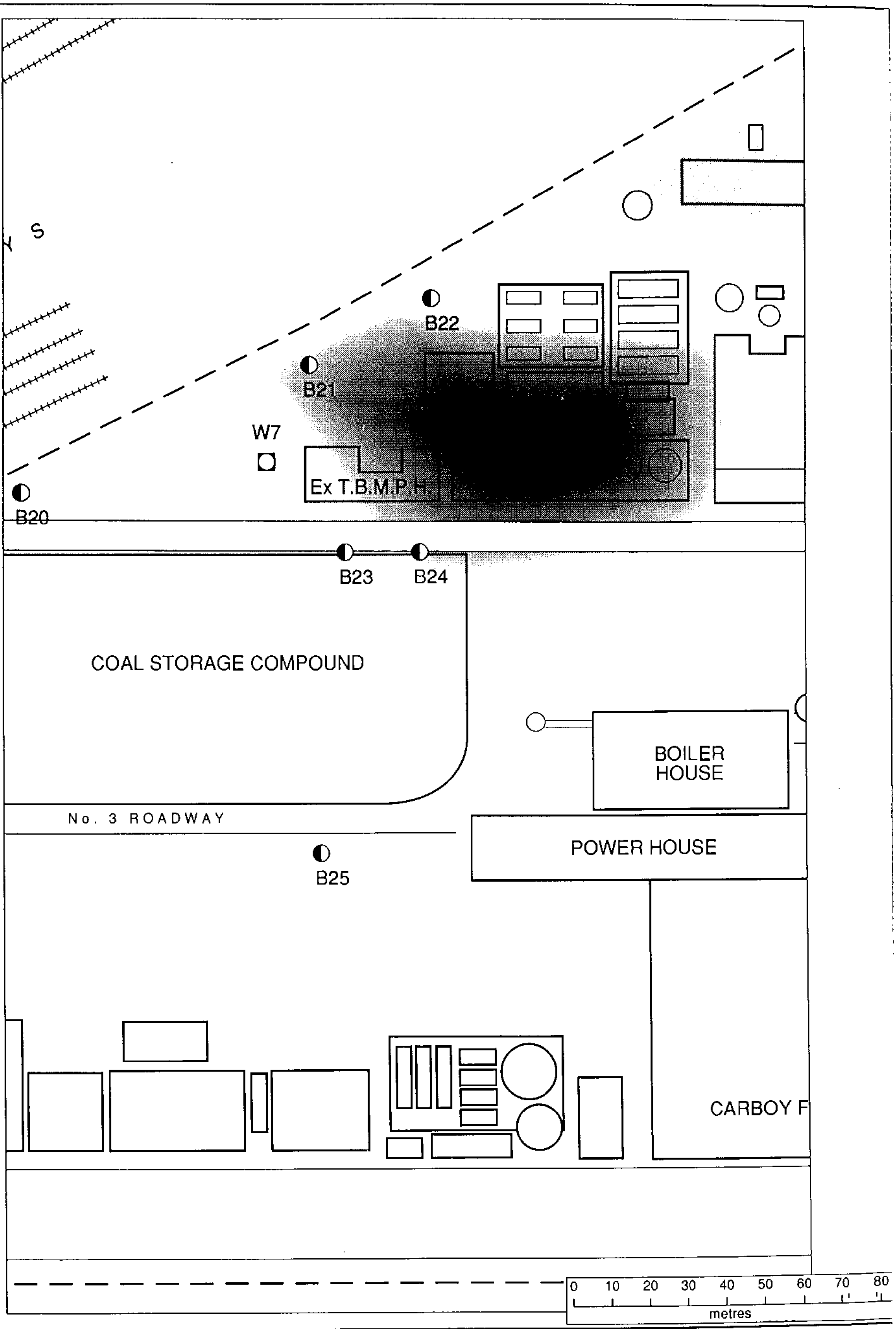
Figure 10
Organics Plant
Interox Facility
Warrington, United Kingdom

◐ BOREHOLE
☐ WELL
● AREA OF CONTAMINATION



Environmental Strategies
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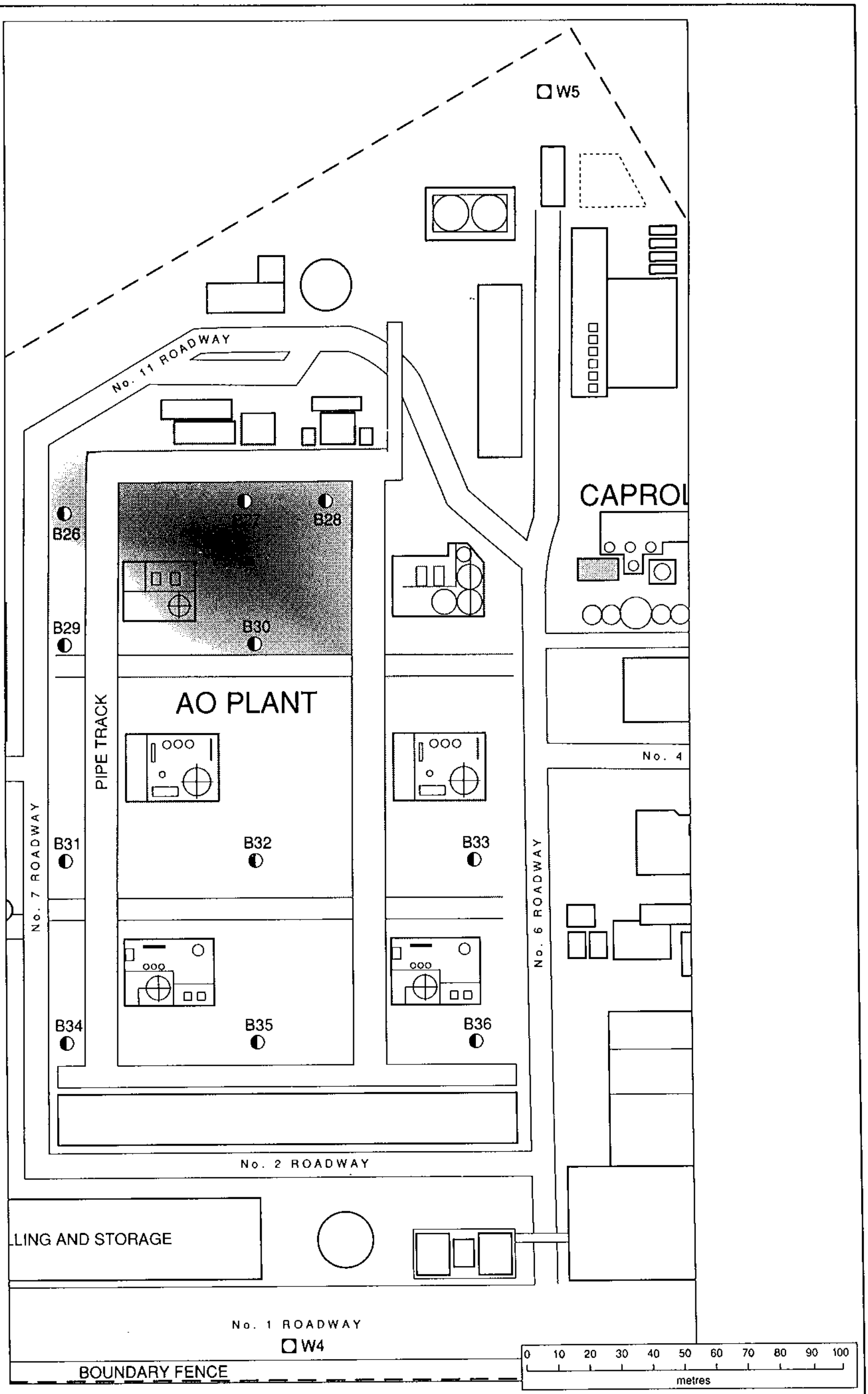
Figure 11
Pumphouse Area
Interox Facility
Warrington, United Kingdom

◐ BOREHOLE
☐ WELL
● AREA OF CONTAMINATION



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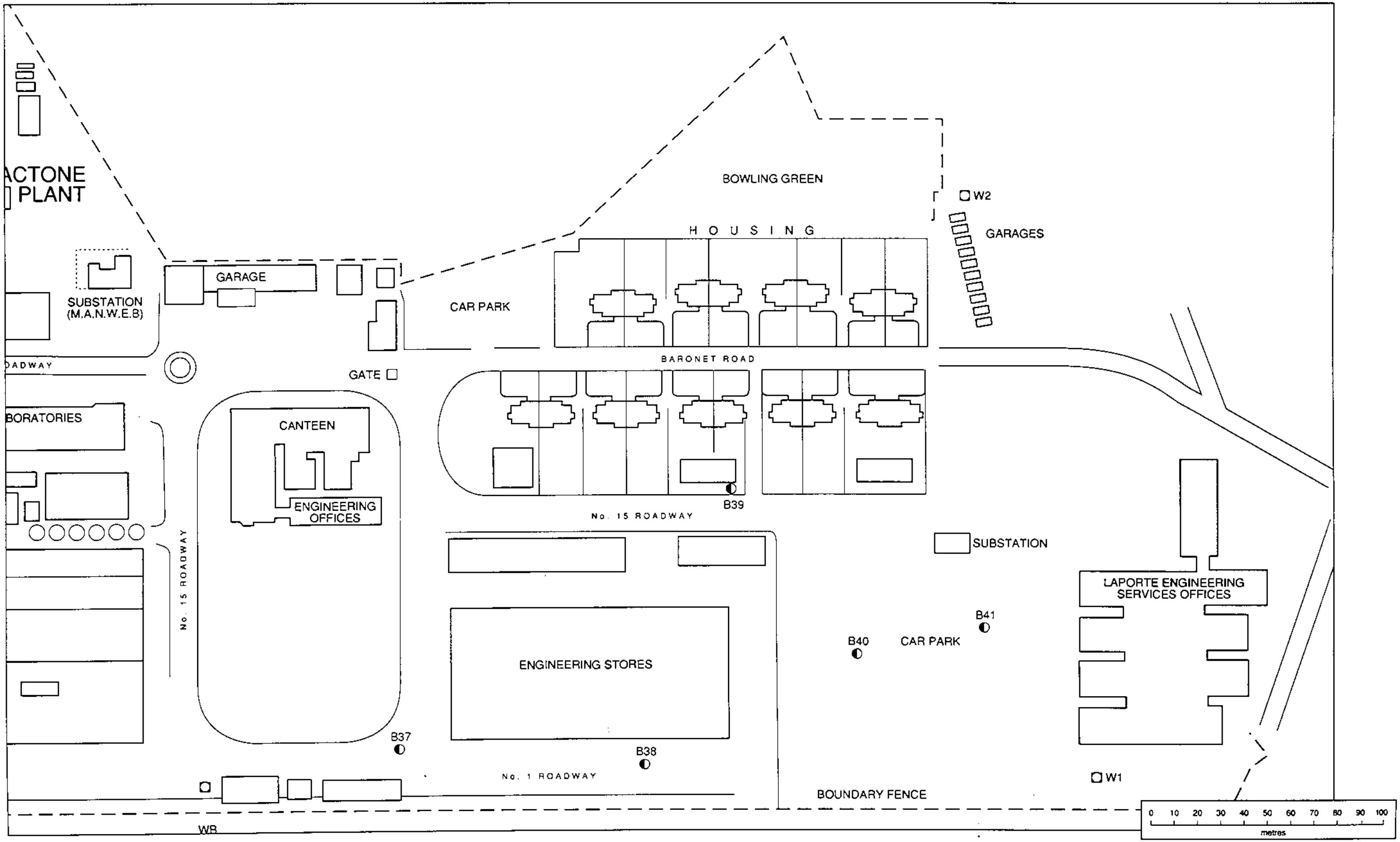
Telephone: 0244 350727

Figure 12
AO Plant
Interox Facility
Warrington, United Kingdom

◐ BOREHOLE
☐ WELL
● AREA OF CONTAMINATION



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15-16 Grosvenor Court, Foregate Street
Chester CH1 1HG.
Telephone: 0244 350727

Figure 13
Eastern Area
Interox Facility
Warrington, United Kingdom

◐ BOREHOLE
☐ WELL

DELINEATION OF WORKING SOLUTION AT THE A.O.PLANT AND PRELIMINARY RISK ASSESSMENT

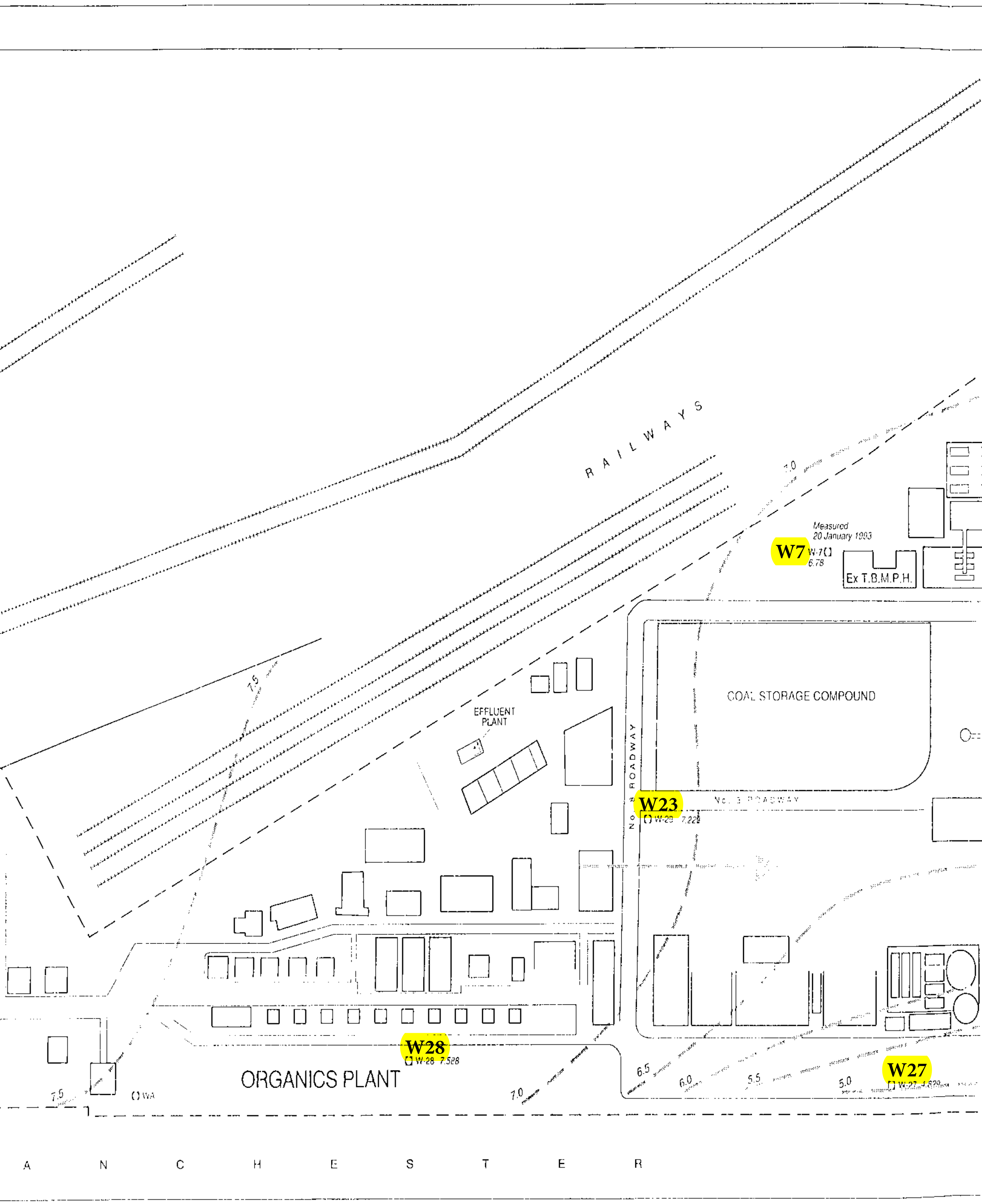
SOLVAY INTEROX LIMITED
WARRINGTON, CHESHIRE

August 1993

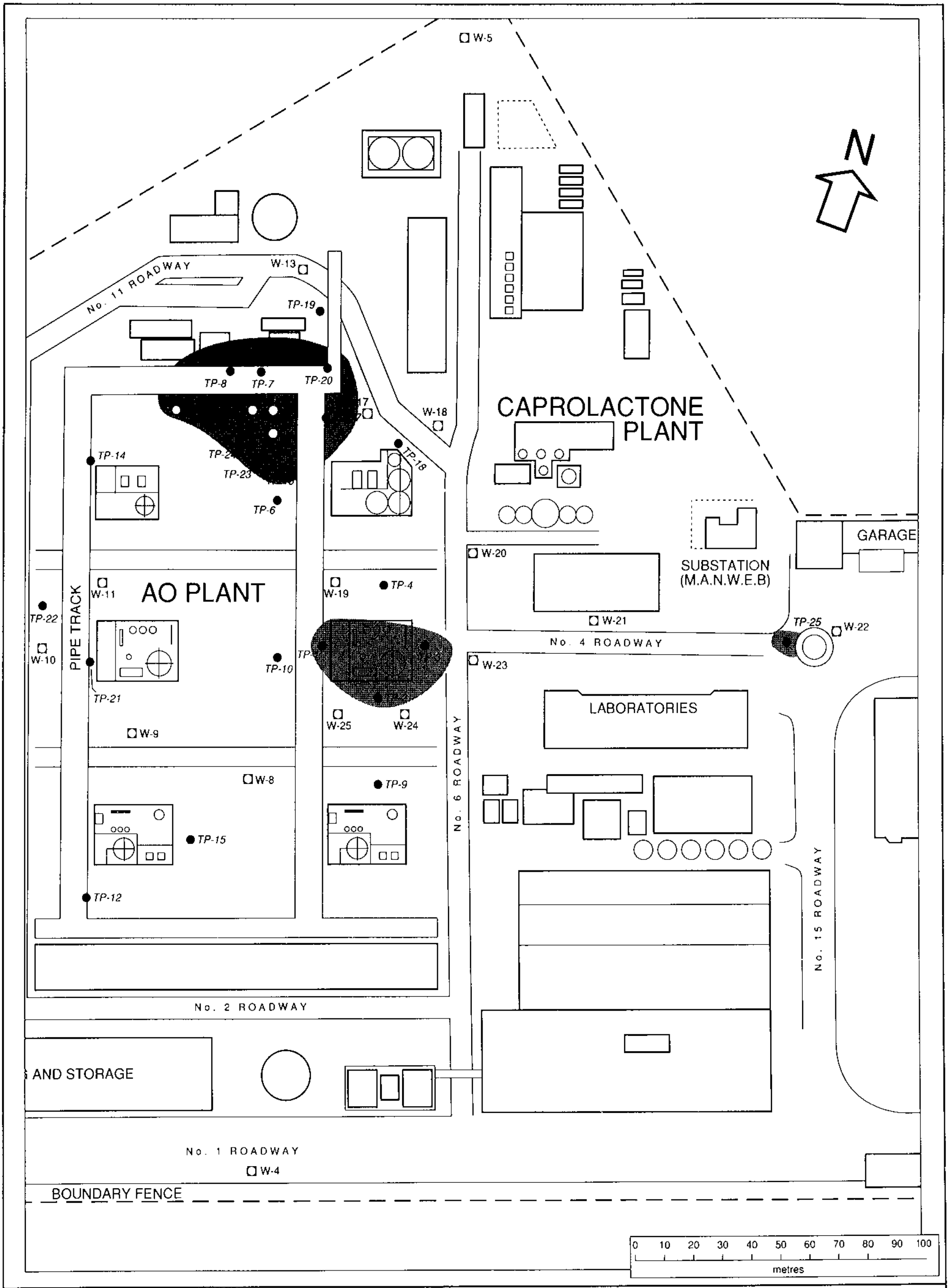
PREPARED BY

ENVIRONMENTAL STRATEGIES

PRIVILEGED AND CONFIDENTIAL


RAILWAYS
7.0
7.5
Measured
20 January 1993
W7
W-7
6.78
Ex T.B.M.P.H.
COAL STORAGE COMPOUND
EFFLUENT
PLANT
No. 8 ROADWAY
No. 3 ROADWAY
W23
W-23 7.224
W28
W-28 7.528
ORGANICS PLANT
WA
7.5
7.0
6.5
6.0
5.5
5.0
W27
W-27 4.829
ANCHESTER

Map



Environmental Strategies
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Foregate Street • Chester CH1 1HG.
Telephone: 0244 350727

Figure 5.1.
Schematic Representation of Working Solution in Ground, AO Plant
Solvay Interox
Warrington, Cheshire

● Test Pit
☐ Well
▨ Extent of Solution

DRAFT PHASE III INVESTIGATION REPORT

VOLUME 1

SOLVAY INTEROX LIMITED
WARRINGTON, CHESHIRE

March 1994

PREPARED BY

ENVIRONMENTAL STRATEGIES

PRIVILEGED AND CONFIDENTIAL

90374

EXECUTIVE SUMMARY

Environmental Strategies was retained by Solvay Interox to further investigate the areas of environmental concern identified in previous investigations at its facility in Warrington, Cheshire. The principal areas of concern are located in the A.O. Plant (including the A.O. Effluent Treatment Plant), T.B.M. Pumphouse, Organics Plant, Caprolactone Plant, and Sextate Plant.

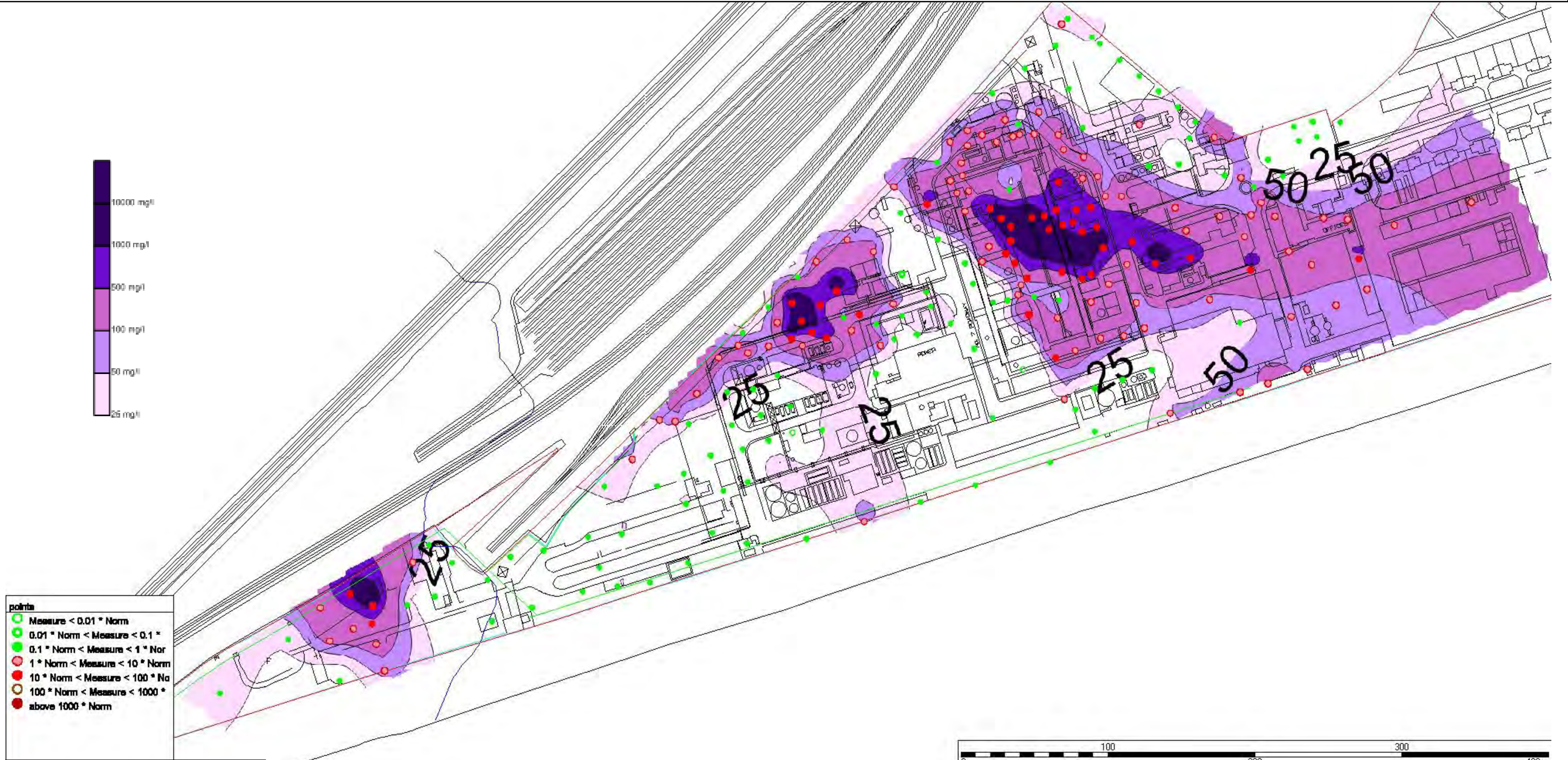
The Phase III investigation consisted of drilling 29 boreholes to estimated depths ranging from 3 m to 12 m; collecting soil samples for field and laboratory analyses; completing the 29 boreholes as groundwater monitoring wells; measuring groundwater levels and Working Solution thicknesses in newly-installed and existing wells; collecting groundwater samples for laboratory analysis from 18 of the newly-installed and 17 existing wells; performing groundwater and Working Solution pumping and recovery tests; and collecting one surface water sample from the Grange Mill Stream and two surface water samples from the Manchester Ship Canal for laboratory analysis.

The geology at the facility consists of unconsolidated drift of recent age overlying sandstone bedrock (Sherwood Sandstone). The Sherwood Sandstone the primary aquifer beneath the facility and is utilised extensively by Solvay Interox for production and cooling water. A regional potentiometric surface map of the Sherwood Sandstone indicates that, in the vicinity of the facility, groundwater flows to the northwest towards the River Mersey. A cone of depression is indicated around the public drinking water supply well, located approximately 1.3 km south of the facility, however, the zone of influence of this well does not reach the facility. The water in the Manchester Ship Canal is expected, at least in part, to be in hydraulic continuity with the shallow groundwater in the alluvial and upper sandstone zones.

Working Solution has migrated away from the Reversion Plant and the Oxidation Plant (A Stream) across the No. 6 roadway and along the No. 4 roadway. The Working Solution is expected to have migrated through the northern storm water drainage system running from the western section outside the A.O. Plant and towards the River Mersey. Working Solution thicknesses have generally increased in all of these wells where it was detected in 1992. Working Solution is not believed to be migrating off the facility property.

A range of VOC and SVOC contaminants were detected in the groundwater samples collected from the alluvial and upper portion of the Sherwood Sandstone during the field investigation.

Surfer plot of TOC concentrations in groundwater, Summer 1995



"Norm = 50 mg/l TOC

Surfer plot of TOC concentrations in groundwater, Summer 2012

“Norm = 50 mg/l TOC

Surfer plot of TOC concentrations in groundwater, Summer 2013

"Norm = 50 mg/l TOC

Appendix C

Conceptual Site Model Development

7. CONCEPTUAL SITE MODEL

7.1 SUMMARY OF SITE AND INSTALLATION SETTING

The installation is located in area of moderate to high environmental sensitivity. The underlying geology is classed as a minor aquifer overlying a major aquifer, and the groundwater present beneath the site is likely to be in hydraulic continuity with the River Mersey.

7.2 SENSITIVE RECEPTORS

Sensitive receptors identified on this site in relation to ground and groundwater contamination are detailed in Table 8 below:

Table 8: Environmental receptors potentially at risk from the identified hazards

Category	Receptor	Location	Comments
Humans	Installation workers, users and visitors	Whole Installation	The presence of hardstanding and gravel across the site minimises the likelihood of direct impact by ground or groundwater contamination.
	Construction/maintenance Workers	Whole Installation	Construction/maintenance workers may come into contact with ground contamination during clearance of drains, excavations etc.
	Residents	100m east	Generally, contamination is contained in the site by groundwater abstraction. On site monitoring of TOC shows that, although in 1995 to 2003 there may have been some potential for contamination around the residential properties on Baronet Road, 2004 levels show that the contamination is contained around the AO plant and Caprolactone Monomer Plant. Chloride concentrations appear to have increased particularly south of the residential units, as have pH levels in this area. However, more recently in 2005 two new groundwater monitoring well have been installed near to the residential properties on Baronet Road and confirm the absence of both TOC and chloride contamination in this area.
Ecological systems	Nature reserve	240m north west	Off-site contaminant migration in groundwater unlikely due to hydraulic containment as a result of groundwater abstraction.
Adjacent land	Morley Common	North east of installation	Off-site contaminant migration in groundwater unlikely due to hydraulic containment as a result of groundwater abstraction.
Controlled waters	Manchester Ship Canal	Directly south of installation	Direct discharges from the site into the Manchester Ship Canal may occur during fire or false fire alarms resulting in the penstock valve from the AO effluent treatment plant automatically opening.

Category	Receptor	Location	Comments
	River Mersey	180m north of installation	Direct discharge from the installation to the River Mersey may occur from leaks or spills outside of the contained process areas and from dust being washed into the surface water drains from hardstanding or roofs. Groundwater is likely to be in hydraulic continuity with the River Mersey. However, the on site groundwater abstraction is likely to minimise the potential for off-site migration of contaminants in the groundwater.
	Groundwater - Minor and Major aquifer	Underlying the site	The installation is underlain by a minor aquifer, and major aquifer. Groundwater contamination has and may occur due to leaking drains or cracks and corrosion of concrete hardstanding.

7.3 SUMMARY CONCEPTUAL SITE MODEL

The findings of the desk study and site reconnaissance have been used to develop the site conceptual model, which is based on the source-pathway-receptor linkages that may be present at the site. Those that are relevant to the installation are detailed below.

Key historic, current and future potential contaminant sources relevant to the installation include:

- Current and historic Auto Oxidation processes;
- Current and historic Caprolactone Processes;
- Current and historic sodium percarbonate processes;
- Current and historic peracetic acid processes;
- Current and historic demineralisation water processes;
- General storage areas for diesel and waste chemicals; and
- Former sextate and organic peroxide manufacturing area to the west of the site.

The key pathways by which contaminants could be transported to potentially sensitive receptors are through leaks in the drainage system, cracks in the hardstanding across the site and historical discharges direct to land. This would have resulted in contaminants entering the ground and groundwater where it could migrate off site. However, off site migration is limited by groundwater abstraction at the site. Maintenance and construction workers may come into contact with contaminated soils and groundwater. A schematic conceptual model is presented as Figure A6 in Appendix A.

7.4 CONCLUSIONS AND RECOMMENDATIONS

On the basis of the desk study, detailed site inspection and review of previous site investigation data, pollution of the land is known to be present. This is due to historical contamination, however, it is considered that there is a reasonable likelihood for future contamination to occur due to the potential for failure in the existing containment measures, notably the tanks, bunds, hardstanding and drains. There are large quantities of potentially contaminating substances stored at the site and contaminated effluent and checks to ensure that the containment measures for these substances and effluent remain effective are not currently routinely or systematically carried out. However, such checks are proposed in the future.

It is therefore recommended that reference data is collected for the Site Protection and Monitoring Programme. Site investigation data has already been collected for the installation but this data is not considered to be sufficient to characterise the site and no soil analysis has been undertaken since 1994. A detailed review of the soil and groundwater analysis gathered to date should be undertaken in the first instance to determine what additional data, is required to adequately characterise the site. Any site investigation carried out should determine the potential for contaminant migration onto the installation from areas of the site not within the installation, such as the western land parcel where sextate and organic peroxides are known to have led to contamination, the machine workshops and the former underground diesel tank located adjacent to the machine workshops.

The SPMP should also include a programme of integrity testing for tanks, bunds, drains and hardstanding.

7.5 CONCEPTUAL MODEL LIMITATIONS

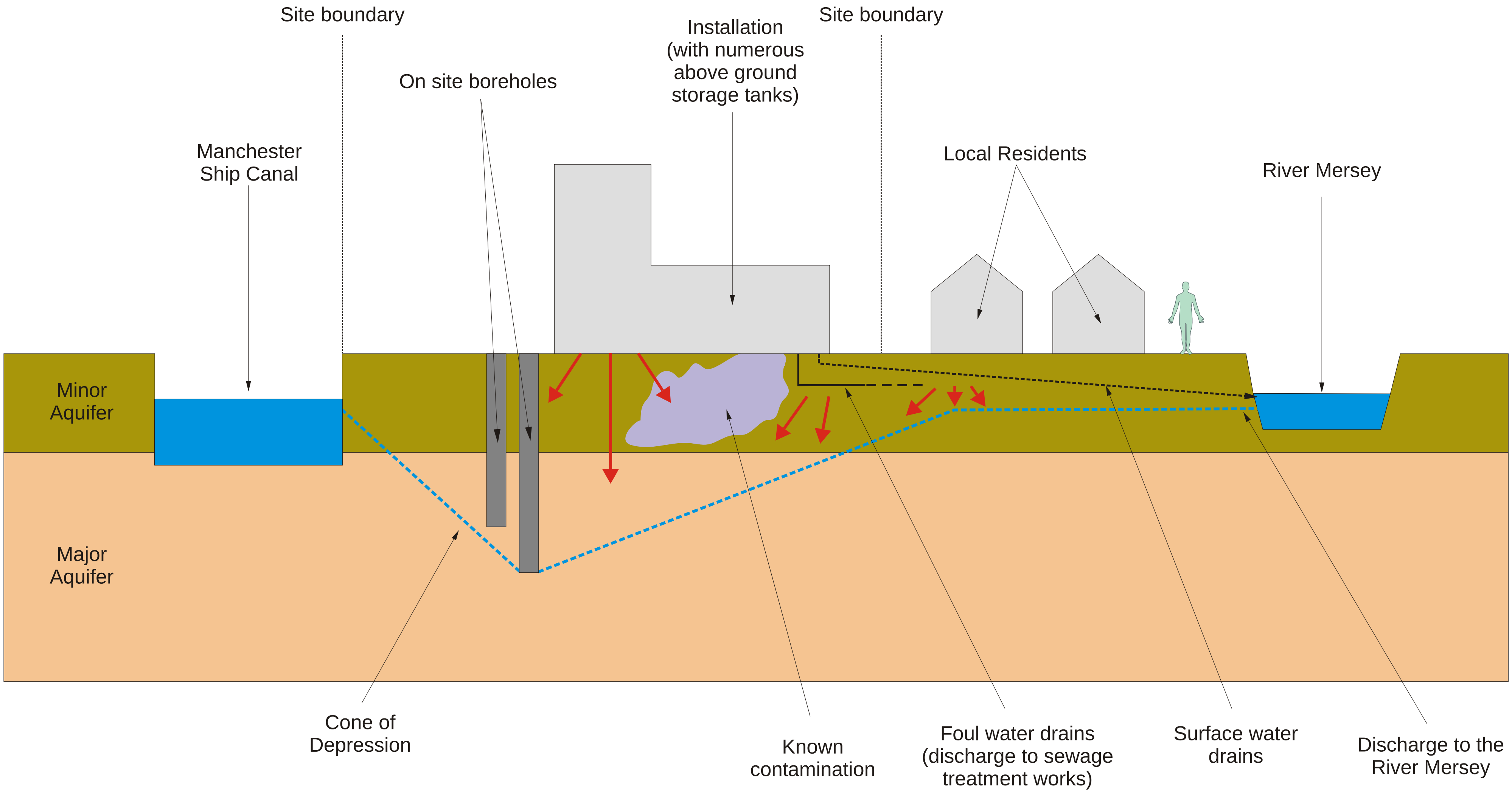
It should be noted that the installation conceptual model has the following limitations:

1. Although Waterman Environmental has endeavoured to assess all information provided to them during this investigation, the accuracy or completeness of information provided by third parties cannot be guaranteed;

2. Intrusive sampling has not been undertaken as part of this report, and as such geological and hydrogeological conditions beneath the site have been interpreted from information provided within the Solvay Interox COMAH Report and regional maps;

3. The shallow groundwater is in hydraulic continuity with the River Mersey;

4. Due to the long history of the plant, historical contamination is suspected but the exact location of contamination is not known.



Legend

➡	Contamination Migration (downward and lateral)
🟫	Marine and Estuarine Alluvium
🟧	Sherwood Sandstone

Waterman Environmental
Consulting Engineers & Scientists

Delphian House Riverside New Bailey Street Manchester M3 5AP
Telephone 0161 839 8392 Fax 0161 839 8394

Job No: EN4799

Figure No: A6

Title: Solvay Chemicals Ltd, Warrington
Schematic Conceptual Model

Date: Aug 2005

Scale: N.T.S.

Drawn By: PM

Event	Impact
Historical losses of working solution to ground (~800 m^3) in and around the AO Plant, mainly as a result of a fire in 1984	Accumulation of free phase working solution at the shallow groundwater table beneath the AO Plant area and development of an associated dissolved phase plume in shallow groundwater. Following an initial programme of free product recovery, the corrective action programme in this area was transitioned to a groundwater pump and treat system with additional infiltration of nitrate and peroxide to aid biodegradation of residual contamination. The remedial system has been operated at the AO Plant since around 1996.

Additional impacts to groundwater quality from inorganic species include:

- Elevated chloride and sodium concentrations. To varying degrees, this is a site wide issue. It is believed that upwelling of brackish water caused by prolonged deep groundwater abstraction at the site may be the source of this issue. The current groundwater abstraction regime is configured to minimise the potential for further impacts of this nature;
- Localised elevated concentrations of potassium, arsenic, phosphate, tin, sulphate and alkaline pH.

The extent and magnitude of both organic and inorganic contaminants in soil and groundwater beneath the installation were detailed in the first phase SPMP report (Waterman, 2008) which sought to establish a baseline of soil and groundwater contamination at the site.

5. CONCEPTUAL SITE MODEL

5.1. INTRODUCTION

The Conceptual Site Model (CSM) for the site is described below in terms of the geological, hydrogeological and hydrological setting. The CSM has been updated by Geosyntec, to account for additional information gathered during performance of the SPMP related works and through detailed hydrological investigations related to the assessment of the remedial pump and treat systems operating at the site.

5.2. SITE GEOLOGY

The general geological sequence encountered beneath the site is described in Table 3 below:

Table 3: Generalised Geological Section

Site Geology	Area Covered	Estimated Stratum Thickness	Typical Description
Made Ground	Whole site	0.1 – 1.8 m	Granular building rubble and reworked superficial deposits.

Site Geology	Area Covered	Estimated Stratum Thickness	Typical Description
Marine and Estuarine Alluvium	Whole site	1.0 – 7.0 m	Mostly fine to medium Sand, occasionally clayey and / or gravelly. Some laterally discontinuous and thin (max. 2m thick) clay lenses.
Weathered Bedrock	Whole site	1.0 – 5.0 m	Highly weathered bedrock surface. Red mudstone/siltstone across much of the site.
Competent Bedrock: Permo-Triassic Sandstone (Helsby Formation)	Whole site	100-150 m	Helsby Sandstone comprising red, fine to medium grained poorly cemented sandstones with minor mudstones and siltstones.

5.3. SITE HYDROLOGY AND HYDROGEOLOGY

The River Mersey is situated approximately 300 metres to the north east of the site at its closest point, and the unlined Manchester Ship Canal forms the southern site boundary. The Grange Mill stream runs south to north in a culvert beneath the far western portion of the site, and is channelled beneath the Manchester Ship Canal. There is also several surface water bodies located between the site and the River Mersey including the disused Runcorn and Latchford Canal to the north east and the series of flooded (disused) sand and gravel quarry pits to the north west of the site (Moss Wood).

Shallow groundwater beneath the site is inferred to flow broadly west to east within the marine and estuarine alluvial (sand) deposits. The probable sink for shallow groundwater flow from beneath the site is the River Mersey to the north east of the site. There are also inferred to be local components of shallow groundwater flow towards the south (Manchester Ship Canal) and towards the northwest (the former gravel pits). Figure A.5 in Appendix A illustrates the inferred shallow groundwater flow regime beneath the installation.

Deeper groundwater flow (as inferred from groundwater elevations measured in the 'D' Series wells screened from ~15 – 20 mbgl) is broadly from north east to south west beneath the site, flowing within the Permo-Triassic Sandstone Bedrock. A small component of vertical flow from shallow to deeper groundwater is suspected from the modest detections of site derived contaminants in deeper groundwater monitoring wells (>15mbgl) and from relative groundwater heads in wells of different depths at the site. Deeper groundwater from beneath the site is also inferred to provide some base flow to the MSC. Figures A.6 and A.7 in Appendix A illustrate the inferred deep groundwater flow regime.

The site abstraction regime (for cooling water) from the deeper Helsby Sandstone Formation is known to influence deeper groundwater flow beneath the site. It is expected that site abstractions provide a degree of hydraulic containment of deeper groundwater beneath the site.

5.4. CONTAMINANT SOURCES AND PATHWAYS

5.4.1. Contaminants Sources

PCS Plant operations ended in April 2014. No residual impacts to soil or groundwater are expected from the decommissioned plant and as such it is no longer considered as a potential pollutant source. It is possible that the building may be used for product storage in the future. As plans for this have yet to be clarified, it is recommended that monitoring of groundwater quality in this area be retained within the SPMP for the present time.

The main potentially polluting substance used or produced within the Peroxygen business is the AO Plant Working Solution. The process to generate working solution and the constituents used are described below:

- Ethylanthraquinone (Quinone) is dissolved in a hydrocarbon (Solvesso 150/Shellsol AB) and an acetate ("Sextate" – Methylcyclohexyl acetate). Solvesso 150 is an aromatic hydrocarbon mixture containing Tri and Tetramethylbenzenes. Shellsol AB is a mixture of alkylated aromatic hydrocarbons (C9 through to C11);
- The Quinone solution is initially hydrogenated to form Quinol. The Quinol is then oxygenated to reform Quinone in a carrier of acetate and hydrocarbon with hydrogen peroxide formed as a by-product of the oxygenation. The resulting mixture is known as a working solution (WS). It is understood that there is around 900 tonnes of WS in the AO plant at any one time;
- The hydrogen peroxide (H_2O_2) is extracted from the WS in extraction columns using demineralised water. The crude H_2O_2 is then purified by washing it with Solvesso 150 to remove any organic residues. This liquid is concentrated or distilled to produce 59% H_2O_2 (concentrate) and 70% H_2O_2 (distillate);
- During oxidation, the Quinone becomes degraded. This is reverted back by reacting the degraded species in the working solution with caustic soda and blowing air through it;
- Cooling for the AO Crude process (hydrogenation, oxidation, extraction and reversion) and indirect cooling of the distillation process uses borehole water which is cycled through cooling towers;
- Palladium is used as a catalyst in the AO plant area.

Additionally, fuel storage tanks (diesel and gas oil) are present on site and have also been considered in the selection of monitoring wells for inclusion in the SPMP design.

5.4.2. Contaminant Migration Pathways

Site environmental management processes and containment infrastructure is in place to minimise the risk of material loss to soil and groundwater. However, in the event of containment infrastructure failure, drainage failure (process, foul or storm) or in the event of accidental spillage on site (such as tanker accidents) the main pathways for pollutant migration to receptors are considered to be:

- Collection of pollutants in the site surface water drainage network which outfalls to the River Mersey;

- Infiltration of pollutants into shallow soils;
- Migration of pollutants through shallow soils to the water table via direct infiltration of via leaching from unsaturated soils;
- Migration of pollutants from shallow to deeper groundwater driven by established vertical hydraulic gradients, and;
- Off-site migration of impacted shallow and deeper groundwater.

5.5. POTENTIAL RECEPTORS

Relevant receptors include:

- Groundwater quality within the Permo-Triassic Sandstone which is classed as a principal aquifer;
- Potential drinking water abstractions from the sandstone aquifer down gradient of the site;
- The quality of site operated, industrial groundwater abstractions from the sandstone bedrock, and;
- Down gradient local surface water bodies, principally the River Mersey situated approximately 300 metres to the north east of the site at its closest point, and the unlined Manchester Ship Canal, but also including the disused Runcorn and Latchford Canal to the north east and flooded (disused) sand and gravel quarry pits to the north west of the site (Moss Wood).

6. MONITORING PROGRAMME

6.1. OBJECTIVES OF THE MONITORING PROGRAMME

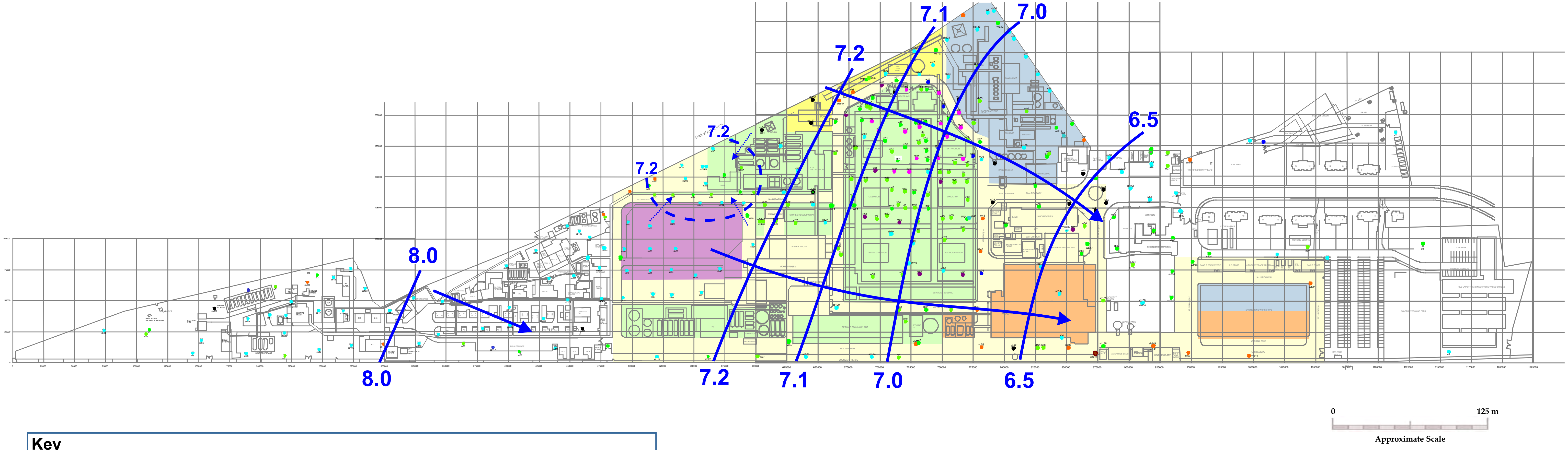
6.1.1. Objectives of the Environmental Monitoring Programme

The objectives of land and groundwater monitoring at the installation are:

- To monitor the effectiveness of infrastructure and management procedures and provide a warning of loss of containment, and;
- To assist at PPC permit surrender by:
  - Determining the movement of pollutants onto or off the site.
  - Determining the movements of pollutants within a site.
  - Providing data on long-term trends.

6.1.2. Objectives of the Infrastructure Monitoring Programme

The objective of the infrastructure monitoring programme is to ensure the continued effectiveness of the infrastructure and pollution prevention measures at the site to minimise



Key

8.0
8.0
Inferred shallow groundwater elevation contour (mAOD)

7.2
7.2
Inferred shallow groundwater elevation around W38 extraction well

Inferred direction of shallow groundwater flow

Inferred Shallow Groundwater Flow Regime (March 2014)

Baronet Works, Warrington

Revised SPMP Design

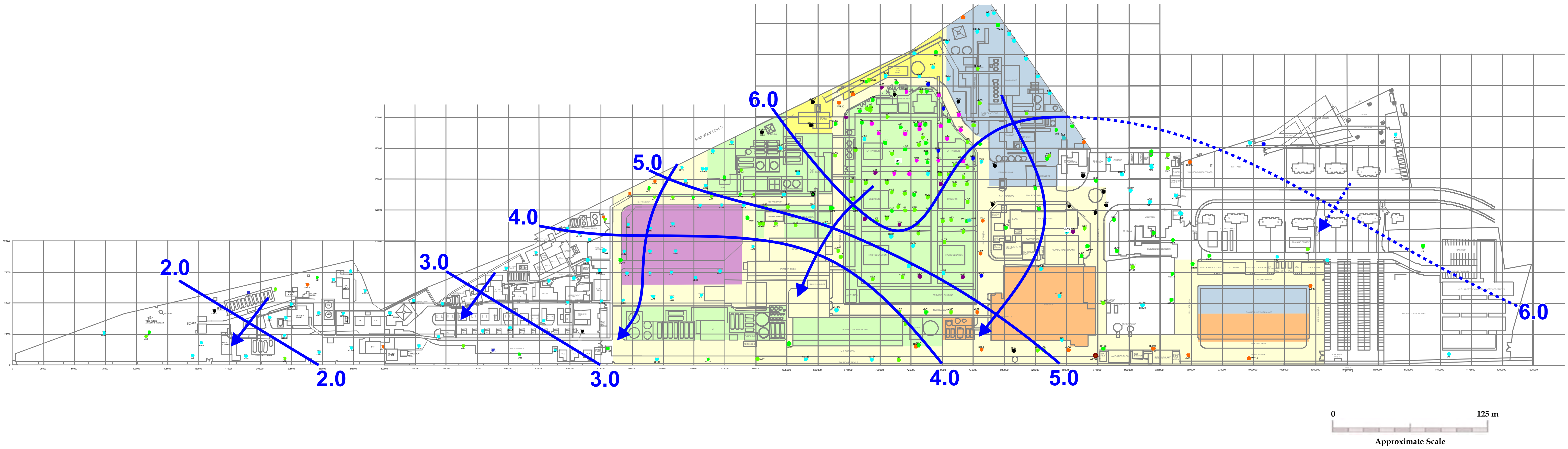
Geosyntec consultants

Solvay Interox Ltd

Figure
A.5

Delph, UK

July 2014



Key

2.0
2.0
Inferred deep groundwater elevation contour (mAOD)

Inferred direction of deep groundwater flow

Inferred Deep Groundwater Flow Regime (March 2014)

Baronet Works, Warrington

Revised SPMP Design

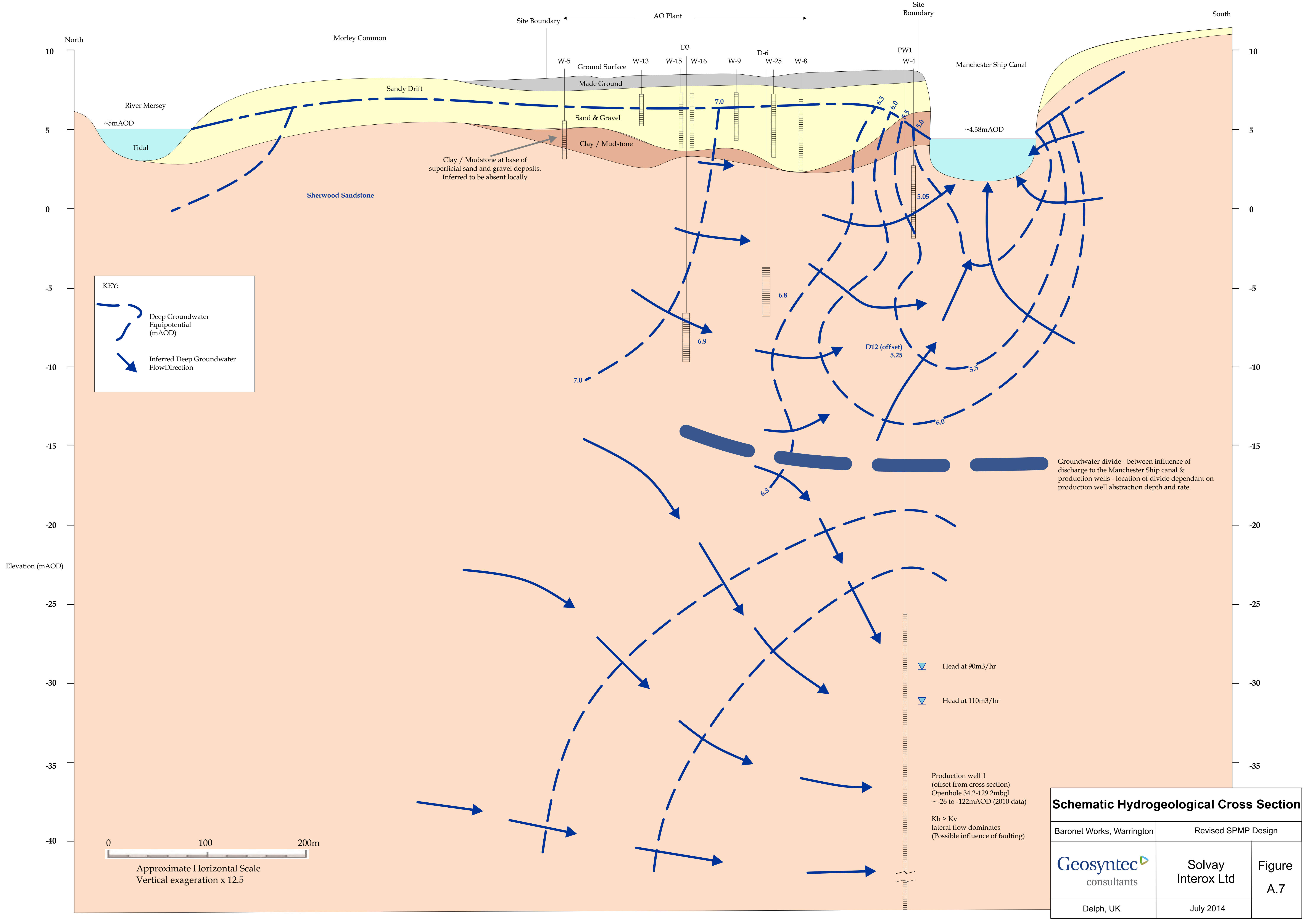
Geosyntec
consultants

Solvay
Interox Ltd

Figure
A.6

Delph, UK

July 2014



Schematic Hydrogeological Cross Section

Baronet Works, Warrington

Revised SPMP Design

Geosyntec
consultants

Solvay
Interox Ltd

Figure
A.7

Delph, UK

July 2014

Appendix D

Sitewide Baseline Data
Laboratory Analysis Certificates
(2007)

ALcontrol Laboratories

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: mkt@alcontrol.co.uk
website: www.alcontrol.co.uk

Waterman Environmental
Waterman Environmental
Southcentral
11 Peter Street
Manchester
M2 5QR
M3 5AP ATTN: Geoff Woods

CERTIFICATE OF ANALYSIS

Date: 29 January, 2008
Our Reference: 07/11339/02/03
Your Reference: EN6344
Location: SOLVAY INTEROX LTD: Peroxygen Business Ar

This report is supplemental to job number 07/11339/02/01.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials- whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Signed

Diane Whittlestone	**Jane Seymour**	**David O'Hare**	**Caroline Suttie**
Tech. Support Manager	Project Manager	Project Manager	Project Coordinator Team Leader

Valid if signed by any of the above signatories.

1291
GROUP

Compiled By

Reah Holmes

ALcontrol Geochem

TEST SCHEDULE

JOB NUMBER : 07/11339/02

CLIENT : Waterman Environmental

CONTACT : Geoff Woods

DATE OF RECEIPT : 03/07/07

LOCATION : SOLVAY INTEROX LTD.

BATCH NUMBER : 1

CLIENT REF/CODE : EN6344

ORDER NUMBER :

TURNAROUND : 0 days

Numeric values indicate additional scheduling

* indicates test subcontracted

				UKAS Accredited ?	✓	✓			✓	✓	✓	✓	✓			✓					✓
Sample Number	**Sample Identity**	**P / V**	**Depth**	**Sample Type**	**Alkalinity Total (W)**	**pH (W)**	**Sodium Dissolved (W)**	**Potassium Dissolved (W)**	**Chloride Kone (W)**	**Fluoride Kone (W)**	**Nitrate as NO3 Kone (W)**	**Sulphate Kone (W)**	**Phosphate (Ortho as PO4) Kone (W)**	**EPH CWG GC Aqueous (W)**	**GRO CWG GC (W)**	**VOC MS (W)**	**VOC TICs (W)**	**SVOC inc PAH MS (W)**	**Tin ICP-MS (W)**	**Silicon Dissolved (W)**	**Nitrite Kone (W)**
1	DW 11	1lglass	11.70	LIQUID										X				X			
2	DW 11	1lplastic	11.70	LIQUID	X	X	X	X	X	X	X	X	X						X	X	X
3	DW 11	Vial	11.70	LIQUID											X						
4	DW 11	Vial	11.70	LIQUID												X	2				
5	SB 132	1lglass	4.00	LIQUID										X				X			
6	SB 132	1lplastic	4.00	LIQUID	X	X	X	X	X	X	X	X	X						X	X	X
7	SB 132	Vial	4.00	LIQUID											X						
8	SB 132	Vial	4.00	LIQUID												X	2				
9	W 44	1lglass	4.60	LIQUID										X				X			
10	W 44	1lplastic	4.60	LIQUID	X	X	X	X	X	X	X	X	X						X	X	X
11	W 44	Vial	4.60	LIQUID											X						
12	W 44	Vial	4.60	LIQUID												X	2				
13	W 50	1lglass	5.37	LIQUID										X				X			
14	W 50	1lplastic	5.37	LIQUID	X	X	X	X	X	X	X	X	X						X	X	X
15	W 50	Vial	5.37	LIQUID											X						
16	W 50	Vial	5.37	LIQUID												X	2				
				Total Number of Tests	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**

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ALcontrol Geochem
TEST SCHEDULE

JOB NUMBER : 07/11339/02
CLIENT : Waterman Environmental
CONTACT : Geoff Woods
DATE OF RECEIPT : 07/07/07
LOCATION : SOLVAY INTEROX LTD.

BATCH NUMBER : 3
CLIENT REF/CODE : EN6344
ORDER NUMBER :
TURNAROUND : 10 days

Numeric values indicate additional scheduling

* indicates test subcontracted

Sample Number	Sample Identity	P / V	Depth	Sample Type	Alkalinity Total (W)	pH (W)	Sodium Dissolved (W)	Potassium Dissolved (W)	Chloride Kone (W)	Fluoride Kone (W)	Nitrate as NO3 Kone (W)	Sulphate Kone (W)	Phosphate (Ortho as PO4) Kone (W)	EPH CWG GC Aqueous (W)	GRO CWG GC (W)	VOC MS (W)	VOC TICs (W)	SVOC inc PAH MS (W)	Tin ICP-MS (W)	Silicon Dissolved (W)	Nitrite Kone (W)	Iron ICP-MS (W)	Metals ICP-MS 9 (W)	Mercury Dissolved (W) (CVAA)	Barium ICP-MS (W)	Beryllium (ICP-MS) (W)	Vanadium ICP-MS (W)	
		UKAS Accredited ?			✓	✓			✓	✓	✓	✓	✓			✓					✓	✓	✓	✓	✓	✓	✓	
33	D10	1lglass	14.42	LIQUID										X				X										
34	D10	1lplastic	14.42	LIQUID	X	X	X	X	X	X	X	X	X															
35	D10	Vial	14.42	LIQUID											X													
36	D10	Vial	14.42	LIQUID												X	3											
37	D12	1lglass	18.15	LIQUID										X				X										
38	D12	1lplastic	18.15	LIQUID	X	X	X		X	X	X	X	X						X	X	X	X						
39	D12	Vial	18.15	LIQUID											X													
40	D12	Vial	18.15	LIQUID												X	3											
41	M37	1lglass	3.60	LIQUID										X				X										
42	M37	1lplastic	3.60	LIQUID	X	X	X		X	X	X	X	X						X	X	X							
43	M37	Vial	3.60	LIQUID											X													
44	M37	Vial	3.60	LIQUID												X	3											
45	M58	1lglass	4.18	LIQUID										X				X										
46	M58	1lplastic	4.18	LIQUID	X	X	X		X	X	X	X	X							X		X						
47	M58	Vial	4.18	LIQUID											X													
48	M58	Vial	4.18	LIQUID												X	3											
49	SB23	1lglass	4.00	LIQUID																								
50	SB23	1lplastic	4.00	LIQUID	X	X																						
51	SB23	Vial	4.00	LIQUID																								
52	SB23	Vial	4.00	LIQUID																								
53	SB63	1lglass	3.96	LIQUID										X				X										
54	SB63	1lplastic	3.96	LIQUID	X	X	X	X	X	X	X	X	X															

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ALcontrol Geochem
TEST SCHEDULE

JOB NUMBER : 07/11339/02
CLIENT : Waterman Environmental
CONTACT : Geoff Woods
DATE OF RECEIPT : 07/07/07
LOCATION : SOLVAY INTEROX LTD.

BATCH NUMBER : 3
CLIENT REF/CODE : EN6344
ORDER NUMBER :
TURNAROUND : 10 days

Numeric values indicate additional scheduling

* indicates test subcontracted

Sample Number	Sample Identity	P / V	Depth	Sample Type	Alkalinity Total (W)	pH (W)	Sodium Dissolved (W)	Potassium Dissolved (W)	Chloride Kone (W)	Fluoride Kone (W)	Nitrate as NO3 Kone (W)	Sulphate Kone (W)	Phosphate (Ortho as PO4) Kone (W)	EPH CWG GC Aqueous (W)	GRO CWG GC (W)	VOC MS (W)	VOC TICs (W)	SVOC inc PAH MS (W)	Tin ICP-MS (W)	Silicon Dissolved (W)	Nitrite Kone (W)	Iron ICP-MS (W)	Metals ICP-MS 9 (W)	Mercury Dissolved (W) (CVAA)	Barium ICP-MS (W)	Beryllium (ICP-MS) (W)	Vanadium ICP-MS (W)
		UKAS Accredited ?			✓	✓			✓	✓	✓	✓	✓			✓					✓	✓	✓	✓	✓	✓	✓
55	SB63	Vial	3.96	LIQUID											X												
56	SB63	Vial	3.96	LIQUID												X	3										
57	SB108	1lglass	3.88	LIQUID										X				X									
58	SB108	1lplastic	3.88	LIQUID	X	X	X	X	X	X	X	X	X														
59	SB108	Vial	3.88	LIQUID											X												
60	SB108	Vial	3.88	LIQUID												X	3										
61	W41	1lglass	11.67	LIQUID										2				2						2			
62	W41	1lplastic	11.67	LIQUID	2	2	2	2	2	2	2	2	2										2		2	2	2
63	W41	Vial	11.67	LIQUID											2												
64	W41	Vial	11.67	LIQUID												2	3										
65	W48	1lglass	1.88	LIQUID										X				X									
66	W48	1lplastic	1.88	LIQUID	X	X	X	X	X	X	X	X	X														
67	W48	Vial	1.88	LIQUID											X												
68	W48	Vial	1.88	LIQUID												X	3										
69	W54	1lglass	4.50	LIQUID										X				X									
70	W54	1lplastic	4.50	LIQUID	X	X	X	X	X	X	X	X	X						X	X	X						
71	W54	Vial	4.50	LIQUID											X												
72	W54	Vial	4.50	LIQUID												X	3										
		Total Number of Tests			**10**	**10**	**9**	**6**	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**3**	**4**	**3**	**2**	**1**	**1**	**1**	**1**	**1**

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TEST SCHEDULE

JOB NUMBER : 07/11339/02
CLIENT : Waterman Environmental
CONTACT : Geoff Woods
DATE OF RECEIPT : 09/07/07
LOCATION : SOLVAY INTEROX LTD.

BATCH NUMBER : 4
CLIENT REF/CODE : EN6344
ORDER NUMBER :
TURNAROUND : 10 days

Numeric values indicate additional scheduling

* indicates test subcontracted

Sample Number	Sample Identity	P / V	Depth	Sample Type	Alkalinity Total (W)	pH (W)	Sodium Dissolved (W)	Potassium Dissolved (W)	Chloride Kone (W)	Fluoride Kone (W)	Nitrate as NO3 Kone (W)	Sulphate Kone (W)	Phosphate (Ortho as PO4) Kone (W)	EPH CWG GC Aqueous (W)	GRO CWG GC (W)	VOC MS (W)	VOC TICs (W)	SVOC inc PAH MS (W)	Tin ICP-MS (W)	Silicon Dissolved (W)	Nitrite Kone (W)							
				UKAS Accredited ?	✓	✓			✓	✓	✓	✓	✓			✓					✓							
73	DW6	1lglass	15.00	LIQUID										X				X										
74	DW6	1lplastic	15.00	LIQUID	X	X	X	X	X	X	X	X	X															
75	DW6	Vial	15.00	LIQUID											X													
76	DW6	Vial	15.00	LIQUID												X	2											
77	DW9	1lglass	16.25	LIQUID										X				X										
78	DW9	1lplastic	16.25	LIQUID	X	X	X		X	X	X	X	X						X	X	X							
79	DW9	Vial	16.25	LIQUID											X													
80	DW9	Vial	16.25	LIQUID												X	2											
81	M52	1lglass	5.42	LIQUID										X				X										
82	M52	1lplastic	5.42	LIQUID	X	X	X	X	X	X	X	X	X															
83	M52	Vial	5.42	LIQUID											X													
84	M52	Vial	5.42	LIQUID												X	2											
85	W56	1lglass	4.58	LIQUID										X				X										
86	W56	1lplastic	4.58	LIQUID	X	X	X	X	X	X	X	X	X															
87	W56	Vial	4.58	LIQUID											X													
88	W56	Vial	4.58	LIQUID												X	2											
				Total Number of Tests	**4**	**4**	**4**	**3**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**1**	**1**	**1**							

Printed : 17/12/07 09:38:51

ALcontrol Geochem
TEST SCHEDULE

JOB NUMBER : 07/11339/02
CLIENT : Waterman Environmental
CONTACT : Geoff Woods
DATE OF RECEIPT : 26/07/07
LOCATION : SOLVAY INTEROX LTD.

BATCH NUMBER : 12
CLIENT REF/CODE : EN6344
ORDER NUMBER : EN6344
TURNAROUND : 10 days

Numeric values indicate additional scheduling

* indicates test subcontracted

Sample Number	Sample Identity	P / V	Depth	Sample Type	pH (S)	Alkalinity Total (S)	Chloride Soluble Kone (S)	Nitrate as NO3 Kone (S)	Phosphate (Ortho) Kone (S)	Sodium (S)	Potassium (S)	EPH CWG GC (S)	GRO CWG GC (S)	VOC MS (S)	VOC TICs (S)	SVOC inc PAH MS (S)	Sulphate Total (S)	Fluoride Kone (S)	Silicon (S)	Iron (S)	Boron Water Soluble (S)	Metals ICP. 9 (S)	Boron Water Soluble (S)	Beryllium (S)	Barium (S)	Vanadium (S)		
		UKAS Accredited ?			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓		✓	✓		
240	WE18	VOC	2.60-2.70	SOLID	Sample on Hold																							
241	WE4	1KGTub	0.50-0.70	SOLID	Sample on Hold																							
242	WE4	JAR 250g	0.50-0.70	SOLID			X	X	X	X	X	X				X	X	X										
243	WE4	TUB 400g	0.50-0.70	SOLID	X	X																						
244	WE4	VOC	0.50-0.70	SOLID									X	X	4													
245	WE4	JAR 250g	1.50-1.70	SOLID			X	X	X	X	X	X				X	X	X										
246	WE4	TUB 400g	1.50-1.70	SOLID	X	X																						
247	WE4	VOC	1.50-1.70	SOLID									X	X	4													
248	WE7	1KGTub	0.40	SOLID	Sample on Hold																							
249	WE7	JAR 250g	0.40	SOLID			X	X	X	X	X	X				X	X	X										
250	WE7	TUB 400g	0.40	SOLID	X	X																						
251	WE7	VOC	0.40	SOLID									X	X	4													
252	WE7	JAR 250g	1.40-1.60	SOLID			X	X	X	X	X	X				X	X	X										
253	WE7	TUB 400g	1.40-1.60	SOLID	X	X																						
254	WE7	VOC	1.40-1.60	SOLID									X	X	4													
255	WE7	JAR 250g	2.50-2.60	SOLID	Sample on Hold																							
256	WE7	TUB 400g	2.50-2.60	SOLID	Sample on Hold																							
257	WE7	VOC	2.50-2.60	SOLID	Sample on Hold																							
258	WE17	JAR 250g	0.50-0.70	SOLID	Sample on Hold																							
259	WE17	TUB 400g	0.50-0.70	SOLID	Sample on Hold																							
260	WE17	VOC	0.50-0.70	SOLID	Sample on Hold																							
261	WE17	JAR 250g	1.80-2.00	SOLID	Sample on Hold																							

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ALcontrol Geochem
TEST SCHEDULE

JOB NUMBER : 07/11339/02
CLIENT : Waterman Environmental
CONTACT : Geoff Woods
DATE OF RECEIPT : 26/07/07
LOCATION : SOLVAY INTEROX LTD.

BATCH NUMBER : 12
CLIENT REF/CODE : EN6344
ORDER NUMBER : EN6344
TURNAROUND : 10 days

Numeric values indicate additional scheduling

* indicates test subcontracted

Sample Number	Sample Identity	P / V	Depth	Sample Type	pH (S)	Alkalinity Total (S)	Chloride Soluble Kone (S)	Nitrate as NO3 Kone (S)	Phosphate (Ortho) Kone (S)	Sodium (S)	Potassium (S)	EPH CWG GC (S)	GRO CWG GC (S)	VOC MS (S)	VOC TICs (S)	SVOC inc PAH MS (S)	Sulphate Total (S)	Fluoride Kone (S)	Silicon (S)	Iron (S)	Boron Water Soluble (S)	Metals ICP. 9 (S)	Boron Water Soluble (S)	Beryllium (S)	Barium (S)	Vanadium (S)		
				UKAS Accredited ?	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓		✓	✓		
262	WE17	TUB 400g	1.80-2.00	SOLID	Sample on Hold																							
263	WE17	VOC	1.80-2.00	SOLID	Sample on Hold																							
264	WE17	JAR 250g	2.50-2.60	SOLID			X		X	X	X					X	X		X	X	X							
265	WE17	TUB 400g	2.50-2.60	SOLID	X	X																						
266	WE17	VOC	2.50-2.60	SOLID										X	4													
267	WE18	JAR 250g	0.60-0.70	SOLID			X		X	X	X					X	X		X	X	X							
268	WE18	TUB 400g	0.60-0.70	SOLID	X	X																						
269	WE18	VOC	0.60-0.70	SOLID										X	4													
270	WE18	JAR 250g	1.50-1.60	SOLID	Sample on Hold																							
271	WE18	TUB 400g	1.50-1.60	SOLID	Sample on Hold																							
272	WE18	VOC	1.50-1.60	SOLID	Sample on Hold																							
273	WE18	JAR 250g	2.60-2.70	SOLID	Sample on Hold																							
274	WE18	TUB 400g	2.60-2.70	SOLID	Sample on Hold																							
275	WE18	JAR 250g	3.50-3.70	SOLID	Sample on Hold																							
276	WE18	TUB 400g	3.50-3.70	SOLID	Sample on Hold																							
277	WE18	VOC	3.50-3.70	SOLID	Sample on Hold																							
278	WE20	JAR 250g	0.40-0.50	SOLID		X	X	X	X	2	2	2				2	X	X				3	3	3	3	3		
279	WE20	TUB 400g	0.40-0.50	SOLID	X																							
280	WE20	VOC	0.40-0.50	SOLID									2	2	4													
				Total Number of Tests	**7**	**7**	**7**	**5**	**7**	**7**	**7**	**5**	**5**	**7**	**7**	**7**	**7**	**5**	**2**	**2**	**2**	**1**	**1**	**1**	**1**	**1**		

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ALcontrol Geochem
TEST SCHEDULE

JOB NUMBER : 07/11339/02
CLIENT : Waterman Environmental
CONTACT : Geoff Woods
DATE OF RECEIPT : 28/07/07
LOCATION : SOLVAY INTEROX LTD.

BATCH NUMBER : 13
CLIENT REF/CODE : EN6344
ORDER NUMBER : EN6344
TURNAROUND : 10 days

Numeric values indicate additional scheduling

* indicates test subcontracted

Sample Number	Sample Identity	P / V	Depth	Sample Type	pH (S)	Alkalinity Total (S)	Chloride Soluble Kone (S)	Nitrate as NO3 Kone (S)	Phosphate (Ortho) Kone (S)	Sodium (S)	Potassium (S)	EPH CWG GC (S)	GRO CWG GC (S)	VOC MS (S)	VOC TICs (S)	SVOC inc PAH MS (S)	Sulphate Total (S)	Fluoride Kone (S)	Metals ICP. 9 (S)	Boron Water Soluble (S)	Beryllium (S)	Barium (S)	Vanadium (S)	Miscellaneous Analysis (S)*				
				UKAS Accredited ?	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓		✓	✓					
281	WE1	JAR 250g	0.50-0.60	SOLID			X	X	X	X	X	X				X	X	X										
282	WE1	TUB 400g	0.50-0.60	SOLID	X	X																		2				
283	WE1	VOC	0.50-0.60	SOLID									X	X	3													
284	WE1	JAR 250g	1.20-1.40	SOLID	Sample on Hold																							
285	WE1	TUB 400g	1.20-1.40	SOLID	Sample on Hold																							
286	WE1	VOC	1.20-1.40	SOLID	Sample on Hold																							
287	WE1	JAR 250g	2.50-2.70	SOLID			X	X	X	X	X	X				X	X	X										
288	WE1	TUB 400g	2.50-2.70	SOLID	X	X																		2				
289	WE1	VOC	2.50-2.70	SOLID									X	X	3													
290	WE2	JAR 250g	1.50-1.60	SOLID			X	X	X	X	X	X				X	X	X										
291	WE2	TUB 400g	1.50-1.60	SOLID	X	X																		2				
292	WE2	VOC	1.50-1.60	SOLID									X	X	3													
293	WE3	JAR 250g	1.20-1.40	SOLID	Sample on Hold																							
294	WE3	TUB 400g	1.20-1.40	SOLID	Sample on Hold																							
295	WE3	VOC	1.20-1.40	SOLID	Sample on Hold																							
296	WE3	JAR 250g	2.70-3.00	SOLID			X	X	X	X	X	X				X	X	X										
297	WE3	TUB 400g	2.70-3.00	SOLID	X	X																		2				
298	WE3	VOC	2.70-3.00	SOLID									X	X	3													
299	WE19	JAR 250g	0.20-0.30	SOLID	Sample on Hold																							
300	WE19	TUB 400g	0.20-0.30	SOLID	Sample on Hold																							
301	WE19	VOC	0.20-0.30	SOLID	Sample on Hold																							
302	WE19	JAR 250g	1.50-1.60	SOLID	Sample on Hold																							

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ALcontrol Geochem
TEST SCHEDULE

JOB NUMBER : 07/11339/02
CLIENT : Waterman Environmental
CONTACT : Geoff Woods
DATE OF RECEIPT : 28/07/07
LOCATION : SOLVAY INTEROX LTD.

BATCH NUMBER : 13
CLIENT REF/CODE : EN6344
ORDER NUMBER : EN6344
TURNAROUND : 10 days

Numeric values indicate additional scheduling

* indicates test subcontracted

Sample Number	Sample Identity	P / V	Depth	Sample Type	pH (S)	Alkalinity Total (S)	Chloride Soluble Kone (S)	Nitrate as NO3 Kone (S)	Phosphate (Ortho) Kone (S)	Sodium (S)	Potassium (S)	EPH CWG GC (S)	GRO CWG GC (S)	VOC MS (S)	VOC TICs (S)	SVOC inc PAH MS (S)	Sulphate Total (S)	Fluoride Kone (S)	Metals ICP. 9 (S)	Boron Water Soluble (S)	Beryllium (S)	Barium (S)	Vanadium (S)	Miscellaneous Analysis (S)*				
				UKAS Accredited ?	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓		✓	✓					
303	WE19	TUB 400g	1.50-1.60	SOLID	Sample on Hold																							
304	WE19	VOC	1.50-1.60	SOLID	Sample on Hold																							
305	WE19	JAR 250g	2.60-2.95	SOLID			X	X	X	X	X	X				X	X	X	X	X	X	X	X					
306	WE19	TUB 400g	2.60-2.95	SOLID	X	X																						
307	WE19	VOC	2.60-2.95	SOLID									X	X	3													
308	WE1	TUB (D)	0.50-0.60	SOLID	Sample on Hold																							
				Total Number of Tests	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**1**	**1**	**1**	**1**	**1**	**4**				

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Alcontrol Geochem

VOC Tentatively Identified Compounds

Job Number	-	200711339
Client	-	Waterman Environmental
Sample Identity	-	280 - WE20 0.4-0.5m
Sample Type [Units]	-	Solid µg/kg
Date Acquired	-	12/08/07
Date Reported	-	15/10/07

Tentative Compound Identification	RetentionTime min	Concentration Solid µg/kg
Acetic Acid	-	ND
Cyclohexane	-	ND
Caprolactone	-	ND
Dimethylbenzene	-	ND
diethylene glycol	-	ND
neopentyl glycol	-	ND
organo tin stabiliser	-	ND
2- methyl cyclohexyl acetate	-	ND
2- ethylanthraquinone	-	ND
cyclohexanone	-	ND

*includes all identified peaks

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

Alcontrol Geochem

VOC Tentatively Identified Compounds

Job Number	-	200711339
Client	-	Waterman Environmental
Sample Identity	-	269 - WE18 0.6-0.7m
Sample Type [Units]	-	Solid µg/kg
Date Acquired	-	12/08/07
Date Reported	-	15/10/07

Tentative Compound Identification	**RetentionTime min**	**Concentration Solid µg/kg**
Acetic Acid	-	ND
Cyclohexane	-	ND
Caprolactone	-	ND
Dimethylbenzene	-	ND
diethylene glycol	-	ND
neopentyl glycol	-	ND
organo tin stabiliser	-	ND
2- methyl cyclohexyl acetate	-	ND
2- ethylanthraquinone	-	ND
cyclohexanone	-	ND

*includes all identified peaks

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

Alcontrol Geochem

VOC Tentatively Identified Compounds

Job Number	-	200711339
Client	-	Waterman Environmental
Sample Identity	-	004 - DW11 11.70m
Sample Type [Units]	-	Liquid µg/l
Date Acquired	-	16/07/07
Date Reported	-	15/10/07

Tentative Compound Identification	**RetentionTime min**	**Concentration Liquid µg/l**
Acetic Acid	-	ND
Cyclohexane	-	ND
Caprolactone	-	ND
Dimethylbenzene	-	ND
diethylene glycol	-	ND
neopentyl glycol	-	ND
organo tin stabiliser	-	ND
2- methyl cyclohexyl acetate	-	ND
2- ethylanthraquinone	-	ND
cyclohexanone	-	ND

*includes all identified peaks

** Some isomers included within hydrocarbon band

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

Alcontrol Geochem

VOC Tentatively Identified Compounds

Job Number	-	200711339
Client	-	Waterman Environmental
Sample Identity	-	008 - SB132 4.00m
Sample Type [Units]	-	Liquid µg/l
Date Acquired	-	16/07/07
Date Reported	-	15/10/07

Tentative Compound Identification	RetentionTime min	Concentration Liquid µg/l
Acetic Acid	-	ND
Cyclohexane	-	ND
Caprolactone	-	ND
Dimethylbenzene**	4.41-5.66	-
C10 - C13 Hydrocarbon fraction	4.41-5.66	6005
diethylene glycol	-	ND
neopentyl glycol	-	ND
organo tin stabiliser	-	ND
2- methyl cyclohexyl acetate	-	ND
2- ethylanthraquinone	-	ND
cyclohexanone	-	ND

*includes all identified peaks

** Some isomers included within hydrocarbon band

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

Alcontrol Geochem

VOC Tentatively Identified Compounds

Job Number	-	200711339
Client	-	Waterman Environmental
Sample Identity	-	012 - W44 4.60m
Sample Type [Units]	-	Liquid µg/l
Date Acquired	-	16/07/07
Date Reported	-	15/10/07

Tentative Compound Identification	RetentionTime min	Concentration Liquid µg/l
Acetic Acid	-	ND
Cyclohexane	-	ND
Caprolactone	-	ND
Dimethylbenzene	-	ND
diethylene glycol	-	ND
neopentyl glycol	-	ND
organo tin stabiliser	-	ND
2- methyl cyclohexyl acetate	-	ND
2- ethylanthraquinone	-	ND
cyclohexanone	-	ND

*includes all identified peaks

** Some isomers included within hydrocarbon band

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

Alcontrol Geochem

VOC Tentatively Identified Compounds

Job Number	-	200711339
Client	-	Waterman Environmental
Sample Identity	-	036 - D10 14.42m
Sample Type [Units]	-	Liquid µg/l
Date Acquired	-	20/07/07
Date Reported	-	15/10/07

Tentative Compound Identification	RetentionTime min	Concentration Liquid µg/l
Acetic Acid	-	ND
Cyclohexane	-	ND
Caprolactone	-	ND
Dimethylbenzene	-	ND
diethylene glycol	-	ND
neopentyl glycol	-	ND
organo tin stabiliser	-	ND
2- methyl cyclohexyl acetate	-	ND
2- ethylanthraquinone	-	ND
cyclohexanone	-	ND

*includes all identified peaks

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

Alcontrol Geochem

VOC Tentatively Identified Compounds

Job Number	-	200711339
Client	-	Waterman Environmental
Sample Identity	-	040 - D12 18.15m
Sample Type [Units]	-	Liquid µg/l
Date Acquired	-	20/07/07
Date Reported	-	15/10/07

Tentative Compound Identification	RetentionTime min	Concentration Liquid µg/l
Acetic Acid	-	ND
Cyclohexane	-	ND
Caprolactone	-	ND
Dimethylbenzene	-	ND
diethylene glycol	-	ND
neopentyl glycol	-	ND
organo tin stabiliser	-	ND
2- methyl cyclohexyl acetate	-	ND
2- ethylanthraquinone	-	ND
cyclohexanone	-	ND

*includes all identified peaks

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

Alcontrol Geochem

VOC Tentatively Identified Compounds

Job Number	-	200711339
Client	-	Waterman Environmental
Sample Identity	-	044 - M37 3.60m
Sample Type [Units]	-	Liquid µg/l
Date Acquired	-	20/07/07
Date Reported	-	15/10/07

Tentative Compound Identification	RetentionTime min	Concentration Liquid µg/l
Acetic Acid	-	ND
Cyclohexane	-	ND
Caprolactone	-	ND
Dimethylbenzene**	3.73-5.01	-
C9 - C13 Hydrocarbon fraction*	3.73-5.01	29295
diethylene glycol	-	ND
neopentyl glycol	-	ND
organo tin stabiliser	-	ND
2- methyl cyclohexyl acetate	-	ND
2- ethylanthraquinone	-	ND
cyclohexanone	-	ND

*includes all identified peaks

** Isomers included within the hydrocarbon fraction band

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

Alcontrol Geochem

VOC Tentatively Identified Compounds

Job Number	-	200711339
Client	-	Waterman Environmental
Sample Identity	-	048 - M58 4.18m
Sample Type [Units]	-	Liquid µg/l
Date Acquired	-	20/07/07
Date Reported	-	15/10/07

Tentative Compound Identification	RetentionTime min	Concentration Liquid µg/l
Acetic Acid	-	ND
Cyclohexane	-	ND
Caprolactone	-	ND
Dimethylbenzene	-	ND
diethylene glycol	-	ND
neopentyl glycol	-	ND
organo tin stabiliser	-	ND
2- methyl cyclohexyl acetate	-	ND
2- ethylanthraquinone	-	ND
cyclohexanone	-	ND

*includes all identified peaks

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

Alcontrol Geochem

VOC Tentatively Identified Compounds

Job Number	-	200711339
Client	-	Waterman Environmental
Sample Identity	-	056 - SB63 3.96m
Sample Type [Units]	-	Liquid µg/l
Date Acquired	-	20/07/07
Date Reported	-	15/10/07

Tentative Compound Identification	RetentionTime min	Concentration Liquid µg/l
Acetic Acid	-	ND
Cyclohexane	-	ND
Caprolactone	-	ND
Dimethylbenzene**	3.73-5.01	-
C9 - C13 Hydrocarbon fraction*	3.73-5.36	22735
diethylene glycol	-	ND
neopentyl glycol	-	ND
organo tin stabiliser	-	ND
2- methyl cyclohexyl acetate	-	ND
2- ethylanthraquinone	-	ND
cyclohexanone	-	ND

*includes all identified peaks

** Isomers included within the hydrocarbon fraction band

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

Alcontrol Geochem

VOC Tentatively Identified Compounds

Job Number	-	200711339
Client	-	Waterman Environmental
Sample Identity	-	064 - W41 11.67m
Sample Type [Units]	-	Liquid µg/l
Date Acquired	-	20/07/07
Date Reported	-	15/10/07

Tentative Compound Identification	RetentionTime min	Concentration Liquid µg/l
Acetic Acid	-	ND
Cyclohexane	-	ND
Caprolactone	-	ND
Dimethylbenzene	-	ND
diethylene glycol	-	ND
neopentyl glycol	-	ND
organo tin stabiliser	-	ND
2- methyl cyclohexyl acetate	-	ND
2- ethylanthraquinone	-	ND
cyclohexanone	-	ND

*includes all identified peaks

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

Alcontrol Geochem

VOC Tentatively Identified Compounds

Job Number	-	200711339
Client	-	Waterman Environmental
Sample Identity	-	068 - W48 1.88m
Sample Type [Units]	-	Liquid µg/l
Date Acquired	-	20/07/07
Date Reported	-	15/10/07

Tentative Compound Identification	RetentionTime min	Concentration Liquid µg/l
Acetic Acid	-	ND
Cyclohexane	-	ND
Caprolactone	-	ND
Dimethylbenzene	-	ND
diethylene glycol	-	ND
neopentyl glycol	-	ND
organo tin stabiliser	-	ND
2- methyl cyclohexyl acetate	-	ND
2- ethylanthraquinone	-	ND
cyclohexanone	-	ND

*includes all identified peaks

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

Alcontrol Geochem

VOC Tentatively Identified Compounds

Job Number - 200711339
Client - Waterman Environmental
Sample Identity - 076 - DW6 15.00m
Sample Type [Units] - Liquid µg/l
Date Acquired - 22/07/07
Date Reported - 15/10/07

Tentative Compound Identification	RetentionTime min	Concentration Liquid µg/l
Acetic Acid	-	ND
Cyclohexane	-	ND
Caprolactone	-	ND
Dimethylbenzene	-	ND
diethylene glycol	-	ND
neopentyl glycol	-	ND
organo tin stabiliser	-	ND
2- methyl cyclohexyl acetate	-	ND
2- ethylanthraquinone	-	ND
cyclohexanone	-	ND

*includes all identified peaks

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

Alcontrol Geochem

VOC Tentatively Identified Compounds

Job Number	-	200711339
Client	-	Waterman Environmental
Sample Identity	-	080 - DW9 16.25m
Sample Type [Units]	-	Liquid µg/l
Date Acquired	-	22/07/07
Date Reported	-	15/10/07

Tentative Compound Identification	RetentionTime min	Concentration Liquid µg/l
Acetic Acid	-	ND
Cyclohexane	-	ND
Caprolactone	-	ND
Dimethylbenzene	-	ND
diethylene glycol	-	ND
neopentyl glycol	-	ND
organo tin stabiliser	-	ND
2- methyl cyclohexyl acetate	-	ND
2- ethylanthraquinone	-	ND
cyclohexanone	-	ND

*includes all identified peaks

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

Alcontrol Geochem

VOC Tentatively Identified Compounds

Job Number	-	200711339
Client	-	Waterman Environmental
Sample Identity	-	084 - M52 5.42m
Sample Type [Units]	-	Liquid µg/l
Date Acquired	-	22/07/07
Date Reported	-	15/10/07

Tentative Compound Identification	RetentionTime min	Concentration Liquid µg/l
Acetic Acid	-	ND
Cyclohexane	-	ND
Caprolactone	-	ND
Dimethylbenzene	-	ND
2- Ethyl-1,3- dimethyl-benzene	4.45	495
C9 - C13 Hydrocarbon fraction*	3.77-5.08	6400
diethylene glycol	-	ND
neopentyl glycol	-	ND
organo tin stabiliser	-	ND
2- methyl cyclohexyl acetate	-	ND
2- ethylanthraquinone	-	ND
cyclohexanone	-	ND

*includes all identified peaks

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

Alcontrol Geochem

VOC Tentatively Identified Compounds

Job Number	-	200711339
Client	-	Waterman Environmental
Sample Identity	-	088 - W56 4.58m
Sample Type [Units]	-	Liquid µg/l
Date Acquired	-	22/07/07
Date Reported	-	15/10/07

Tentative Compound Identification	RetentionTime min	Concentration Liquid µg/l
Acetic Acid	-	ND
Cyclohexane	-	ND
Caprolactone	-	ND
Dimethylbenzene	-	ND
2- Ethyl-1,3- dimethyl-benzene	4.45	75
C9 - C13 Hydrocarbon fraction*	3.78-5.06	1245
diethylene glycol	-	ND
neopentyl glycol	-	ND
organo tin stabiliser	-	ND
2- methyl cyclohexyl acetate	-	ND
2- ethylanthraquinone	-	ND
cyclohexanone	-	ND

*includes all identified peaks

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

Alcontrol Geochem

VOC Tentatively Identified Compounds

Job Number - 200711339
Client - Waterman Environmental
Sample Identity - 244 - WE4 0.5-0.7m
Sample Type [Units] - Solid µg/kg
Date Acquired - 12/08/07
Date Reported - 15/10/07

Tentative Compound Identification	**RetentionTime min**	**Concentration Solid µg/kg**
Acetic Acid	-	ND
Cyclohexane	-	ND
Caprolactone	-	ND
Dimethylbenzene	-	ND
diethylene glycol	-	ND
neopentyl glycol	-	ND
organo tin stabiliser	-	ND
2- methyl cyclohexyl acetate	-	ND
2- ethylanthraquinone	-	ND
cyclohexanone	-	ND

*includes all identified peaks

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

Alcontrol Geochem

VOC Tentatively Identified Compounds

Job Number - 200711339
Client - Waterman Environmental
Sample Identity - 247 - WE4 1.5-1.7m
Sample Type [Units] - Solid µg/kg
Date Acquired - 12/08/07
Date Reported - 15/10/07

Tentative Compound Identification	RetentionTime min	Concentration Solid µg/kg
Acetic Acid	-	ND
Cyclohexane	-	ND
Caprolactone	-	ND
Dimethylbenzene	-	ND
2,2,4,6,6- Pentamethyl-heptane	3.92	17765
C9 - C11 Hydrocarbon fraction	3.99-4.65	4065
diethylene glycol	-	ND
neopentyl glycol	-	ND
organo tin stabiliser	-	ND
2- methyl cyclohexyl acetate	-	ND
2- ethylanthraquinone	-	ND
cyclohexanone	-	ND

*includes all identified peaks

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

Alcontrol Geochem

VOC Tentatively Identified Compounds

Job Number	-	200711339
Client	-	Waterman Environmental
Sample Identity	-	251 - WE7 0.4m
Sample Type [Units]	-	Solid µg/kg
Date Acquired	-	12/08/07
Date Reported	-	15/10/07

Tentative Compound Identification	RetentionTime min	Concentration Solid µg/kg
Acetic Acid	-	ND
Cyclohexane	-	ND
Caprolactone	-	ND
Dimethylbenzene	-	ND
diethylene glycol	-	ND
neopentyl glycol	-	ND
organo tin stabiliser	-	ND
2- methyl cyclohexyl acetate	-	ND
2- ethylanthraquinone	-	ND
cyclohexanone	-	ND

*includes all identified peaks

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

Alcontrol Geochem

VOC Tentatively Identified Compounds

Job Number	-	200711339
Client	-	Waterman Environmental
Sample Identity	-	254 - WE7 1.4-1.6m
Sample Type [Units]	-	Solid µg/kg
Date Acquired	-	12/08/07
Date Reported	-	15/10/07

Tentative Compound Identification	RetentionTime min	Concentration Solid µg/kg
Acetic Acid	-	ND
Cyclohexane	-	ND
Caprolactone	-	ND
Dimethylbenzene	-	ND
diethylene glycol	-	ND
neopentyl glycol	-	ND
organo tin stabiliser	-	ND
2- methyl cyclohexyl acetate	-	ND
2- ethylanthraquinone	-	ND
cyclohexanone	-	ND

*includes all identified peaks

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

Alcontrol Geochem

VOC Tentatively Identified Compounds

Job Number	-	200711339
Client	-	Waterman Environmental
Sample Identity	-	266 - WE17 2.5-2.6m
Sample Type [Units]	-	Solid µg/kg
Date Acquired	-	12/08/07
Date Reported	-	15/10/07

Tentative Compound Identification	RetentionTime min	Concentration Solid µg/kg
Acetic Acid	-	ND
Cyclohexane	-	ND
Caprolactone	-	ND
Dimethylbenzene	-	ND
diethylene glycol	-	ND
neopentyl glycol	-	ND
organo tin stabiliser	-	ND
2- methyl cyclohexyl acetate	-	ND
2- ethylanthraquinone	-	ND
cyclohexanone	-	ND

*includes all identified peaks

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

Alcontrol Geochem

VOC Tentatively Identified Compounds

Job Number	-	200711339
Client	-	Waterman Environmental
Sample Identity	-	283 - WE1 0.50-0.60m
Sample Type [Units]	-	Solid µg/kg
Date Acquired	-	12/08/07
Date Reported	-	15/10/07

Tentative Compound Identification	RetentionTime min	Concentration Solid µg/kg
Acetic Acid	-	ND
Cyclohexane	-	ND
Caprolactone	-	ND
Dimethylbenzene	-	ND
diethylene glycol	-	ND
neopentyl glycol	-	ND
organo tin stabiliser	-	ND
2- methyl cyclohexyl acetate	-	ND
2- ethylanthraquinone	-	ND
cyclohexanone	-	ND

*includes all identified peaks

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

Alcontrol Geochem

VOC Tentatively Identified Compounds

Job Number	-	200711339
Client	-	Waterman Environmental
Sample Identity	-	289 - WE1 2.50-2.70m
Sample Type [Units]	-	Solid µg/kg
Date Acquired	-	12/08/07
Date Reported	-	15/10/07

Tentative Compound Identification	RetentionTime min	Concentration Solid µg/kg
Acetic Acid	-	ND
Cyclohexane	-	ND
Caprolactone	-	ND
Dimethylbenzene	-	ND
diethylene glycol	-	ND
neopentyl glycol	-	ND
organo tin stabiliser	-	ND
2- methyl cyclohexyl acetate	-	ND
2- ethylanthraquinone	-	ND
cyclohexanone	-	ND

*includes all identified peaks

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

Alcontrol Geochem

VOC Tentatively Identified Compounds

Job Number	-	200711339
Client	-	Waterman Environmental
Sample Identity	-	292 - WE2 1.50-1.60m
Sample Type [Units]	-	Solid µg/kg
Date Acquired	-	12/08/07
Date Reported	-	15/10/07

Tentative Compound Identification	RetentionTime min	Concentration Solid µg/kg
Acetic Acid	-	ND
Cyclohexane	-	ND
Caprolactone	-	ND
Dimethylbenzene**	4.00-5.36	-
C9 - C13 Hydrocarbon fraction*	4.00-5.36	2871710
diethylene glycol	-	ND
neopentyl glycol	-	ND
organo tin stabiliser	-	ND
2- methyl cyclohexyl acetate	-	ND
2- ethylanthraquinone	-	ND
cyclohexanone	-	ND

*includes all identified peaks

** Some isomers included within the hydrocarbon band

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

Alcontrol Geochem

VOC Tentatively Identified Compounds

Job Number	-	200711339
Client	-	Waterman Environmental
Sample Identity	-	298 - WE3 2.70-3.00m
Sample Type [Units]	-	Solid µg/kg
Date Acquired	-	12/08/07
Date Reported	-	15/10/07

Tentative Compound Identification	RetentionTime min	Concentration Solid µg/kg
Acetic Acid	-	ND
Cyclohexane	-	ND
Caprolactone	-	ND
Dimethylbenzene**	4.12-5.36	-
C10 - C13 Hydrocarbon fraction*	4.12-5.36	4535
diethylene glycol	-	ND
neopentyl glycol	-	ND
organo tin stabiliser	-	ND
2- methyl cyclohexyl acetate	-	ND
2- ethylanthraquinone	-	ND
cyclohexanone	-	ND

*includes all identified peaks

** Some isomers included within the hydrocarbon band

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

Alcontrol Geochem

VOC Tentatively Identified Compounds

Job Number	-	200711339
Client	-	Waterman Environmental
Sample Identity	-	307 - WE19 2.60-2.95m
Sample Type [Units]	-	Solid µg/kg
Date Acquired	-	12/08/07
Date Reported	-	15/10/07

Tentative Compound Identification	RetentionTime min	Concentration Solid µg/kg
Acetic Acid	-	ND
Cyclohexane	-	ND
Caprolactone	-	ND
Dimethylbenzene	-	ND
diethylene glycol	-	ND
neopentyl glycol	-	ND
organo tin stabiliser	-	ND
2- methyl cyclohexyl acetate	-	ND
2- ethylanthraquinone	-	ND
cyclohexanone	-	ND

*includes all identified peaks

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

ALcontrol Laboratories Analytical Services
Sample Descriptions

Job Number: 07/11339/02/03
Client: Waterman Environmental
Client Ref : EN6344

Grain sizes

<0.063mm	Very Fine
0.1mm - 0.063mm	Fine
0.1mm - 2mm	Medium
2mm - 10mm	Coarse
>10mm	Very Coarse

Sample Identity	Depth (m)	Colour	Grain Size	Description	Batch
WE1	0.50-0.60	Dark Brown	0.1mm - 0.063mm	Silt with some Stones	13
WE1	2.50-2.70	Light Brown	0.1mm - 2mm	Sand with some Stones	13
WE2	1.50-1.60	Dark Brown	0.1mm - 2mm	Sand	13
WE3	2.70-3.00	Light Brown	0.1mm - 2mm	Sand with some Stones	13
WE4	0.5-0.7	Brown	0.1mm - 2mm	Sand with some Stones	12
WE4	1.5-1.7	Dark Grey	0.1mm - 2mm	Sand with some Stones	12
WE7	0.40	Brown	0.1mm - 2mm	Sandy Clay with some Stones	12
WE7	1.4-1.60	Light Brown	0.1mm - 2mm	Sand	12
WE17	2.5-2.60	Brown	0.1mm - 2mm	Sand with some Stones	12
WE18	0.60-0.70	Light Brown	0.1mm - 2mm	Sand with some Stones	12
WE19	2.60-2.95	Brown	0.1mm - 2mm	Sand with some Stones	13
WE20	0.4-0.5	Dark Brown	0.1mm - 2mm	Sandy Clay with some Stones	12

* These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials-whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.
Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.
¹ Sample Description supplied by client

Validated ☑

Preliminary ☐

ALcontrol Laboratories Analytical Services
Table Of Results

\# ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/11339/02/03 **Matrix:** SOLID
Client: Waterman Environmental **Location:** SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344 **Client Contact:** Geoff Woods

Sample Identity	WE1	WE1	WE2	WE3	WE4	WE4	WE7	WE7	WE17	**Method Code**	**LoD/Units**
Depth (m)	0.50-0.60	2.50-2.70	1.50-1.60	2.70-3.00	0.5-0.7	1.5-1.7	0.40	1.4-1.60	2.5-2.60		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	26.07.07	26.07.07	26.07.07	26.07.07	25.07.07	25.07.07	24.07.07	24.07.07	24.07.07		
Sample Received Date	28.07.07	28.07.07	28.07.07	28.07.07	26.07.07	26.07.07	26.07.07	26.07.07	26.07.07		
Batch	13	13	13	13	12	12	12	12	12		
Sample Number(s)	**281-283,308**	**287-289**	**290-292**	**296-298**	**241-244**	**245-247**	**248-251**	**252-254**	**264-266**		
Total Sulphate	580	<100	<100	<100	1400	170	350	<100	190	TM129$^{\#}_{M}$	<100 mg/kg
Boron Water Soluble	-	-	-	-	-	-	-	-	<3.5	TM129$^{\#}_{M}$	<3.5 mg/kg
Arsenic	-	-	-	-	-	-	-	-	-	TM129$^{\#}_{M}$	<3.0 mg/kg
Barium	-	-	-	-	-	-	-	-	-	TM129$^{\#}_{M}$	<6.0 mg/kg
Beryllium	-	-	-	-	-	-	-	-	-	TM129	<0.4 mg/kg
Cadmium	-	-	-	-	-	-	-	-	-	TM129	<0.3 mg/kg
Chromium	-	-	-	-	-	-	-	-	-	TM129$^{\#}_{M}$	<4.5 mg/kg
Copper	-	-	-	-	-	-	-	-	-	TM129$^{\#}$	<6 mg/kg
Iron	-	-	-	-	-	-	-	-	19000	TM129	<4.0 mg/kg
Lead	-	-	-	-	-	-	-	-	-	TM129$^{\#}_{M}$	<2 mg/kg
Mercury	-	-	-	-	-	-	-	-	-	TM129$^{\#}_{M}$	<0.6 mg/kg
Nickel	-	-	-	-	-	-	-	-	-	TM129$^{\#}_{M}$	<0.9 mg/kg
Selenium	-	-	-	-	-	-	-	-	-	TM129$^{\#}_{M}$	<3 mg/kg
Silicon	-	-	-	-	-	-	-	-	320	TM129$^{\#}$	<1 mg/kg
Vanadium	-	-	-	-	-	-	-	-	-	TM129$^{\#}_{M}$	<1.5 mg/kg
Zinc	-	-	-	-	-	-	-	-	-	TM129$^{\#}_{M}$	<2.5 mg/kg
Total Alkalinity as CaCO3	97	<10	27	11	120	58	58	54	89	TM043	<10 mg/kg
Potassium	1800	450	390	480	1700	1100	3500	1400	1600	TM083	<4 mg/kg
Sodium	400	590	210	190	690	280	480	380	320	TM083	<4 mg/kg
Nitrate (soluble) as NO3	12	<1	<1	<1	22	1	37	6	-	TM102$^{\#}$	<1 mg/kg
Chloride (soluble)	76	590	6	8	36	120	60	170	14	TM097$^{\#}_{M}$	<2 mg/kg
Fluoride (soluble)	3	<1	<3	<1	<3	<3	<3	<3	-	TM104$^{\#}$	<3 mg/kg
Phosphate (Ortho as PO4)	<1	<1	<1	<1	<1	<1	2	3	<1	TM100$^{\#}$	<1 mg/kg
Miscellaneous Analysis*	See Attached	See Attached	See Attached	See Attached	-	-	-	-	-		NONE
pH Value	7.99	7.44	7.19	7.74	8.72	8.08	8.00	7.96	8.38	TM133$^{\#}_{M}$	<1.00 pH Units

All results expressed on a dry weight basis.

Date 29.01.2008

Validated ☑

Preliminary ☐

ALcontrol Laboratories Analytical Services
Table Of Results

\# ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/11339/02/03
Matrix: SOLID
Client: Waterman Environmental
Location: SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344
Client Contact: Geoff Woods

Sample Identity	WE1	WE1	WE2	WE3	WE4	WE4	WE7	WE7	WE17	**Method Code**	**LoD/Units**
Depth (m)	0.50-0.60	2.50-2.70	1.50-1.60	2.70-3.00	0.5-0.7	1.5-1.7	0.40	1.4-1.60	2.5-2.60		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	26.07.07	26.07.07	26.07.07	26.07.07	25.07.07	25.07.07	24.07.07	24.07.07	24.07.07		
Sample Received Date	28.07.07	28.07.07	28.07.07	28.07.07	26.07.07	26.07.07	26.07.07	26.07.07	26.07.07		
Batch	13	13	13	13	12	12	12	12	12		
Sample Number(s)	**281-283,308**	**287-289**	**290-292**	**296-298**	**241-244**	**245-247**	**248-251**	**252-254**	**264-266**		
GRO (C4-C12)	<10	<10	170000	1200	<10	24000	<10	<10	-	TM089	<10 ug/kg
MTBE	<10	<10	<10	<10	<10	<10	<10	<10	-	TM089$^{\#}$	<10 ug/kg
Benzene	<10	<10	<10	<10	<10	<10	<10	<10	-	TM089$^{\#}_{M}$	<10 ug/kg
Toluene	<10	<10	<10	<10	<10	<10	<10	<10	-	TM089$^{\#}_{M}$	<10 ug/kg
Ethyl benzene	<10	<10	<10	<10	<10	<10	<10	<10	-	TM089$^{\#}_{M}$	<10 ug/kg
m & p Xylene	<10	<10	<10	<10	<10	<10	<10	<10	-	TM089$^{\#}_{M}$	<10 ug/kg
o Xylene	<10	<10	30	<10	<10	<10	<10	<10	-	TM089$^{\#}_{M}$	<10 ug/kg
Aliphatics C5-C6	<10	<10	<10	<10	<10	<10	<10	<10	-	TM089	<10 ug/kg
Aliphatics >C6-C8	<10	<10	<10	<10	<10	140	<10	<10	-	TM089	<10 ug/kg
Aliphatics >C8-C10	<10	<10	10000	31	<10	<10	<10	<10	-	TM089	<10 ug/kg
Aliphatics >C10-C12	<10	<10	57000	450	<10	9600	<10	<10	-	TM089	<10 ug/kg
Aliphatics >C12-C16	<100	<100	<100	<100	110000	<100	<100	<100	-	TM173$^{\#}$	<100 ug/kg
Aliphatics >C16-C21	<100	<100	<100	<100	75000	<100	<100	<100	-	TM173$^{\#}$	<100 ug/kg
Aliphatics >C21-C35	<100	<100	14000	<100	230000	1200	2400	<100	-	TM173$^{\#}$	<100 ug/kg
Total Aliphatics C5-C35	<100	<100	81000	480	410000	11000	2400	<100	-	TM61/89	<100 ug/kg
Aromatics C6-C7	<10	<10	<10	<10	<10	<10	<10	<10	-	TM089	<10 ug/kg
Aromatics >C7-C8	<10	<10	<10	<10	<10	<10	<10	<10	-	TM089	<10 ug/kg
Aromatics >EC8-EC10	<10	<10	15000	46	<10	<10	<10	<10	-	TM089	<10 ug/kg
Aromatics >EC10-EC12	<10	<10	85000	670	<10	14000	<10	<10	-	TM089	<10 ug/kg
Aromatics >EC12-EC16	470	<100	50000	<100	60000	7500	<100	<100	-	TM173$^{\#}$	<100 ug/kg
Aromatics >EC16-EC21	3300	<100	28000	<100	300000	27000	1400	<100	-	TM173$^{\#}$	<100 ug/kg
Aromatics >EC21-EC35	28000	<100	1100000	21000	940000	96000	23000	<100	-	TM173$^{\#}$	<100 ug/kg
Total Aromatics C6-C35	31000	<100	1300000	22000	1300000	140000	24000	<100	-	TM61/89	<100 ug/kg
TPH (Aliphatics and Aromatics C5-C35)	31000	<100	1400000	22000	1700000	160000	27000	<100	-	TM61/89	<100 ug/kg

All results expressed on a dry weight basis.

Date 29.01.2008

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ALcontrol Laboratories Analytical Services
Table Of Results

ISO 17025 accredited
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* Subcontracted test
» Shown on prev. report

Job Number: 07/11339/02/03
Matrix: SOLID
Client: Waterman Environmental
Location: SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344
Client Contact: Geoff Woods

Sample Identity	WE1	WE1	WE2	WE3	WE4	WE4	WE7	WE7	WE17	**Method Code**	**LoD/Units**
Depth (m)	0.50-0.60	2.50-2.70	1.50-1.60	2.70-3.00	0.5-0.7	1.5-1.7	0.40	1.4-1.60	2.5-2.60		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	26.07.07	26.07.07	26.07.07	26.07.07	25.07.07	25.07.07	24.07.07	24.07.07	24.07.07		
Sample Received Date	28.07.07	28.07.07	28.07.07	28.07.07	26.07.07	26.07.07	26.07.07	26.07.07	26.07.07		
Batch	13	13	13	13	12	12	12	12	12		
Sample Number(s)	**281-283,308**	**287-289**	**290-292**	**296-298**	**241-244**	**245-247**	**248-251**	**252-254**	**264-266**		
SVOC by GCMS											
Phenols											
2-Chlorophenol	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
2-Methylphenol	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
2-Nitrophenol	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
2,4-Dichlorophenol	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
2,4-Dimethylphenol	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
2,4,5-Trichlorophenol	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
2,4,6-Trichlorophenol	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
4-Chloro-3-methylphenol	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
4-Methylphenol	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
4-Nitrophenol	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
Pentachlorophenol	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
Phenol	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg

All results expressed on a dry weight basis.

Date 29.01.2008

Validated ☑

Preliminary ☐

ALcontrol Laboratories Analytical Services
Table Of Results

\# ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/11339/02/03
Matrix: SOLID
Client: Waterman Environmental
Location: SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344
Client Contact: Geoff Woods

Sample Identity	WE1	WE1	WE2	WE3	WE4	WE4	WE7	WE7	WE17	**Method Code**	**LoD/Units**
Depth (m)	0.50-0.60	2.50-2.70	1.50-1.60	2.70-3.00	0.5-0.7	1.5-1.7	0.40	1.4-1.60	2.5-2.60		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	26.07.07	26.07.07	26.07.07	26.07.07	25.07.07	25.07.07	24.07.07	24.07.07	24.07.07		
Sample Received Date	28.07.07	28.07.07	28.07.07	28.07.07	26.07.07	26.07.07	26.07.07	26.07.07	26.07.07		
Batch	13	13	13	13	12	12	12	12	12		
Sample Number(s)	**281-283,308**	**287-289**	**290-292**	**296-298**	**241-244**	**245-247**	**248-251**	**252-254**	**264-266**		
PAHs											
2-Chloronaphthalene	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
2-Methylnaphthalene	320	<100	7100	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
Acenaphthene	400	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
Acenaphthylene	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
Anthracene	360	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
Benzo(a)anthracene	750	<100	<4000	<100	410	<100	130	<100	<100	TM157	<100 ug/kg
Benzo(a)pyrene	730	<100	<4000	<100	310	<100	<100	<100	<100	TM157	<100 ug/kg
Benzo(b)fluoranthene	1300	<100	<4000	<100	540	<100	160	<100	<100	TM157	<100 ug/kg
Benzo(ghi)perylene	220	<100	<4000	<100	210	<100	<100	<100	<100	TM157	<100 ug/kg
Benzo(k)fluoranthene	740	<100	<4000	<100	270	<100	<100	<100	<100	TM157	<100 ug/kg
Chrysene	740	<100	<4000	<100	450	<100	150	<100	<100	TM157	<100 ug/kg
Dibenzo(a,h)anthracene	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
Fluoranthene	2300	<100	<4000	<100	880	130	210	<100	<100	TM157	<100 ug/kg
Fluorene	340	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
Indeno(1,2,3-cd)pyrene	200	<100	<4000	<100	150	<100	<100	<100	<100	TM157	<100 ug/kg
Naphthalene	540	<100	89000	140	<100	<100	<100	<100	<100	TM157	<100 ug/kg
Phenanthrene	1700	<100	<4000	<100	270	<100	<100	<100	<100	TM157	<100 ug/kg
Pyrene	2800	<100	<4000	<100	1000	<100	300	<100	<100	TM157	<100 ug/kg
Phthalates											
Bis(2-ethylhexyl) phthalate	<100	<100	<4000	<100	<100	<100	<100	<100	280	TM157	<100 ug/kg
Butylbenzyl phthalate	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
Di-n-butyl phthalate	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
Di-n-Octyl phthalate	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
Diethyl phthalate	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
Dimethyl phthalate	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
Other Semi-volatiles											
1,2-Dichlorobenzene	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
1,2,4-Trichlorobenzene	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg

All results expressed on a dry weight basis.

Date 29.01.2008

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ALcontrol Laboratories Analytical Services
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* Subcontracted test
» Shown on prev. report

Job Number: 07/11339/02/03
Matrix: SOLID
Client: Waterman Environmental
Location: SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344
Client Contact: Geoff Woods

Sample Identity	WE1	WE1	WE2	WE3	WE4	WE4	WE7	WE7	WE17	**Method Code**	**LoD/Units**
Depth (m)	0.50-0.60	2.50-2.70	1.50-1.60	2.70-3.00	0.5-0.7	1.5-1.7	0.40	1.4-1.60	2.5-2.60		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	26.07.07	26.07.07	26.07.07	26.07.07	25.07.07	25.07.07	24.07.07	24.07.07	24.07.07		
Sample Received Date	28.07.07	28.07.07	28.07.07	28.07.07	26.07.07	26.07.07	26.07.07	26.07.07	26.07.07		
Batch	13	13	13	13	12	12	12	12	12		
Sample Number(s)	**281-283,308**	**287-289**	**290-292**	**296-298**	**241-244**	**245-247**	**248-251**	**252-254**	**264-266**		
Other Semi-volatiles (cont)											
1,3-Dichlorobenzene	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
1,4-Dichlorobenzene	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
2-Nitroaniline	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
2,4-Dinitrotoluene	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
2,6-Dinitrotoluene	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
3-Nitroaniline	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
4-Bromophenylphenylether	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
4-Chloroaniline	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
4-Chlorophenylphenylether	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
4-Nitroaniline	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
Azobenzene	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
Bis(2-chloroethoxy)methane	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
Bis(2-chloroethyl)ether	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
Carbazole	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
Dibenzofuran	460	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
Hexachlorobenzene	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
Hexachlorobutadiene	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
Hexachlorocyclopentadiene	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
Hexachloroethane	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
Isophorone	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
N-nitrosodi-n-propylamine	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg
Nitrobenzene	<100	<100	<4000	<100	<100	<100	<100	<100	<100	TM157	<100 ug/kg

All results expressed on a dry weight basis.

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ALcontrol Laboratories Analytical Services
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* Subcontracted test
» Shown on prev. report

Job Number: 07/11339/02/03 **Matrix:** SOLID
Client: Waterman Environmental **Location:** SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344 **Client Contact:** Geoff Woods

Sample Identity	WE1	WE1	WE2	WE3	WE4	WE4	WE7	WE7	WE17	**Method Code**	**LoD/Units**
Depth (m)	0.50-0.60	2.50-2.70	1.50-1.60	2.70-3.00	0.5-0.7	1.5-1.7	0.40	1.4-1.60	2.5-2.60		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	26.07.07	26.07.07	26.07.07	26.07.07	25.07.07	25.07.07	24.07.07	24.07.07	24.07.07		
Sample Received Date	28.07.07	28.07.07	28.07.07	28.07.07	26.07.07	26.07.07	26.07.07	26.07.07	26.07.07		
Batch	13	13	13	13	12	12	12	12	12		
Sample Number(s)	**281-283,308**	**287-289**	**290-292**	**296-298**	**241-244**	**245-247**	**248-251**	**252-254**	**264-266**		
Volatile Organic Compounds											
Dichlorodifluoromethane	<4	<4	<400	<4	<4	<4	<4	<4	<4	TM116$^{\#}$	<4 ug/kg
Chloromethane	<7	<7	<700	<7	<7	<7	<7	<7	<7	TM116$^{\#}$	<7 ug/kg
Vinyl Chloride	<10	<10	<1000	<10	<10	<10	<10	<10	<10	TM116$^{\#}_{M}$	<10 ug/kg
Bromomethane	<13	<13	<1300	<13	<13	<13	<13	<13	<13	TM116$^{\#}$	<13 ug/kg
Chloroethane	<14	<14	<1400	<14	<14	<14	<14	<14	<14	TM116$^{\#}$	<14 ug/kg
Trichlorofluoromethane	<6	<6	<600	<6	<6	<6	<6	<6	<6	TM116$^{\#}_{M}$	<6 ug/kg
trans-1-2-Dichloroethene	<11	<11	<1100	<11	<11	<11	<11	<11	<11	TM116$^{\#}$	<11 ug/kg
Dichloromethane	<10	<10	<1000	<10	<10	<10	<10	<10	<10	TM116$^{\#}$	<10 ug/kg
Carbon Disulphide	<7	<7	<700	<7	<7	<7	<7	<7	<7	TM116$^{\#}_{M}$	<7 ug/kg
1.1-Dichloroethene	<10	<10	<1000	<10	<10	<10	<10	<10	<10	TM116$^{\#}_{M}$	<10 ug/kg
1.1-Dichloroethane	<8	<8	<800	<8	<8	<8	<8	<8	<8	TM116$^{\#}_{M}$	<8 ug/kg
Methyl Tertiary Butyl Ether	<11	<11	<1100	<11	<11	<11	<11	<11	<11	TM116$^{\#}_{M}$	<11 ug/kg
cis-1-2-Dichloroethene	<5	<5	<500	<5	<5	<5	<5	<5	<5	TM116$^{\#}_{M}$	<5 ug/kg
Bromochloromethane	<14	<14	<1400	<14	<14	<14	<14	<14	<14	TM116$^{\#}$	<14 ug/kg
Chloroform	<8	<8	<800	<8	<8	<8	<8	<8	<8	TM116$^{\#}_{M}$	<8 ug/kg
2.2-Dichloropropane	<12	<12	<1200	<12	<12	<12	<12	<12	<12	TM116$^{\#}$	<12 ug/kg
1.2-Dichloroethane	<5	<5	<500	<5	<5	<5	<5	<5	<5	TM116$^{\#}$	<5 ug/kg
1.1.1-Trichloroethane	<7	<7	<700	<7	<7	<7	<7	<7	<7	TM116$^{\#}_{M}$	<7 ug/kg
1.1-Dichloropropene	<11	<11	<1100	<11	<11	<11	<11	<11	<11	TM116$^{\#}_{M}$	<11 ug/kg
Benzene	<9	<9	<900	<9	<9	<9	<9	<9	<9	TM116$^{\#}_{M}$	<9 ug/kg
Carbontetrachloride	<14	<14	<1400	<14	<14	<14	<14	<14	<14	TM116$^{\#}_{M}$	<14 ug/kg
Dibromomethane	<9	<9	<900	<9	<9	<9	<9	<9	<9	TM116$^{\#}$	<9 ug/kg
1.2-Dichloropropane	<12	<12	<1200	<12	<12	<12	<12	<12	<12	TM116$^{\#}_{M}$	<12 ug/kg
Bromodichloromethane	<7	<7	<700	<7	<7	<7	<7	<7	<7	TM116$^{\#}_{M}$	<7 ug/kg
Trichloroethene	<9	<9	<900	<9	<9	<9	<9	<9	<9	TM116$^{\#}_{M}$	<9 ug/kg
cis-1-3-Dichloropropene	<14	<14	<1400	<14	<14	<14	<14	<14	<14	TM116$^{\#}_{M}$	<14 ug/kg
trans-1-3-Dichloropropene	<14	<14	<1400	<14	<14	<14	<14	<14	<14	TM116$^{\#}_{M}$	<14 ug/kg
1.1.2-Trichloroethane	<10	<10	<1000	<10	<10	<10	<10	<10	<10	TM116$^{\#}$	<10 ug/kg
Toluene	<5	<5	<500	<5	<5	<5	<5	<5	<5	TM116$^{\#}_{M}$	<5 ug/kg
1.3-Dichloropropane	<7	<7	<700	<7	<7	<7	<7	<7	<7	TM116$^{\#}$	<7 ug/kg

All results expressed on a dry weight basis.

Date 29.01.2008

Validated ☑

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ALcontrol Laboratories Analytical Services
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M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/11339/02/03 **Matrix:** SOLID
Client: Waterman Environmental **Location:** SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344 **Client Contact:** Geoff Woods

Sample Identity	WE1	WE1	WE2	WE3	WE4	WE4	WE7	WE7	WE17	**Method Code**	**LoD/Units**
Depth (m)	0.50-0.60	2.50-2.70	1.50-1.60	2.70-3.00	0.5-0.7	1.5-1.7	0.40	1.4-1.60	2.5-2.60		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	26.07.07	26.07.07	26.07.07	26.07.07	25.07.07	25.07.07	24.07.07	24.07.07	24.07.07		
Sample Received Date	28.07.07	28.07.07	28.07.07	28.07.07	26.07.07	26.07.07	26.07.07	26.07.07	26.07.07		
Batch	13	13	13	13	12	12	12	12	12		
Sample Number(s)	**281-283,308**	**287-289**	**290-292**	**296-298**	**241-244**	**245-247**	**248-251**	**252-254**	**264-266**		
Volatile Organic Compounds (cont)											
Dibromochloromethane	<13	<13	<1300	<13	<13	<13	<13	<13	<13	TM116$^{\#}$	<13 ug/kg
1.2-Dibromoethane	<12	<12	<1200	<12	<12	<12	<12	<12	<12	TM116$^{\#}$	<12 ug/kg
Tetrachloroethene	<5	<5	<500	<5	<5	<5	<5	<5	<5	TM116$^{\#}$	<5 ug/kg
1.1.1.2-Tetrachloroethane	<10	<10	<1000	<10	<10	<10	<10	<10	<10	TM116$^{\#}_{M}$	<10 ug/kg
Chlorobenzene	<5	<5	<500	<5	<5	<5	<5	<5	<5	TM116$^{\#}_{M}$	<5 ug/kg
Ethylbenzene	<4	<4	<400	<4	<4	<4	<4	<4	<4	TM116$^{\#}$	<4 ug/kg
p/m-Xylene	<14	<14	<1400	<14	<14	<14	<14	<14	<14	TM116$^{\#}$	<14 ug/kg
Bromoform	<10	<10	<1000	<10	<10	<10	<10	<10	<10	TM116$^{\#}$	<10 ug/kg
Styrene	<10	<10	<1000	<10	<10	<10	<10	<10	<10	TM116$^{\#}$	<10 ug/kg
1.1.2.2-Tetrachloroethane	<10	<10	<1000	<10	<10	<10	<10	<10	<10	TM116$^{\#}$	<10 ug/kg
o-Xylene	<10	<10	<1000	<10	<10	<10	<10	<10	<10	TM116$^{\#}$	<10 ug/kg
1.2.3-Trichloropropane	<17	<17	<1700	<17	<17	<17	<17	<17	<17	TM116$^{\#}$	<17 ug/kg
Isopropylbenzene	<5	<5	<500	<5	<5	<5	<5	<5	<5	TM116$^{\#}$	<5 ug/kg
Bromobenzene	<10	<10	<1000	<10	<10	<10	<10	<10	<10	TM116$^{\#}_{M}$	<10 ug/kg
2-Chlorotoluene	<9	<9	<900	<9	<9	<9	<9	<9	<9	TM116$^{\#}$	<9 ug/kg
Propylbenzene	<11	<11	<1100	<11	<11	<11	<11	<11	<11	TM116$^{\#}$	<11 ug/kg
4-Chlorotoluene	<12	<12	<1200	<12	<12	<12	<12	<12	<12	TM116$^{\#}$	<12 ug/kg
1.2.4-Trimethylbenzene	<9	<9	60000	19	<9	<9	<9	<9	<9	TM116$^{\#}$	<9 ug/kg
4-Isopropyltoluene	<11	<11	1300	<11	<11	<11	<11	<11	<11	TM116$^{\#}$	<11 ug/kg
1.3.5-Trimethylbenzene	<8	<8	15000	<8	<8	<8	<8	<8	<8	TM116$^{\#}$	<8 ug/kg
1.2-Dichlorobenzene	<12	<12	<1200	<12	<12	<12	<12	<12	<12	TM116$^{\#}_{M}$	<12 ug/kg
1.4-Dichlorobenzene	<5	<5	<500	<5	<5	<5	<5	<5	<5	TM116$^{\#}_{M}$	<5 ug/kg
sec-Butylbenzene	<10	<10	<1000	<10	<10	<10	<10	<10	<10	TM116$^{\#}$	<10 ug/kg
tert-Butylbenzene	<12	<12	<1200	<12	<12	<12	<12	<12	<12	TM116$^{\#}$	<12 ug/kg
1.3-Dichlorobenzene	<6	<6	<600	<6	<6	<6	<6	<6	<6	TM116$^{\#}$	<6 ug/kg
n-Butylbenzene	<10	<10	<1000	<10	<10	<10	<10	<10	<10	TM116$^{\#}$	<10 ug/kg
1.2-Dibromo-3-chloropropane	<14	<14	<1400	<14	<14	<14	<14	<14	<14	TM116$^{\#}$	<14 ug/kg
1.2.4-Trichlorobenzene	<6	<6	<600	<6	<6	<6	<6	<6	<6	TM116$^{\#}$	<6 ug/kg
Naphthalene	<13	<13	<1300	120	<13	<13	<13	<13	<13	TM116$^{\#}$	<13 ug/kg
1.2.3-Trichlorobenzene	<11	<11	<1100	<11	<11	<11	<11	<11	<11	TM116$^{\#}$	<11 ug/kg

All results expressed on a dry weight basis.

Date 29.01.2008

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ALcontrol Laboratories Analytical Services
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* Subcontracted test
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Job Number: 07/11339/02/03
Matrix: SOLID
Client: Waterman Environmental
Location: SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344
Client Contact: Geoff Woods

Sample Identity	WE1	WE1	WE2	WE3	WE4	WE4	WE7	WE7	WE17	**Method Code**	**LoD/Units**
Depth (m)	0.50-0.60	2.50-2.70	1.50-1.60	2.70-3.00	0.5-0.7	1.5-1.7	0.40	1.4-1.60	2.5-2.60		
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID		
Sampled Date	26.07.07	26.07.07	26.07.07	26.07.07	25.07.07	25.07.07	24.07.07	24.07.07	24.07.07		
Sample Received Date	28.07.07	28.07.07	28.07.07	28.07.07	26.07.07	26.07.07	26.07.07	26.07.07	26.07.07		
Batch	13	13	13	13	12	12	12	12	12		
Sample Number(s)	**281-283,308**	**287-289**	**290-292**	**296-298**	**241-244**	**245-247**	**248-251**	**252-254**	**264-266**		
Volatile Organic Compounds (cont)											
Hexachlorobutadiene	<12	<12	<1200	<12	<12	<12	<12	<12	<12	TM116#	<12 ug/kg

All results expressed on a dry weight basis.

Date 29.01.2008

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ALcontrol Laboratories Analytical Services
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Job Number: 07/11339/02/03
Matrix: SOLID
Client: Waterman Environmental
Location: SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344
Client Contact: Geoff Woods

Sample Identity	WE18	WE19	WE20							**Method Code**	**LoD/Units**
Depth (m)	0.60-0.70	2.60-2.95	0.4-0.5								
Sample Type	SOLID	SOLID	SOLID								
Sampled Date	24.07.07	26.07.07	25.07.07								
Sample Received Date	26.07.07	28.07.07	26.07.07								
Batch	12	13	12								
Sample Number(s)	**267-269**	**305-307**	**278-280**								
Total Sulphate	<100	130	580							TM129$^{\#}_{M}$	<100 mg/kg
Boron Water Soluble	<3.5	<3.5	<3.5							TM129$^{\#}_{M}$	<3.5 mg/kg
Arsenic	-	<3	9							TM129$^{\#}_{M}$	<3.0 mg/kg
Barium	-	42	95							TM129$^{\#}_{M}$	<6.0 mg/kg
Beryllium	-	0.6	<0.4							TM129	<0.4 mg/kg
Cadmium	-	0.4	1.0							TM129	<0.3 mg/kg
Chromium	-	10	8.0							TM129$^{\#}_{M}$	<4.5 mg/kg
Copper	-	17	22							TM129$^{\#}$	<6 mg/kg
Iron	4500	-	-							TM129	<4.0 mg/kg
Lead	-	9	32							TM129$^{\#}_{M}$	<2 mg/kg
Mercury	-	<0.6	<0.6							TM129$^{\#}_{M}$	<0.6 mg/kg
Nickel	-	11	5.5							TM129$^{\#}_{M}$	<0.9 mg/kg
Selenium	-	<3	<3							TM129$^{\#}_{M}$	<3 mg/kg
Silicon	330	-	-							TM129$^{\#}$	<1 mg/kg
Vanadium	-	8.4	9.1							TM129$^{\#}_{M}$	<1.5 mg/kg
Zinc	-	43	110							TM129$^{\#}_{M}$	<2.5 mg/kg
Total Alkalinity as CaCO3	100	15	220							TM043	<10 mg/kg
Potassium	910	1200	1200							TM083	<4 mg/kg
Sodium	470	170	390							TM083	<4 mg/kg
Nitrate (soluble) as NO3	-	<1	4							TM102$^{\#}$	<1 mg/kg
Chloride (soluble)	36	16	34							TM097$^{\#}_{M}$	<2 mg/kg
Fluoride (soluble)	-	<3	<1							TM104$^{\#}$	<3 mg/kg
Phosphate (Ortho as PO4)	<1	<1	<1							TM100$^{\#}$	<1 mg/kg
Miscellaneous Analysis*	-	-	-								NONE
pH Value	8.85	7.82	7.98							TM133$^{\#}_{M}$	<1.00 pH Units

All results expressed on a dry weight basis.

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Job Number: 07/11339/02/03
Matrix: SOLID
Client: Waterman Environmental
Location: SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344
Client Contact: Geoff Woods

Sample Identity	WE18	WE19	WE20							**Method Code**	**LoD/Units**
Depth (m)	0.60-0.70	2.60-2.95	0.4-0.5								
Sample Type	SOLID	SOLID	SOLID								
Sampled Date	24.07.07	26.07.07	25.07.07								
Sample Received Date	26.07.07	28.07.07	26.07.07								
Batch	12	13	12								
Sample Number(s)	**267-269**	**305-307**	**278-280**								
GRO (C4-C12)	-	960	<10							TM089	<10 ug/kg
MTBE	-	<10	<10							TM089$^{\#}$	<10 ug/kg
Benzene	-	<10	<10							TM089$^{\#}_{M}$	<10 ug/kg
Toluene	-	<10	<10							TM089$^{\#}_{M}$	<10 ug/kg
Ethyl benzene	-	<10	<10							TM089$^{\#}_{M}$	<10 ug/kg
m & p Xylene	-	<10	<10							TM089$^{\#}_{M}$	<10 ug/kg
o Xylene	-	<10	<10							TM089$^{\#}_{M}$	<10 ug/kg
Aliphatics C5-C6	-	<10	<10							TM089	<10 ug/kg
Aliphatics >C6-C8	-	<10	<10							TM089	<10 ug/kg
Aliphatics >C8-C10	-	27	<10							TM089	<10 ug/kg
Aliphatics >C10-C12	-	360	<10							TM089	<10 ug/kg
Aliphatics >C12-C16	-	<100	<100							TM173$^{\#}$	<100 ug/kg
Aliphatics >C16-C21	-	<100	3900							TM173$^{\#}$	<100 ug/kg
Aliphatics >C21-C35	-	<100	24000							TM173$^{\#}$	<100 ug/kg
Total Aliphatics C5-C35	-	380	28000							TM61/89	<100 ug/kg
Aromatics C6-C7	-	<10	<10							TM089	<10 ug/kg
Aromatics >C7-C8	-	<10	<10							TM089	<10 ug/kg
Aromatics >EC8-EC10	-	41	<10							TM089	<10 ug/kg
Aromatics >EC10-EC12	-	530	<10							TM089	<10 ug/kg
Aromatics >EC12-EC16	-	<100	<100							TM173$^{\#}$	<100 ug/kg
Aromatics >EC16-EC21	-	<100	1300							TM173$^{\#}$	<100 ug/kg
Aromatics >EC21-EC35	-	<100	85000							TM173$^{\#}$	<100 ug/kg
Total Aromatics C6-C35	-	570	87000							TM61/89	<100 ug/kg
TPH (Aliphatics and Aromatics C5-C35)	-	960	110000							TM61/89	<100 ug/kg

All results expressed on a dry weight basis.

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Job Number: 07/11339/02/03
Matrix: SOLID
Client: Waterman Environmental
Location: SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344
Client Contact: Geoff Woods

Sample Identity	WE18	WE19	WE20							**Method Code**	**LoD/Units**
Depth (m)	0.60-0.70	2.60-2.95	0.4-0.5								
Sample Type	SOLID	SOLID	SOLID								
Sampled Date	24.07.07	26.07.07	25.07.07								
Sample Received Date	26.07.07	28.07.07	26.07.07								
Batch	12	13	12								
Sample Number(s)	**267-269**	**305-307**	**278-280**								
SVOC by GCMS											
Phenols											
2-Chlorophenol	<100	<100	<100							TM157	<100 ug/kg
2-Methylphenol	<100	<100	<100							TM157	<100 ug/kg
2-Nitrophenol	<100	<100	<100							TM157	<100 ug/kg
2,4-Dichlorophenol	<100	<100	<100							TM157	<100 ug/kg
2,4-Dimethylphenol	<100	<100	<100							TM157	<100 ug/kg
2,4,5-Trichlorophenol	<100	<100	<100							TM157	<100 ug/kg
2,4,6-Trichlorophenol	<100	<100	<100							TM157	<100 ug/kg
4-Chloro-3-methylphenol	<100	<100	<100							TM157	<100 ug/kg
4-Methylphenol	<100	<100	<100							TM157	<100 ug/kg
4-Nitrophenol	<100	<100	<100							TM157	<100 ug/kg
Pentachlorophenol	<100	<100	<100							TM157	<100 ug/kg
Phenol	<100	<100	<100							TM157	<100 ug/kg

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Job Number: 07/11339/02/03
Matrix: SOLID
Client: Waterman Environmental
Location: SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344
Client Contact: Geoff Woods

Sample Identity	WE18	WE19	WE20							**Method Code**	**LoD/Units**
Depth (m)	0.60-0.70	2.60-2.95	0.4-0.5								
Sample Type	SOLID	SOLID	SOLID								
Sampled Date	24.07.07	26.07.07	25.07.07								
Sample Received Date	26.07.07	28.07.07	26.07.07								
Batch	12	13	12								
Sample Number(s)	**267-269**	**305-307**	**278-280**								
PAHs											
2-Chloronaphthalene	<100	<100	<100							TM157	<100 ug/kg
2-Methylnaphthalene	<100	<100	<100							TM157	<100 ug/kg
Acenaphthene	<100	<100	<100							TM157	<100 ug/kg
Acenaphthylene	<100	<100	<100							TM157	<100 ug/kg
Anthracene	170	<100	<100							TM157	<100 ug/kg
Benzo(a)anthracene	1100	<100	<100							TM157	<100 ug/kg
Benzo(a)pyrene	910	<100	<100							TM157	<100 ug/kg
Benzo(b)fluoranthene	1600	<100	<100							TM157	<100 ug/kg
Benzo(ghi)perylene	330	<100	<100							TM157	<100 ug/kg
Benzo(k)fluoranthene	350	<100	<100							TM157	<100 ug/kg
Chrysene	670	<100	<100							TM157	<100 ug/kg
Dibenzo(a,h)anthracene	<100	<100	<100							TM157	<100 ug/kg
Fluoranthene	2300	<100	<100							TM157	<100 ug/kg
Fluorene	<100	<100	<100							TM157	<100 ug/kg
Indeno(1,2,3-cd)pyrene	390	<100	<100							TM157	<100 ug/kg
Naphthalene	<100	<100	<100							TM157	<100 ug/kg
Phenanthrene	660	<100	<100							TM157	<100 ug/kg
Pyrene	1400	<100	<100							TM157	<100 ug/kg
Phthalates											
Bis(2-ethylhexyl) phthalate	<100	<100	<100							TM157	<100 ug/kg
Butylbenzyl phthalate	<100	<100	<100							TM157	<100 ug/kg
Di-n-butyl phthalate	<100	<100	<100							TM157	<100 ug/kg
Di-n-Octyl phthalate	<100	<100	<100							TM157	<100 ug/kg
Diethyl phthalate	<100	<100	<100							TM157	<100 ug/kg
Dimethyl phthalate	<100	<100	<100							TM157	<100 ug/kg
Other Semi-volatiles											
1,2-Dichlorobenzene	<100	<100	<100							TM157	<100 ug/kg
1,2,4-Trichlorobenzene	<100	<100	<100							TM157	<100 ug/kg

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Job Number: 07/11339/02/03
Matrix: SOLID
Client: Waterman Environmental
Location: SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344
Client Contact: Geoff Woods

Sample Identity	WE18	WE19	WE20							**Method Code**	**LoD/Units**
Depth (m)	0.60-0.70	2.60-2.95	0.4-0.5								
Sample Type	SOLID	SOLID	SOLID								
Sampled Date	24.07.07	26.07.07	25.07.07								
Sample Received Date	26.07.07	28.07.07	26.07.07								
Batch	12	13	12								
Sample Number(s)	**267-269**	**305-307**	**278-280**								
Other Semi-volatiles (cont)											
1,3-Dichlorobenzene	<100	<100	<100							TM157	<100 ug/kg
1,4-Dichlorobenzene	<100	<100	<100							TM157	<100 ug/kg
2-Nitroaniline	<100	<100	<100							TM157	<100 ug/kg
2,4-Dinitrotoluene	<100	<100	<100							TM157	<100 ug/kg
2,6-Dinitrotoluene	<100	<100	<100							TM157	<100 ug/kg
3-Nitroaniline	<100	<100	<100							TM157	<100 ug/kg
4-Bromophenylphenylether	<100	<100	<100							TM157	<100 ug/kg
4-Chloroaniline	<100	<100	<100							TM157	<100 ug/kg
4-Chlorophenylphenylether	<100	<100	<100							TM157	<100 ug/kg
4-Nitroaniline	<100	<100	<100							TM157	<100 ug/kg
Azobenzene	<100	<100	<100							TM157	<100 ug/kg
Bis(2-chloroethoxy)methane	<100	<100	<100							TM157	<100 ug/kg
Bis(2-chloroethyl)ether	<100	<100	<100							TM157	<100 ug/kg
Carbazole	<100	<100	<100							TM157	<100 ug/kg
Dibenzofuran	<100	<100	<100							TM157	<100 ug/kg
Hexachlorobenzene	<100	<100	<100							TM157	<100 ug/kg
Hexachlorobutadiene	<100	<100	<100							TM157	<100 ug/kg
Hexachlorocyclopentadiene	<100	<100	<100							TM157	<100 ug/kg
Hexachloroethane	<100	<100	<100							TM157	<100 ug/kg
Isophorone	<100	<100	<100							TM157	<100 ug/kg
N-nitrosodi-n-propylamine	<100	<100	<100							TM157	<100 ug/kg
Nitrobenzene	<100	<100	<100							TM157	<100 ug/kg

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Job Number: 07/11339/02/03 **Matrix:** SOLID
Client: Waterman Environmental **Location:** SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344 **Client Contact:** Geoff Woods

Sample Identity	WE18	WE19	WE20							**Method Code**	**LoD/Units**
Depth (m)	0.60-0.70	2.60-2.95	0.4-0.5								
Sample Type	SOLID	SOLID	SOLID								
Sampled Date	24.07.07	26.07.07	25.07.07								
Sample Received Date	26.07.07	28.07.07	26.07.07								
Batch	12	13	12								
Sample Number(s)	**267-269**	**305-307**	**278-280**								
Volatile Organic Compounds											
Dichlorodifluoromethane	<4	<4	<4							TM116$^{\#}$	<4 ug/kg
Chloromethane	<7	<7	<7							TM116$^{\#}$	<7 ug/kg
Vinyl Chloride	<10	<10	<10							TM116$^{\#}_{M}$	<10 ug/kg
Bromomethane	<13	<13	<13							TM116$^{\#}$	<13 ug/kg
Chloroethane	<14	<14	<14							TM116$^{\#}$	<14 ug/kg
Trichlorofluoromethane	<6	<6	<6							TM116$^{\#}_{M}$	<6 ug/kg
trans-1-2-Dichloroethene	<11	<11	<11							TM116$^{\#}$	<11 ug/kg
Dichloromethane	<10	<10	<10							TM116$^{\#}$	<10 ug/kg
Carbon Disulphide	<7	<7	<7							TM116$^{\#}_{M}$	<7 ug/kg
1.1-Dichloroethene	<10	<10	<10							TM116$^{\#}_{M}$	<10 ug/kg
1.1-Dichloroethane	<8	<8	<8							TM116$^{\#}_{M}$	<8 ug/kg
Methyl Tertiary Butyl Ether	<11	<11	<11							TM116$^{\#}_{M}$	<11 ug/kg
cis-1-2-Dichloroethene	<5	<5	<5							TM116$^{\#}_{M}$	<5 ug/kg
Bromochloromethane	<14	<14	<14							TM116$^{\#}$	<14 ug/kg
Chloroform	<8	<8	<8							TM116$^{\#}_{M}$	<8 ug/kg
2.2-Dichloropropane	<12	<12	<12							TM116$^{\#}$	<12 ug/kg
1.2-Dichloroethane	<5	<5	<5							TM116$^{\#}$	<5 ug/kg
1.1.1-Trichloroethane	<7	<7	<7							TM116$^{\#}_{M}$	<7 ug/kg
1.1-Dichloropropene	<11	<11	<11							TM116$^{\#}_{M}$	<11 ug/kg
Benzene	<9	<9	<9							TM116$^{\#}_{M}$	<9 ug/kg
Carbontetrachloride	<14	<14	<14							TM116$^{\#}_{M}$	<14 ug/kg
Dibromomethane	<9	<9	<9							TM116$^{\#}$	<9 ug/kg
1.2-Dichloropropane	<12	<12	<12							TM116$^{\#}_{M}$	<12 ug/kg
Bromodichloromethane	<7	<7	<7							TM116$^{\#}_{M}$	<7 ug/kg
Trichloroethene	<9	<9	<9							TM116$^{\#}_{M}$	<9 ug/kg
cis-1-3-Dichloropropene	<14	<14	<14							TM116$^{\#}_{M}$	<14 ug/kg
trans-1-3-Dichloropropene	<14	<14	<14							TM116$^{\#}_{M}$	<14 ug/kg
1.1.2-Trichloroethane	<10	<10	<10							TM116$^{\#}$	<10 ug/kg
Toluene	<5	<5	<5							TM116$^{\#}_{M}$	<5 ug/kg
1.3-Dichloropropane	<7	<7	<7							TM116$^{\#}$	<7 ug/kg

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ALcontrol Laboratories Analytical Services
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Job Number: 07/11339/02/03 **Matrix:** SOLID

Client: Waterman Environmental **Location:** SOLVAY INTEROX LTD: Peroxygen Business Area

Client Ref. No.: EN6344 **Client Contact:** Geoff Woods

Sample Identity	WE18	WE19	WE20							**Method Code**	**LoD/Units**
Depth (m)	0.60-0.70	2.60-2.95	0.4-0.5								
Sample Type	SOLID	SOLID	SOLID								
Sampled Date	24.07.07	26.07.07	25.07.07								
Sample Received Date	26.07.07	28.07.07	26.07.07								
Batch	12	13	12								
Sample Number(s)	**267-269**	**305-307**	**278-280**								
Volatile Organic Compounds (cont)											
Dibromochloromethane	<13	<13	<13							TM116$^{\#}$	<13 ug/kg
1.2-Dibromoethane	<12	<12	<12							TM116$^{\#}$	<12 ug/kg
Tetrachloroethene	<5	<5	<5							TM116$^{\#}$	<5 ug/kg
1.1.1.2-Tetrachloroethane	<10	<10	<10							TM116$^{\#}_{M}$	<10 ug/kg
Chlorobenzene	<5	<5	<5							TM116$^{\#}_{M}$	<5 ug/kg
Ethylbenzene	<4	<4	<4							TM116$^{\#}$	<4 ug/kg
p/m-Xylene	<14	<14	<14							TM116$^{\#}$	<14 ug/kg
Bromoform	<10	<10	<10							TM116$^{\#}$	<10 ug/kg
Styrene	<10	<10	<10							TM116$^{\#}$	<10 ug/kg
1.1.2.2-Tetrachloroethane	<10	<10	<10							TM116$^{\#}$	<10 ug/kg
o-Xylene	<10	<10	<10							TM116$^{\#}$	<10 ug/kg
1.2.3-Trichloropropane	<17	<17	<17							TM116$^{\#}$	<17 ug/kg
Isopropylbenzene	<5	<5	<5							TM116$^{\#}$	<5 ug/kg
Bromobenzene	<10	<10	<10							TM116$^{\#}_{M}$	<10 ug/kg
2-Chlorotoluene	<9	<9	<9							TM116$^{\#}$	<9 ug/kg
Propylbenzene	<11	<11	<11							TM116$^{\#}$	<11 ug/kg
4-Chlorotoluene	<12	<12	<12							TM116$^{\#}$	<12 ug/kg
1.2.4-Trimethylbenzene	<9	<9	<9							TM116$^{\#}$	<9 ug/kg
4-Isopropyltoluene	<11	<11	<11							TM116$^{\#}$	<11 ug/kg
1.3.5-Trimethylbenzene	<8	<8	<8							TM116$^{\#}$	<8 ug/kg
1.2-Dichlorobenzene	<12	<12	<12							TM116$^{\#}_{M}$	<12 ug/kg
1.4-Dichlorobenzene	<5	<5	<5							TM116$^{\#}_{M}$	<5 ug/kg
sec-Butylbenzene	<10	<10	<10							TM116$^{\#}$	<10 ug/kg
tert-Butylbenzene	<12	<12	<12							TM116$^{\#}$	<12 ug/kg
1.3-Dichlorobenzene	<6	<6	<6							TM116$^{\#}$	<6 ug/kg
n-Butylbenzene	<10	<10	<10							TM116$^{\#}$	<10 ug/kg
1.2-Dibromo-3-chloropropane	<14	<14	<14							TM116$^{\#}$	<14 ug/kg
1.2.4-Trichlorobenzene	<6	<6	<6							TM116$^{\#}$	<6 ug/kg
Naphthalene	<13	<13	<13							TM116$^{\#}$	<13 ug/kg
1.2.3-Trichlorobenzene	<11	<11	<11							TM116$^{\#}$	<11 ug/kg

All results expressed on a dry weight basis.

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Job Number: 07/11339/02/03
Matrix: SOLID
Client: Waterman Environmental
Location: SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344
Client Contact: Geoff Woods

Sample Identity	WE18	WE19	WE20							**Method Code**	**LoD/Units**
Depth (m)	0.60-0.70	2.60-2.95	0.4-0.5								
Sample Type	SOLID	SOLID	SOLID								
Sampled Date	24.07.07	26.07.07	25.07.07								
Sample Received Date	26.07.07	28.07.07	26.07.07								
Batch	12	13	12								
Sample Number(s)	**267-269**	**305-307**	**278-280**								
Volatile Organic Compounds (cont)											
Hexachlorobutadiene	<12	<12	<12							TM116#	<12 ug/kg

All results expressed on a dry weight basis.

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Job Number: 07/11339/02/03
Client: Waterman Environmental
Client Ref. No.: EN6344
Matrix: LIQUID
Location: SOLVAY INTEROX LTD: Peroxygen Business Area
Client Contact: Geoff Woods

Sample Identity	D10	D12	DW6	DW9	M37	M52	M58	SB23	SB63	**Method Code**	**LoD/Units**
Depth (m)	14.42	18.15	15.00	16.25	3.60	5.42	4.18	4.00	3.96		
Sample Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID		
Sampled Date	05.07.07	04.07.07	09.07.07	09.07.07	05.07.07	09.07.07	04.07.07	05.07.07	05.07.07		
Sample Received Date	07.07.07	07.07.07	09.07.07	09.07.07	07.07.07	09.07.07	07.07.07	07.07.07	07.07.07		
Batch	3	3	4	4	3	4	3	3	3		
Sample Number(s)	**33-36**	**37-40**	**73-76**	**77-80**	**41-44**	**81-84**	**45-48**	**49-52**	**53-56**		
Arsenic Dissolved (ICP-MS)	-	-	-	-	-	-	-	-	-	TM152$^{\#}$	<1 ug/l
Barium Dissolved (ICP-MS)	-	-	-	-	-	-	-	-	-	TM152$^{\#}$	<1 ug/l
Beryllium Dissolved (ICP-MS)	-	-	-	-	-	-	-	-	-	TM152$^{\#}$	<1 ug/l
Boron Dissolved (ICP-MS)	-	-	-	-	-	-	-	-	-	TM152$^{\#}$	<10 ug/l
Cadmium Dissolved (ICP-MS)	-	-	-	-	-	-	-	-	-	TM152$^{\#}$	<0.4 ug/l
Chromium Dissolved (ICP-MS)	-	-	-	-	-	-	-	-	-	TM152$^{\#}$	<1 ug/l
Copper Dissolved (ICP-MS)	-	-	-	-	-	-	-	-	-	TM152$^{\#}$	<1 ug/l
Iron Dissolved (ICP-MS)	-	48	-	-	-	-	59	-	-	TM152$^{\#}$	<5 ug/l
Lead Dissolved (ICP-MS)	-	-	-	-	-	-	-	-	-	TM152$^{\#}$	<1 ug/l
Nickel Dissolved (ICP-MS)	-	-	-	-	-	-	-	-	-	TM152$^{\#}$	<1 ug/l
Selenium Dissolved (ICP-MS)	-	-	-	-	-	-	-	-	-	TM152$^{\#}$	<1 ug/l
Tin Dissolved (ICP-MS)	-	1	-	<1	<1	-	-	-	-	TM152	<1 ug/l
Vanadium Dissolved (ICP-MS)	-	-	-	-	-	-	-	-	-	TM152$^{\#}$	<1 ug/l
Zinc Dissolved (ICP-MS)	-	-	-	-	-	-	-	-	-	TM152$^{\#}$	<3 ug/l
Mercury Dissolved (CVAA)	-	-	-	-	-	-	-	-	-	TM127$^{\#}$	<0.05 ug/l
Silicon Dissolved	-	2.9	-	8.0	6.7	-	6.2	-	-	TM129	<0.05 mg/l
Total Alkalinity as CaCO3	190	190	80	440	280	230	3100	90	180	TM043$^{\#}$	<2 mg/l
Potassium Dissolved	12	-	8.6	-	-	5.9	-	-	4.4	TM083	<0.2 mg/l
Sodium Dissolved	2100	830	130	260	330	370	4700	-	47	TM083	<0.2 mg/l
Nitrate as NO3	<0.3	1.6	2.5	37	<0.3	0.4	8.3	-	2.6	TM102$^{\#}$	<0.3 mg/l
Nitrite as NO2	-	0.05	-	0.14	<0.05	-	-	-	-	TM103$^{\#}$	<0.05 mg/l
Sulphate (soluble)	310	64	22	33	61	54	51	-	14	TM098$^{\#}$	<3 mg/l
Chloride	3500	870	200	150	330	630	3100	-	41	TM097$^{\#}$	<1 mg/l
Fluoride	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	-	<0.5	TM104$^{\#}$	<0.5 mg/l
Phosphate (Ortho as PO4)	<0.08	2.0	3.1	1.2	<0.08	<0.08	18	-	0.19	TM100$^{\#}$	<0.08 mg/l
pH Value	8.05	8.68	8.26	8.88	8.20	8.70	10.46	7.29	8.22	TM133$^{\#}$	<1.00 pH Units

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Job Number: 07/11339/02/03
Matrix: LIQUID
Client: Waterman Environmental
Location: SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344
Client Contact: Geoff Woods

Sample Identity	D10	D12	DW6	DW9	M37	M52	M58	SB23	SB63	**Method Code**	**LoD/Units**
Depth (m)	14.42	18.15	15.00	16.25	3.60	5.42	4.18	4.00	3.96		
Sample Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID		
Sampled Date	05.07.07	04.07.07	09.07.07	09.07.07	05.07.07	09.07.07	04.07.07	05.07.07	05.07.07		
Sample Received Date	07.07.07	07.07.07	09.07.07	09.07.07	07.07.07	09.07.07	07.07.07	07.07.07	07.07.07		
Batch	3	3	4	4	3	4	3	3	3		
Sample Number(s)	**33-36**	**37-40**	**73-76**	**77-80**	**41-44**	**81-84**	**45-48**	**49-52**	**53-56**		
GRO (C4-C12)	23	<10	<10	<10	7400	2000	<10	-	3600	TM089#	<10 ug/l
MTBE	<10	<10	<10	<10	<10	<10	<10	-	<10	TM089#	<10 ug/l
Benzene	<10	<10	<10	<10	<10	<10	<10	-	<10	TM089#	<10 ug/l
Toluene	<10	<10	<10	<10	<10	<10	<10	-	<10	TM089#	<10 ug/l
Ethyl benzene	<10	<10	<10	<10	<10	<10	<10	-	<10	TM089#	<10 ug/l
m & p Xylene	<10	<10	<10	<10	29	<10	<10	-	<10	TM089#	<10 ug/l
o Xylene	<10	<10	<10	<10	46	<10	<10	-	<10	TM089#	<10 ug/l
Aliphatics C5-C6	23	<10	<10	<10	<10	<10	<10	-	<10	TM089	<10 ug/l
Aliphatics >C6-C8	<10	<10	<10	<10	<10	<10	<10	-	<10	TM089	<10 ug/l
Aliphatics >C8-C10	<10	<10	<10	<10	1900	140	<10	-	210	TM089	<10 ug/l
Aliphatics >C10-C12	<10	<10	<10	<10	990	660	<10	-	1200	TM089	<10 ug/l
Aliphatics >C12-C16 Aqueous	<10	<10	<10	<10	<10	<10	<10	-	17	TM174	<10 ug/l
Aliphatics >C16-C21 Aqueous	<10	<10	<10	<10	<10	<10	<10	-	<10	TM174	<10 ug/l
Aliphatics >C21-C35 Aqueous	<10	<10	<10	<10	<10	<10	<10	-	<10	TM174	<10 ug/l
Total Aliphatics C5-C35 Aqueous	23	<10	<10	<10	2900	800	<10	-	1500	TM61/89	<10 ug/l
Aromatics C6-C7	<10	<10	<10	<10	<10	<10	<10	-	<10	TM089#	<10 ug/l
Aromatics >C7-C8	<10	<10	<10	<10	<10	<10	<10	-	<10	TM089#	<10 ug/l
Aromatics >EC8-EC10	<10	<10	<10	<10	3000	210	<10	-	320	TM089	<10 ug/l
Aromatics >EC10-EC12	<10	<10	<10	<10	1500	990	<10	-	1900	TM089	<10 ug/l
Aromatics >EC12-EC16 Aqueous	<10	<10	<10	<10	1500	2600	<10	-	3400	TM174	<10 ug/l
Aromatics >EC16-EC21 Aqueous	<10	<10	<10	<10	<10	33	<10	-	<10	TM174	<10 ug/l
Aromatics >EC21-EC35 Aqueous	<10	<10	<10	<10	43	75	<10	-	400	TM174	<10 ug/l
Total Aromatics C6-C35 Aqueous	<10	<10	<10	<10	6000	3900	<10	-	6000	TM61/89	<10 ug/l
TPH (Aliphatics and Aromatics C5-C35) Aqueous	23	<10	<10	<10	8900	4700	<10	-	7400	TM61/89	<10 ug/l

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Job Number: 07/11339/02/03
Matrix: LIQUID
Client: Waterman Environmental
Location: SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344
Client Contact: Geoff Woods

Sample Identity	D10	D12	DW6	DW9	M37	M52	M58	SB23	SB63	**Method Code**	**LoD/Units**
Depth (m)	14.42	18.15	15.00	16.25	3.60	5.42	4.18	4.00	3.96		
Sample Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID		
Sampled Date	05.07.07	04.07.07	09.07.07	09.07.07	05.07.07	09.07.07	04.07.07	05.07.07	05.07.07		
Sample Received Date	07.07.07	07.07.07	09.07.07	09.07.07	07.07.07	09.07.07	07.07.07	07.07.07	07.07.07		
Batch	3	3	4	4	3	4	3	3	3		
Sample Number(s)	**33-36**	**37-40**	**73-76**	**77-80**	**41-44**	**81-84**	**45-48**	**49-52**	**53-56**		
SVOC by GCMS											
Phenols											
2-Chlorophenol	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
2-Methylphenol	<1	<1	<1	<1	<5	1	<1	-	<10	TM176	<1 ug/l
2-Nitrophenol	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
2,4-Dichlorophenol	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
2,4-Dimethylphenol	<1	<1	<1	<1	7	18	<1	-	<10	TM176	<1 ug/l
2,4,5-Trichlorophenol	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
2,4,6-Trichlorophenol	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
4-Chloro-3-methylphenol	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
4-Methylphenol	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
4-Nitrophenol	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Pentachlorophenol	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Phenol	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l

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Job Number: 07/11339/02/03
Matrix: LIQUID
Client: Waterman Environmental
Location: SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344
Client Contact: Geoff Woods

Sample Identity	D10	D12	DW6	DW9	M37	M52	M58	SB23	SB63	**Method Code**	**LoD/Units**
Depth (m)	14.42	18.15	15.00	16.25	3.60	5.42	4.18	4.00	3.96		
Sample Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID		
Sampled Date	05.07.07	04.07.07	09.07.07	09.07.07	05.07.07	09.07.07	04.07.07	05.07.07	05.07.07		
Sample Received Date	07.07.07	07.07.07	09.07.07	09.07.07	07.07.07	09.07.07	07.07.07	07.07.07	07.07.07		
Batch	3	3	4	4	3	4	3	3	3		
Sample Number(s)	**33-36**	**37-40**	**73-76**	**77-80**	**41-44**	**81-84**	**45-48**	**49-52**	**53-56**		
PAHs											
2-Chloronaphthalene	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
2-Methylnaphthalene	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Acenaphthene	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Acenaphthylene	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Anthracene	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Benzo(a)anthracene	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Benzo(a)pyrene	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Benzo(b)fluoranthene	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Benzo(ghi)perylene	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Benzo(k)fluoranthene	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Chrysene	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Dibenzo(a,h)anthracene	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Fluoranthene	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Fluorene	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Indeno(1,2,3-cd)pyrene	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Naphthalene	<1	<1	<1	<1	21	<1	<1	-	37	TM176	<1 ug/l
Phenanthrene	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Pyrene	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Phthalates											
Bis(2-ethylhexyl) phthalate	<2	<2	<2	<2	<10	<2	<2	-	<20	TM176	<2 ug/l
Butylbenzyl phthalate	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Di-n-butyl phthalate	<1	<1	<1	<1	<5	1	<1	-	<10	TM176	<1 ug/l
Di-n-Octyl phthalate	<5	<5	<5	<5	<25	<5	<5	-	<50	TM176	<5 ug/l
Diethyl phthalate	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Dimethyl phthalate	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Other Semi-volatiles											
1,2-Dichlorobenzene	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
1,2,4-Trichlorobenzene	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l

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ALcontrol Laboratories Analytical Services
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Job Number: 07/11339/02/03 **Matrix:** LIQUID
Client: Waterman Environmental **Location:** SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344 **Client Contact:** Geoff Woods

Sample Identity	D10	D12	DW6	DW9	M37	M52	M58	SB23	SB63	**Method Code**	**LoD/Units**
Depth (m)	14.42	18.15	15.00	16.25	3.60	5.42	4.18	4.00	3.96		
Sample Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID		
Sampled Date	05.07.07	04.07.07	09.07.07	09.07.07	05.07.07	09.07.07	04.07.07	05.07.07	05.07.07		
Sample Received Date	07.07.07	07.07.07	09.07.07	09.07.07	07.07.07	09.07.07	07.07.07	07.07.07	07.07.07		
Batch	3	3	4	4	3	4	3	3	3		
Sample Number(s)	**33-36**	**37-40**	**73-76**	**77-80**	**41-44**	**81-84**	**45-48**	**49-52**	**53-56**		
Other Semi-volatiles (cont)											
1,3-Dichlorobenzene	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
1,4-Dichlorobenzene	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
2-Nitroaniline	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
2,4-Dinitrotoluene	<1	<1	<1	<1	6	<1	<1	-	<10	TM176	<1 ug/l
2,6-Dinitrotoluene	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
3-Nitroaniline	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
4-Bromophenylphenylether	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
4-Chloroaniline	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
4-Chlorophenylphenylether	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
4-Nitroaniline	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Azobenzene	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Bis(2-chloroethoxy)methane	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Bis(2-chloroethyl)ether	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Carbazole	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Dibenzofuran	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Hexachlorobenzene	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Hexachlorobutadiene	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Hexachlorocyclopentadiene	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Hexachloroethane	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Isophorone	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
N-nitrosodi-n-propylamine	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l
Nitrobenzene	<1	<1	<1	<1	<5	<1	<1	-	<10	TM176	<1 ug/l

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ALcontrol Laboratories Analytical Services
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Job Number: 07/11339/02/03
Matrix: LIQUID
Client: Waterman Environmental
Location: SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344
Client Contact: Geoff Woods

Sample Identity	D10	D12	DW6	DW9	M37	M52	M58	SB23	SB63	**Method Code**	**LoD/Units**
Depth (m)	14.42	18.15	15.00	16.25	3.60	5.42	4.18	4.00	3.96		
Sample Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID		
Sampled Date	05.07.07	04.07.07	09.07.07	09.07.07	05.07.07	09.07.07	04.07.07	05.07.07	05.07.07		
Sample Received Date	07.07.07	07.07.07	09.07.07	09.07.07	07.07.07	09.07.07	07.07.07	07.07.07	07.07.07		
Batch	3	3	4	4	3	4	3	3	3		
Sample Number(s)	**33-36**	**37-40**	**73-76**	**77-80**	**41-44**	**81-84**	**45-48**	**49-52**	**53-56**		
Volatile Organic Compounds											
Dichlorodifluoromethane	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
Chloromethane	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
Vinyl Chloride	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
Bromomethane	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
Chloroethane	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
Trichlorofluoromethane	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
trans-1-2-Dichloroethene	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
Dichloromethane	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
Carbon Disulphide	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
1.1-Dichloroethene	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
1.1-Dichloroethane	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
Methyl Tertiary Butyl Ether	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
cis-1-2-Dichloroethene	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
Bromochloromethane	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
Chloroform	<1	<1	5	<1	<1	<1	5	-	<1	TM116#	<1 ug/l
2.2-Dichloropropane	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
1.2-Dichloroethane	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
1.1.1-Trichloroethane	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
1.1-Dichloropropene	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
Benzene	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
Carbontetrachloride	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
Dibromomethane	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
1.2-Dichloropropane	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
Bromodichloromethane	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
Trichloroethene	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
cis-1-3-Dichloropropene	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
trans-1-3-Dichloropropene	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
1.1.2-Trichloroethane	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
Toluene	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
1.3-Dichloropropane	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l

Date 29.01.2008

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ALcontrol Laboratories Analytical Services
Table Of Results

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* Subcontracted test
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Job Number: 07/11339/02/03
Matrix: LIQUID
Client: Waterman Environmental
Location: SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344
Client Contact: Geoff Woods

Sample Identity	D10	D12	DW6	DW9	M37	M52	M58	SB23	SB63	**Method Code**	**LoD/Units**
Depth (m)	14.42	18.15	15.00	16.25	3.60	5.42	4.18	4.00	3.96		
Sample Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID		
Sampled Date	05.07.07	04.07.07	09.07.07	09.07.07	05.07.07	09.07.07	04.07.07	05.07.07	05.07.07		
Sample Received Date	07.07.07	07.07.07	09.07.07	09.07.07	07.07.07	09.07.07	07.07.07	07.07.07	07.07.07		
Batch	3	3	4	4	3	4	3	3	3		
Sample Number(s)	**33-36**	**37-40**	**73-76**	**77-80**	**41-44**	**81-84**	**45-48**	**49-52**	**53-56**		
Volatile Organic Compounds (cont)											
Dibromochloromethane	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
1.2-Dibromoethane	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
Tetrachloroethene	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
1.1.1.2-Tetrachloroethane	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
Chlorobenzene	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
Ethylbenzene	<1	<1	<1	<1	3	<1	<1	-	<1	TM116#	<1 ug/l
p/m-Xylene	<1	<1	<1	<1	41	3	<1	-	<1	TM116#	<1 ug/l
Bromoform	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
Styrene	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
1.1.2.2-Tetrachloroethane	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
o-Xylene	<1	<1	<1	<1	65	9	<1	-	<1	TM116#	<1 ug/l
1.2.3-Trichloropropane	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
Isopropylbenzene	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
Bromobenzene	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
2-Chlorotoluene	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
Propylbenzene	<1	<1	<1	<1	5	<1	<1	-	6	TM116#	<1 ug/l
4-Chlorotoluene	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
1.2.4-Trimethylbenzene	<1	<1	<1	<1	9200	340	5	-	1300	TM116#	<1 ug/l
4-Isopropyltoluene	<1	<1	<1	<1	8	2	<1	-	19	TM116#	<1 ug/l
1.3.5-Trimethylbenzene	<1	<1	<1	<1	2300	24	<1	-	130	TM116#	<1 ug/l
1.2-Dichlorobenzene	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
1.4-Dichlorobenzene	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
sec-Butylbenzene	<1	<1	<1	<1	9	<1	<1	-	12	TM116#	<1 ug/l
tert-Butylbenzene	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
1.3-Dichlorobenzene	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
n-Butylbenzene	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
1.2-Dibromo-3-chloropropane	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
1.2.4-Trichlorobenzene	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l
Naphthalene	<1	<1	<1	<1	63	48	<1	-	210	TM116#	<1 ug/l
1.2.3-Trichlorobenzene	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l

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Job Number: 07/11339/02/03
Matrix: LIQUID
Client: Waterman Environmental
Location: SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344
Client Contact: Geoff Woods

Sample Identity	D10	D12	DW6	DW9	M37	M52	M58	SB23	SB63	**Method Code**	**LoD/Units**
Depth (m)	14.42	18.15	15.00	16.25	3.60	5.42	4.18	4.00	3.96		
Sample Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID		
Sampled Date	05.07.07	04.07.07	09.07.07	09.07.07	05.07.07	09.07.07	04.07.07	05.07.07	05.07.07		
Sample Received Date	07.07.07	07.07.07	09.07.07	09.07.07	07.07.07	09.07.07	07.07.07	07.07.07	07.07.07		
Batch	3	3	4	4	3	4	3	3	3		
Sample Number(s)	**33-36**	**37-40**	**73-76**	**77-80**	**41-44**	**81-84**	**45-48**	**49-52**	**53-56**		
Volatile Organic Compounds (cont)											
Hexachlorobutadiene	<1	<1	<1	<1	<1	<1	<1	-	<1	TM116#	<1 ug/l

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Job Number: 07/11339/02/03
Matrix: LIQUID
Client: Waterman Environmental
Location: SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344
Client Contact: Geoff Woods

Sample Identity	W41	W48	W56							**Method Code**	**LoD/Units**
Depth (m)	11.67	1.88	4.58								
Sample Type	LIQUID	LIQUID	LIQUID								
Sampled Date	05.07.07	04.07.07	09.07.07								
Sample Received Date	07.07.07	07.07.07	09.07.07								
Batch	3	3	4								
Sample Number(s)	**61-64**	**65-68**	**85-88**								
Arsenic Dissolved (ICP-MS)	47	-	-							TM152$^{\#}$	<1 ug/l
Barium Dissolved (ICP-MS)	210	-	-							TM152$^{\#}$	<1 ug/l
Beryllium Dissolved (ICP-MS)	<1	-	-							TM152$^{\#}$	<1 ug/l
Boron Dissolved (ICP-MS)	72	-	-							TM152$^{\#}$	<10 ug/l
Cadmium Dissolved (ICP-MS)	<0.4	-	-							TM152$^{\#}$	<0.4 ug/l
Chromium Dissolved (ICP-MS)	<1	-	-							TM152$^{\#}$	<1 ug/l
Copper Dissolved (ICP-MS)	2	-	-							TM152$^{\#}$	<1 ug/l
Iron Dissolved (ICP-MS)	-	-	-							TM152$^{\#}$	<5 ug/l
Lead Dissolved (ICP-MS)	1	-	-							TM152$^{\#}$	<1 ug/l
Nickel Dissolved (ICP-MS)	4	-	-							TM152$^{\#}$	<1 ug/l
Selenium Dissolved (ICP-MS)	6	-	-							TM152$^{\#}$	<1 ug/l
Tin Dissolved (ICP-MS)	-	-	-							TM152	<1 ug/l
Vanadium Dissolved (ICP-MS)	<1	-	-							TM152$^{\#}$	<1 ug/l
Zinc Dissolved (ICP-MS)	11	-	-							TM152$^{\#}$	<3 ug/l
Mercury Dissolved (CVAA)	<0.05	-	-							TM127$^{\#}$	<0.05 ug/l
Silicon Dissolved	-	-	-							TM129	<0.05 mg/l
Total Alkalinity as CaCO3	260	470	190							TM043$^{\#}$	<2 mg/l
Potassium Dissolved	18	8.1	8.4							TM083	<0.2 mg/l
Sodium Dissolved	2300	15	800							TM083	<0.2 mg/l
Nitrate as NO3	<0.3	3.9	0.8							TM102$^{\#}$	<0.3 mg/l
Nitrite as NO2	-	-	-							TM103$^{\#}$	<0.05 mg/l
Sulphate (soluble)	490	10	50							TM098$^{\#}$	<3 mg/l
Chloride	2900	4	1400							TM097$^{\#}$	<1 mg/l
Fluoride	<0.5	<0.5	<0.5							TM104$^{\#}$	<0.5 mg/l
Phosphate (Ortho as PO4)	1.6	<0.08	<0.08							TM100$^{\#}$	<0.08 mg/l
pH Value	8.36	8.39	8.51							TM133$^{\#}$	<1.00 pH Units

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Job Number: 07/11339/02/03
Matrix: LIQUID
Client: Waterman Environmental
Location: SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344
Client Contact: Geoff Woods

Sample Identity	W41	W48	W56							**Method Code**	**LoD/Units**
Depth (m)	11.67	1.88	4.58								
Sample Type	LIQUID	LIQUID	LIQUID								
Sampled Date	05.07.07	04.07.07	09.07.07								
Sample Received Date	07.07.07	07.07.07	09.07.07								
Batch	3	3	4								
Sample Number(s)	**61-64**	**65-68**	**85-88**								
GRO (C4-C12)	<10	<10	1300							TM089#	<10 ug/l
MTBE	<10	<10	<10							TM089#	<10 ug/l
Benzene	<10	<10	<10							TM089#	<10 ug/l
Toluene	<10	<10	<10							TM089#	<10 ug/l
Ethyl benzene	<10	<10	<10							TM089#	<10 ug/l
m & p Xylene	<10	<10	<10							TM089#	<10 ug/l
o Xylene	<10	<10	<10							TM089#	<10 ug/l
Aliphatics C5-C6	<10	<10	<10							TM089	<10 ug/l
Aliphatics >C6-C8	<10	<10	<10							TM089	<10 ug/l
Aliphatics >C8-C10	<10	<10	320							TM089	<10 ug/l
Aliphatics >C10-C12	<10	<10	210							TM089	<10 ug/l
Aliphatics >C12-C16 Aqueous	<10	<10	<10							TM174	<10 ug/l
Aliphatics >C16-C21 Aqueous	<10	<10	<10							TM174	<10 ug/l
Aliphatics >C21-C35 Aqueous	<10	<10	<10							TM174	<10 ug/l
Total Aliphatics C5-C35 Aqueous	<10	<10	530							TM61/89	<10 ug/l
Aromatics C6-C7	<10	<10	<10							TM089#	<10 ug/l
Aromatics >C7-C8	<10	<10	<10							TM089#	<10 ug/l
Aromatics >EC8-EC10	<10	<10	470							TM089	<10 ug/l
Aromatics >EC10-EC12	<10	<10	310							TM089	<10 ug/l
Aromatics >EC12-EC16 Aqueous	170	<10	140							TM174	<10 ug/l
Aromatics >EC16-EC21 Aqueous	17	<10	<10							TM174	<10 ug/l
Aromatics >EC21-EC35 Aqueous	66	<10	<10							TM174	<10 ug/l
Total Aromatics C6-C35 Aqueous	250	<10	920							TM61/89	<10 ug/l
TPH (Aliphatics and Aromatics C5-C35) Aqueou	250	<10	1400							TM61/89	<10 ug/l

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Job Number: 07/11339/02/03 **Matrix:** LIQUID
Client: Waterman Environmental **Location:** SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344 **Client Contact:** Geoff Woods

Sample Identity	W41	W48	W56							**Method Code**	**LoD/Units**
Depth (m)	11.67	1.88	4.58								
Sample Type	LIQUID	LIQUID	LIQUID								
Sampled Date	05.07.07	04.07.07	09.07.07								
Sample Received Date	07.07.07	07.07.07	09.07.07								
Batch	3	3	4								
Sample Number(s)	**61-64**	**65-68**	**85-88**								
SVOC by GCMS											
Phenols											
2-Chlorophenol	<1	<1	<1							TM176	<1 ug/l
2-Methylphenol	<1	<1	<1							TM176	<1 ug/l
2-Nitrophenol	<1	<1	<1							TM176	<1 ug/l
2,4-Dichlorophenol	<1	<1	<1							TM176	<1 ug/l
2,4-Dimethylphenol	<1	<1	<1							TM176	<1 ug/l
2,4,5-Trichlorophenol	<1	<1	<1							TM176	<1 ug/l
2,4,6-Trichlorophenol	<1	<1	<1							TM176	<1 ug/l
4-Chloro-3-methylphenol	<1	<1	<1							TM176	<1 ug/l
4-Methylphenol	<1	<1	<1							TM176	<1 ug/l
4-Nitrophenol	<1	<1	<1							TM176	<1 ug/l
Pentachlorophenol	<1	<1	<1							TM176	<1 ug/l
Phenol	<1	<1	<1							TM176	<1 ug/l

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Job Number: 07/11339/02/03
Matrix: LIQUID
Client: Waterman Environmental
Location: SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344
Client Contact: Geoff Woods

Sample Identity	W41	W48	W56							**Method Code**	**LoD/Units**
Depth (m)	11.67	1.88	4.58								
Sample Type	LIQUID	LIQUID	LIQUID								
Sampled Date	05.07.07	04.07.07	09.07.07								
Sample Received Date	07.07.07	07.07.07	09.07.07								
Batch	3	3	4								
Sample Number(s)	**61-64**	**65-68**	**85-88**								
PAHs											
2-Chloronaphthalene	<1	<1	<1							TM176	<1 ug/l
2-Methylnaphthalene	<1	<1	<1							TM176	<1 ug/l
Acenaphthene	<1	<1	<1							TM176	<1 ug/l
Acenaphthylene	<1	<1	<1							TM176	<1 ug/l
Anthracene	<1	<1	<1							TM176	<1 ug/l
Benzo(a)anthracene	<1	<1	<1							TM176	<1 ug/l
Benzo(a)pyrene	<1	<1	<1							TM176	<1 ug/l
Benzo(b)fluoranthene	<1	<1	<1							TM176	<1 ug/l
Benzo(ghi)perylene	<1	<1	<1							TM176	<1 ug/l
Benzo(k)fluoranthene	<1	<1	<1							TM176	<1 ug/l
Chrysene	<1	<1	<1							TM176	<1 ug/l
Dibenzo(a,h)anthracene	<1	<1	<1							TM176	<1 ug/l
Fluoranthene	<1	<1	<1							TM176	<1 ug/l
Fluorene	<1	<1	<1							TM176	<1 ug/l
Indeno(1,2,3-cd)pyrene	<1	<1	<1							TM176	<1 ug/l
Naphthalene	<1	<1	<1							TM176	<1 ug/l
Phenanthrene	<1	<1	<1							TM176	<1 ug/l
Pyrene	<1	<1	<1							TM176	<1 ug/l
Phthalates											
Bis(2-ethylhexyl) phthalate	<2	<2	<2							TM176	<2 ug/l
Butylbenzyl phthalate	<1	<1	<1							TM176	<1 ug/l
Di-n-butyl phthalate	<1	<1	<1							TM176	<1 ug/l
Di-n-Octyl phthalate	<5	<5	<5							TM176	<5 ug/l
Diethyl phthalate	<1	<1	<1							TM176	<1 ug/l
Dimethyl phthalate	<1	<1	<1							TM176	<1 ug/l
Other Semi-volatiles											
1,2-Dichlorobenzene	<1	<1	<1							TM176	<1 ug/l
1,2,4-Trichlorobenzene	<1	<1	<1							TM176	<1 ug/l

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Job Number: 07/11339/02/03
Matrix: LIQUID
Client: Waterman Environmental
Location: SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344
Client Contact: Geoff Woods

Sample Identity	W41	W48	W56							**Method Code**	**LoD/Units**
Depth (m)	11.67	1.88	4.58								
Sample Type	LIQUID	LIQUID	LIQUID								
Sampled Date	05.07.07	04.07.07	09.07.07								
Sample Received Date	07.07.07	07.07.07	09.07.07								
Batch	3	3	4								
Sample Number(s)	**61-64**	**65-68**	**85-88**								
Other Semi-volatiles (cont)											
1,3-Dichlorobenzene	<1	<1	<1							TM176	<1 ug/l
1,4-Dichlorobenzene	<1	<1	<1							TM176	<1 ug/l
2-Nitroaniline	<1	<1	<1							TM176	<1 ug/l
2,4-Dinitrotoluene	<1	<1	<1							TM176	<1 ug/l
2,6-Dinitrotoluene	<1	<1	<1							TM176	<1 ug/l
3-Nitroaniline	<1	<1	<1							TM176	<1 ug/l
4-Bromophenylphenylether	<1	<1	<1							TM176	<1 ug/l
4-Chloroaniline	<1	<1	<1							TM176	<1 ug/l
4-Chlorophenylphenylether	<1	<1	<1							TM176	<1 ug/l
4-Nitroaniline	<1	<1	<1							TM176	<1 ug/l
Azobenzene	<1	<1	<1							TM176	<1 ug/l
Bis(2-chloroethoxy)methane	<1	<1	<1							TM176	<1 ug/l
Bis(2-chloroethyl)ether	<1	<1	<1							TM176	<1 ug/l
Carbazole	<1	<1	<1							TM176	<1 ug/l
Dibenzofuran	<1	<1	<1							TM176	<1 ug/l
Hexachlorobenzene	<1	<1	<1							TM176	<1 ug/l
Hexachlorobutadiene	<1	<1	<1							TM176	<1 ug/l
Hexachlorocyclopentadiene	<1	<1	<1							TM176	<1 ug/l
Hexachloroethane	<1	<1	<1							TM176	<1 ug/l
Isophorone	<1	<1	<1							TM176	<1 ug/l
N-nitrosodi-n-propylamine	<1	<1	<1							TM176	<1 ug/l
Nitrobenzene	<1	<1	<1							TM176	<1 ug/l

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Job Number: 07/11339/02/03
Matrix: LIQUID
Client: Waterman Environmental
Location: SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344
Client Contact: Geoff Woods

Sample Identity	W41	W48	W56							**Method Code**	**LoD/Units**
Depth (m)	11.67	1.88	4.58								
Sample Type	LIQUID	LIQUID	LIQUID								
Sampled Date	05.07.07	04.07.07	09.07.07								
Sample Received Date	07.07.07	07.07.07	09.07.07								
Batch	3	3	4								
Sample Number(s)	**61-64**	**65-68**	**85-88**								
Volatile Organic Compounds											
Dichlorodifluoromethane	<1	<1	<1							TM116$^{\#}$	<1 ug/l
Chloromethane	<1	<1	<1							TM116$^{\#}$	<1 ug/l
Vinyl Chloride	<1	<1	<1							TM116$^{\#}$	<1 ug/l
Bromomethane	<1	<1	<1							TM116$^{\#}$	<1 ug/l
Chloroethane	<1	<1	<1							TM116$^{\#}$	<1 ug/l
Trichlorofluoromethane	<1	<1	<1							TM116$^{\#}$	<1 ug/l
trans-1-2-Dichloroethene	<1	<1	<1							TM116$^{\#}$	<1 ug/l
Dichloromethane	<1	<1	<1							TM116$^{\#}$	<1 ug/l
Carbon Disulphide	<1	<1	<1							TM116$^{\#}$	<1 ug/l
1.1-Dichloroethene	<1	<1	<1							TM116$^{\#}$	<1 ug/l
1.1-Dichloroethane	<1	<1	<1							TM116$^{\#}$	<1 ug/l
Methyl Tertiary Butyl Ether	<1	<1	<1							TM116$^{\#}$	<1 ug/l
cis-1-2-Dichloroethene	<1	<1	<1							TM116$^{\#}$	<1 ug/l
Bromochloromethane	<1	<1	<1							TM116$^{\#}$	<1 ug/l
Chloroform	<1	<1	<1							TM116$^{\#}$	<1 ug/l
2.2-Dichloropropane	<1	<1	<1							TM116$^{\#}$	<1 ug/l
1.2-Dichloroethane	<1	<1	<1							TM116$^{\#}$	<1 ug/l
1.1.1-Trichloroethane	<1	15	<1							TM116$^{\#}$	<1 ug/l
1.1-Dichloropropene	<1	<1	<1							TM116$^{\#}$	<1 ug/l
Benzene	<1	<1	<1							TM116$^{\#}$	<1 ug/l
Carbontetrachloride	<1	<1	<1							TM116$^{\#}$	<1 ug/l
Dibromomethane	<1	<1	<1							TM116$^{\#}$	<1 ug/l
1.2-Dichloropropane	<1	<1	<1							TM116$^{\#}$	<1 ug/l
Bromodichloromethane	<1	<1	<1							TM116$^{\#}$	<1 ug/l
Trichloroethene	<1	<1	<1							TM116$^{\#}$	<1 ug/l
cis-1-3-Dichloropropene	<1	<1	<1							TM116$^{\#}$	<1 ug/l
trans-1-3-Dichloropropene	<1	<1	<1							TM116$^{\#}$	<1 ug/l
1.1.2-Trichloroethane	<1	<1	<1							TM116$^{\#}$	<1 ug/l
Toluene	<1	<1	<1							TM116$^{\#}$	<1 ug/l
1.3-Dichloropropane	<1	<1	<1							TM116$^{\#}$	<1 ug/l

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Job Number: 07/11339/02/03
Matrix: LIQUID
Client: Waterman Environmental
Location: SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344
Client Contact: Geoff Woods

Sample Identity	W41	W48	W56							**Method Code**	**LoD/Units**
Depth (m)	11.67	1.88	4.58								
Sample Type	LIQUID	LIQUID	LIQUID								
Sampled Date	05.07.07	04.07.07	09.07.07								
Sample Received Date	07.07.07	07.07.07	09.07.07								
Batch	3	3	4								
Sample Number(s)	**61-64**	**65-68**	**85-88**								
Volatile Organic Compounds (cont)											
Dibromochloromethane	<1	<1	<1							TM116#	<1 ug/l
1.2-Dibromoethane	<1	<1	<1							TM116#	<1 ug/l
Tetrachloroethene	<1	<1	<1							TM116#	<1 ug/l
1.1.1.2-Tetrachloroethane	<1	<1	<1							TM116#	<1 ug/l
Chlorobenzene	<1	<1	<1							TM116#	<1 ug/l
Ethylbenzene	<1	<1	<1							TM116#	<1 ug/l
p/m-Xylene	<1	<1	<1							TM116#	<1 ug/l
Bromoform	<1	<1	<1							TM116#	<1 ug/l
Styrene	<1	<1	<1							TM116#	<1 ug/l
1.1.2.2-Tetrachloroethane	<1	<1	<1							TM116#	<1 ug/l
o-Xylene	<1	<1	<1							TM116#	<1 ug/l
1.2.3-Trichloropropane	<1	<1	<1							TM116#	<1 ug/l
Isopropylbenzene	<1	<1	<1							TM116#	<1 ug/l
Bromobenzene	<1	<1	<1							TM116#	<1 ug/l
2-Chlorotoluene	<1	<1	<1							TM116#	<1 ug/l
Propylbenzene	<1	<1	<1							TM116#	<1 ug/l
4-Chlorotoluene	<1	<1	<1							TM116#	<1 ug/l
1.2.4-Trimethylbenzene	<1	<1	2							TM116#	<1 ug/l
4-Isopropyltoluene	<1	<1	<1							TM116#	<1 ug/l
1.3.5-Trimethylbenzene	<1	<1	<1							TM116#	<1 ug/l
1.2-Dichlorobenzene	<1	<1	<1							TM116#	<1 ug/l
1.4-Dichlorobenzene	<1	<1	<1							TM116#	<1 ug/l
sec-Butylbenzene	<1	<1	<1							TM116#	<1 ug/l
tert-Butylbenzene	<1	<1	<1							TM116#	<1 ug/l
1.3-Dichlorobenzene	<1	<1	<1							TM116#	<1 ug/l
n-Butylbenzene	<1	<1	<1							TM116#	<1 ug/l
1.2-Dibromo-3-chloropropane	<1	<1	<1							TM116#	<1 ug/l
1.2.4-Trichlorobenzene	<1	<1	<1							TM116#	<1 ug/l
Naphthalene	<1	<1	<1							TM116#	<1 ug/l
1.2.3-Trichlorobenzene	<1	<1	<1							TM116#	<1 ug/l

Date 29.01.2008

Validated ☑

Preliminary ☐

ALcontrol Laboratories Analytical Services
Table Of Results

\# ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/11339/02/03
Matrix: LIQUID
Client: Waterman Environmental
Location: SOLVAY INTEROX LTD: Peroxygen Business Area
Client Ref. No.: EN6344
Client Contact: Geoff Woods

Sample Identity	W41	W48	W56							**Method Code**	**LoD/Units**
Depth (m)	11.67	1.88	4.58								
Sample Type	LIQUID	LIQUID	LIQUID								
Sampled Date	05.07.07	04.07.07	09.07.07								
Sample Received Date	07.07.07	07.07.07	09.07.07								
Batch	3	3	4								
Sample Number(s)	**61-64**	**65-68**	**85-88**								
Volatile Organic Compounds (cont)											
Hexachlorobutadiene	<1	<1	<1							TM116#	<1 ug/l

Date 29.01.2008

ALcontrol Laboratories Analytical Services
Table Of Results - Appendix

Job Number:	07/11339/02/03
Client:	Waterman Environmental
Client Ref. No.:	EN6344

Report Key :

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10^{-7}

NDP	No Determination Possible	*	Subcontracted test
NFD	No Fibres Detected	»	Result previously reported (Incremental reports only)
#	ISO 17025 accredited	M	MCERTS Accredited
PFD	Possible Fibres Detected	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control.

Summary of Method Codes contained within report :

Method No.	Reference	Description	ISO 17025 Accredited	MCERTS Accredited	Wet/Dry Sample [1]	Surrogate Corrected
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples			WET	
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples	✓		NA	
TM083	Method 3111, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 7610	Determination of Sodium and Potassium by Flame Photometer			DRY	
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)			WET	
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)	✓		WET	
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)	✓	✓	WET	
TM097	Modified: US EPA Method 325.1 & 325.2	Determination of Chloride using the Kone Analyser	✓		NA	
TM097	Modified: US EPA Method 325.1 & 325.2	Determination of Chloride using the Kone Analyser	✓	✓	DRY	
TM098	Method 4500E, AWWA/APHA, 20th Ed., 1999	Determination of Sulphate using the Kone Analyser	✓		NA	
TM100	BS 2690: Part 105:1983	Determination of Phosphate using the Kone Analyser	✓		DRY	
TM102	Method 4500H, AWWA/APHA, 20th Ed., 1999	Determination of Total Oxidised Nitrogen using the Kone Analyser	✓		DRY	
TM103	Method 4500H, AWWA/APHA, 20th Ed., 1999	Determination of Nitrite using the Kone Analyser	✓		NA	
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser	✓		DRY	
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS			WET	

[1] Applies to Solid samples only. **DRY** indicates samples have been dried at 35°C. **NA** = not applicable.

ALcontrol Laboratories Analytical Services
Table Of Results - Appendix

Job Number:	07/11339/02/03
Client:	Waterman Environmental
Client Ref. No.:	EN6344

Report Key :

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10^{-7}

NDP	No Determination Possible	*	Subcontracted test
NFD	No Fibres Detected	»	Result previously reported (Incremental reports only)
#	ISO 17025 accredited	M	MCERTS Accredited
PFD	Possible Fibres Detected	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control.

Summary of Method Codes contained within report :

Method No.	Reference	Description	ISO 17025 Accredited	MCERTS Accredited	Wet/Dry Sample [1]	Surrogate Corrected
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS	✓		WET	
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS	✓	✓	WET	
TM127	Method 3112B, AWWA/APHA, 20th Ed., 1999	The Determination of Trace Level Mercury in Aqueous Media and Soil Extracts by Atomic Absorption Spectroscopy	✓		NA	
TM129	Method 3120B, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 3050B	Determination of Metal Cations by IRIS Emission Spectrometer			DRY	
TM129	Method 3120B, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 3050B	Determination of Metal Cations by IRIS Emission Spectrometer	✓		DRY	
TM129	Method 3120B, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 3050B	Determination of Metal Cations by IRIS Emission Spectrometer	✓	✓	DRY	
TM133	BS 1377: Part 3 1990	Determination of pH in Soil and Water using the GLpH pH Meter	✓		NA	
TM133	BS 1377: Part 3 1990	Determination of pH in Soil and Water using the GLpH pH Meter	✓	✓	WET	
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS			NA	
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS	✓		NA	
TM157		Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone			WET	
TM173		Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID	✓		DRY	
TM174		Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID			NA	
TM176		Determination of SVOCs in Water by GCMS			NA	

[1] Applies to Solid samples only. **DRY** indicates samples have been dried at 35°C. **NA** = not applicable.

ALcontrol Laboratories Analytical Services
Table Of Results - Appendix

Job Number: 07/11339/02/03
Client: Waterman Environmental
Client Ref. No.: EN6344

Report Key :

Results expressed as (e.g.) 1.03E-07 is equivalent to $1.03x10^{-7}$

NDP	No Determination Possible	*	Subcontracted test
NFD	No Fibres Detected	»	Result previously reported (Incremental reports only)
#	ISO 17025 accredited	M	MCERTS Accredited
PFD	Possible Fibres Detected	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control.

Summary of Method Codes contained within report :

Method No.	Reference	Description	ISO 17025 Accredited	MCERTS Accredited	Wet/Dry Sample [1]	Surrogate Corrected
TM61/89		see TM061 and TM089 for details			WET	

[1] Applies to Solid samples only. **DRY** indicates samples have been dried at 35°C. **NA** = not applicable.

ALcontrol Laboratories Analytical Services
Table Of Results - Appendix

Job Number: 07/11339/02/03
Client: Waterman Environmental
Client Ref. No.: EN6344

Summary of Coolbox temperatures

Batch No.	Coolbox Temperature (°C)
3	16.8
4	20.6
12	17.2*C
13	16.4

Mountainheath Laboratories

Environmental Analysis & Consultancy

Analytical Report

ALcontrol Geochem
Unit7-8, Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden, Deeside
Flintshire, CH5 3US

For the attention of: Sarah Broadbent

Report No: 07-05732/1
Date Received: 03/08/2007
Date Tested: 13/08/2007
Date Issued: 13/08/2007
Page: 1 of 1
By email

4 soil samples received from ALcontrol Geochem (O/N: 38835; Project: 07/11339) in plastic sample bags were analysed as shown below. Analytical methods employed are available on request. Results are reported on an as received basis unless otherwise specified.

Laboratory reference	Client reference	Other reference	palladium* mg/kg 7440-05-3
122507	282	n/a	< 1.00
122508	288	n/a	< 1.00
122509	291	n/a	< 1.00
122510	297	n/a	< 1.00

* Starred analyses were subcontracted.

Sally Paynter
Quality Manager

Unit 2, Shaftesbury Industrial Centre, Icknield Way,
Letchworth Garden City, Hertfordshire SG6 1HE
Tel: 01462 480400 Fax: 01462 480403
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Company Registration No: 277 2276
Vat No: 676 7556 76

A division of Mountainheath Services Ltd.

Mountainheath Laboratories

Environmental Analysis & Consultancy

Analytical Report

ALcontrol Geochem
Unit7-8, Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden, Deeside
Flintshire, CH5 3US

Report No:	07-05798/1
Date Received:	09/08/2007
Date Tested:	16/08/2007
Date Issued:	16/08/2007
Page:	1 of 1

For the attention of: Sarah Broadbent

By email

2 water samples received from ALcontrol Geochem (O/N: not given; Project: 07/11339) in 250ml plastic bottles were analysed as shown below. Analytical methods employed are available on request.

Laboratory reference	Client reference	Other reference	palladium* ug/l 7440-05-3
122857	309	n/a	< 10.0
122858	312	n/a	< 10.0

* Starred analyses were subcontracted.

Robin T R Macdonald
Director

Unit 2, Shaftesbury Industrial Centre, Icknield Way,
Letchworth Garden City, Hertfordshire SG6 1HE
Tel: 01462 480400 Fax: 01462 480403
Email: mail@mountainheath.com
Company Registration No: 277 2276
Vat No: 676 7556 76

A division of Mountainheath Services Ltd.

APPENDIX

APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH_4 by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS TICS.
2. Samples will be run in duplicate upon request, but an additional charge may be incurred.
3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Geochem reserve the right to charge for samples received and stored but not analysed.
4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.
5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.
6. When requested, an asbestos screen is done in-house on soils and if no fibres are found will be reported as NFD – no fibres detected. If asbestos is detected, then identification is carried out by ALcontrol Shutler. If a sample is suspected of containing asbestos, then further preparation and analysis will be suspended on that sample until the asbestos result is known. If asbestos is present, then no further analysis will be undertaken.
7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample – similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.
8. If no preserved sample is received for cyanide or phenol analysis (HPLC), the laboratory will preserve on receipt. However, the integrity of the data may be compromised.
9. NDP – No determination possible due to insufficient/unsuitable sample.
10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals – total metals must be requested separately.
11. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.
12. **Surrogate recoveries** – Currently the only analysis, which is surrogate corrected, is PAHs on soils. For EPH on soils the result is not surrogate corrected, but a percentage recovery is quoted.
13. **Product analyses** – Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.
14. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).
15. Total of 8 speciated phenols by HPLC includes Resorcinol, Catechol, Phenol, Napthol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 14).
16. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
17. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.
18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.
19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.
20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.
21. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.
22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials – whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Last updated October 2007

ALcontrol Geochem

Unit 7-8 Hawarden Business Park
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website: www.alcontrol.co.uk

Waterman Environmental
Waterman Environmental
Southcentral
11 Peter Street
Manchester
M2 5QR
M3 5AP ATTN: George Adamson

CERTIFICATE OF ANALYSIS

Date: 07 December, 2007
Our Reference: 07/18900/02/01
Your Reference: EN6344
Location: SOLVAY INTEROX

A total of 5 samples was received for analysis on Thursday, 25 October 2007 and completed on Monday, 12 November 2007. Accredited laboratory tests are defined in the log sheet, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation. We are pleased to enclose our final report, it was a pleasure to be of service to you, and we look forward to our continuing association.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials- whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Signed

Diane Whittlestone	**Jane Seymour**	**David O'Hare**	**Caroline Suttie**
Customer Services	Customer Services	Customer Services	Customer Services

Valid if signed by any of the above signatories.

Compiled By

Reah Holmes

1291
GROUP

ALcontrol Geochem
TEST SCHEDULE

JOB NUMBER : 07/18900/02
CLIENT : Waterman Environmental
CONTACT : George Adamson
DATE OF RECEIPT : 25/10/07
LOCATION : SOLVAY INTEROX

BATCH NUMBER : 1
CLIENT REF/CODE : EN6344
ORDER NUMBER :
TURNAROUND : 10 days

Numeric values indicate additional scheduling

* indicates test subcontracted

Sample Number	Sample Identity	P / V	Depth	Sample Type	Arsenic ICP-MS (W)	Boron ICP-MS (W)	Lead ICP-MS (W)	Iron ICP-MS (W)	Tin ICP-MS (W)	Silicon Dissolved (W)	Sodium Dissolved (W)	Potassium Dissolved (W)	pH (W)	EPH C10-40 GC Risk Band Aqueous (W)	GRO BTEX MTBE GC (W)	VOC MS (W)	VOC TICs (W)	SVOC inc PAH MS (W)	SVOC TICs (W)	Nitrate as NO3 Kone (W)	Nitrite Kone (W)	Phosphate (Ortho as PO4) Kone (W)	Chloride Kone (W)	Fluoride Kone (W)	Sulphate Kone (W)			
				UKAS Accredited ?	✓	✓	✓	✓					✓		✓	✓				✓	✓	✓	✓	✓	✓			
1	RS01	1lglass	UNKNOWN	LIQUID	Sample on Hold																							
2	RS01	1lglass	UNKNOWN	LIQUID										X				X	X									
3	RS01	1lplastic	UNKNOWN	LIQUID	X	X	X	X	X	X	X	X	X							X	X	X	X	X	X			
4	RS01	Vial	UNKNOWN	LIQUID											X													
5	RS01	Vial	UNKNOWN	LIQUID												X	X											
				Total Number of Tests	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			

Printed : 07/12/07 12:17:52

Alcontrol Geochem

SVOC Tentatively Identified Compounds

Job Number	-	200718900
Client	-	Waterman Environmental
Sample Identity	-	2-RS01
Sample Type [Units]	-	Water - µg/l
Date Acquired	-	11/11/07
Date Reported	-	12/11/07

Tentative Compound Identification	Retention Time min	Concentration µg/l
No compounds detected	-	<10

MAY INCLUDE PREVIOUSLY QUANTIFIED COMPOUNDS

Alcontrol Geochem

VOC Tentatively Identified Compounds

Job Number - 200718900
Client - Waterman Environmental
Sample Identity - 005 - RS01
Sample Type [Units] - Liquid - µg/l
Date Acquired - 30/10/07
Date Reported - 01/11/07

Tentative Compound Identification	RetentionTime min	Concentration Liquid - µg/l
No compounds detected	-	ND

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

Validated ☑

Preliminary ☐

ALcontrol Geochem Analytical Services
Table Of Results

$^{\#}$ ISO 17025 accredited
^{M} MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/18900/02/01
Client: Waterman Environmental
Client Ref. No.: EN6344
Matrix: LIQUID
Location: SOLVAY INTEROX
Client Contact: George Adamson

Sample Identity	RS01									**Method Code**	**LoD/Units**
Depth (m)											
Sample Type	LIQUID										
Sampled Date	25.10.07										
Sample Received Date	25.10.07										
Batch	1										
Sample Number(s)	**1-5**										
Arsenic Dissolved (ICP-MS)	11									TM152$^{\#}$	<1 ug/l
Boron Dissolved (ICP-MS)	110									TM152$^{\#}$	<10 ug/l
Iron Dissolved (ICP-MS)	49									TM152$^{\#}$	<5 ug/l
Lead Dissolved (ICP-MS)	<1									TM152$^{\#}$	<1 ug/l
Tin Dissolved (ICP-MS)	<1									TM152	<1 ug/l
Silicon Dissolved	2.8									TM129	<0.05 mg/l
Potassium Dissolved	8.1									TM083	<0.2 mg/l
Sodium Dissolved	1300									TM083	<0.2 mg/l
Nitrate as NO3	14									TM102$^{\#}$	<0.3 mg/l
Nitrite as NO2	0.05									TM103$^{\#}$	<0.05 mg/l
Sulphate (soluble)	170									TM098$^{\#}$	<3 mg/l
Chloride	2500									TM097$^{\#}$	<1 mg/l
Fluoride	<0.5									TM104$^{\#}$	<0.5 mg/l
Phosphate (Ortho as PO4)	0.24									TM100$^{\#}$	<0.08 mg/l
pH Value	7.64									TM133$^{\#}$	<1.00 pH Units
EPH (DRO) (C10-C40) Aqueous	<10									TM172$^{\#}$	<10 ug/l
EPH C10-12 Aqueous	<10									TM172	<10 ug/l
EPH >C12-16 Aqueous	<10									TM172	<10 ug/l
EPH >C16-21 Aqueous	<10									TM172	<10 ug/l
EPH >C21-35 Aqueous	<10									TM172	<10 ug/l
EPH >C35-40 Aqueous	<10									TM172	<10 ug/l
GRO (C4-C10)	<10									TM089$^{\#}$	<10 ug/l
GRO (C10-C12)	<10									TM089$^{\#}$	<10 ug/l
Benzene	<10									TM089$^{\#}$	<10 ug/l
Toluene	<10									TM089$^{\#}$	<10 ug/l
Ethyl benzene	<10									TM089$^{\#}$	<10 ug/l
m & p Xylene	<10									TM089$^{\#}$	<10 ug/l
o Xylene	<10									TM089$^{\#}$	<10 ug/l
Sum m&p and o Xylene	<10									TM089$^{\#}$	<10 ug/l
Sum of BTEX	<10									TM089$^{\#}$	<10 ug/l
MTBE	<10									TM089$^{\#}$	<10 ug/l

Date 07.12.2007

Validated ☑

Preliminary ☐

ALcontrol Geochem Analytical Services
Table Of Results

ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/18900/02/01
Matrix: LIQUID
Client: Waterman Environmental
Location: SOLVAY INTEROX
Client Ref. No.: EN6344
Client Contact: George Adamson

Sample Identity	RS01									**Method Code**	**LoD/Units**
Depth (m)											
Sample Type	LIQUID										
Sampled Date	25.10.07										
Sample Received Date	25.10.07										
Batch	1										
Sample Number(s)	**1-5**										
SVOC by GCMS											
Phenols											
2-Chlorophenol	<1									TM176	<1 ug/l
2-Methylphenol	<1									TM176	<1 ug/l
2-Nitrophenol	<1									TM176	<1 ug/l
2,4-Dichlorophenol	<1									TM176	<1 ug/l
2,4-Dimethylphenol	<1									TM176	<1 ug/l
2,4,5-Trichlorophenol	<1									TM176	<1 ug/l
2,4,6-Trichlorophenol	<1									TM176	<1 ug/l
4-Chloro-3-methylphenol	<1									TM176	<1 ug/l
4-Methylphenol	<1									TM176	<1 ug/l
4-Nitrophenol	<1									TM176	<1 ug/l
Pentachlorophenol	<1									TM176	<1 ug/l
Phenol	<1									TM176	<1 ug/l
PAHs											
2-Chloronaphthalene	<1									TM176	<1 ug/l
2-Methylnaphthalene	<1									TM176	<1 ug/l
Acenaphthene	<1									TM176	<1 ug/l
Acenaphthylene	<1									TM176	<1 ug/l
Anthracene	<1									TM176	<1 ug/l
Benzo(a)anthracene	<1									TM176	<1 ug/l
Benzo(a)pyrene	<1									TM176	<1 ug/l
Benzo(b)fluoranthene	<1									TM176	<1 ug/l
Benzo(ghi)perylene	<1									TM176	<1 ug/l
Benzo(k)fluoranthene	<1									TM176	<1 ug/l
Chrysene	<1									TM176	<1 ug/l
Dibenzo(a,h)anthracene	<1									TM176	<1 ug/l
Fluoranthene	<1									TM176	<1 ug/l
Fluorene	<1									TM176	<1 ug/l
Indeno(1,2,3-cd)pyrene	<1									TM176	<1 ug/l

Date 07.12.2007

Validated ☑

Preliminary ☐

ALcontrol Geochem Analytical Services
Table Of Results

ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/18900/02/01
Client: Waterman Environmental
Client Ref. No.: EN6344

Matrix: LIQUID
Location: SOLVAY INTEROX
Client Contact: George Adamson

Sample Identity	RS01									**Method Code**	**LoD/Units**
Depth (m)											
Sample Type	LIQUID										
Sampled Date	25.10.07										
Sample Received Date	25.10.07										
Batch	1										
Sample Number(s)	**1-5**										
PAHs (cont)											
Naphthalene	<1									TM176	<1 ug/l
Phenanthrene	<1									TM176	<1 ug/l
Pyrene	<1									TM176	<1 ug/l
Phthalates											
Bis(2-ethylhexyl) phthalate	<2									TM176	<2 ug/l
Butylbenzyl phthalate	<1									TM176	<1 ug/l
Di-n-butyl phthalate	<1									TM176	<1 ug/l
Di-n-Octyl phthalate	<5									TM176	<5 ug/l
Diethyl phthalate	<1									TM176	<1 ug/l
Dimethyl phthalate	<1									TM176	<1 ug/l
Other Semi-volatiles											
1,2-Dichlorobenzene	<1									TM176	<1 ug/l
1,2,4-Trichlorobenzene	<1									TM176	<1 ug/l
1,3-Dichlorobenzene	<1									TM176	<1 ug/l
1,4-Dichlorobenzene	<1									TM176	<1 ug/l
2-Nitroaniline	<1									TM176	<1 ug/l
2,4-Dinitrotoluene	<1									TM176	<1 ug/l
2,6-Dinitrotoluene	<1									TM176	<1 ug/l
3-Nitroaniline	<1									TM176	<1 ug/l
4-Bromophenylphenylether	<1									TM176	<1 ug/l
4-Chloroaniline	<1									TM176	<1 ug/l
4-Chlorophenylphenylether	<1									TM176	<1 ug/l
4-Nitroaniline	<1									TM176	<1 ug/l
Azobenzene	<1									TM176	<1 ug/l
Bis(2-chloroethoxy)methane	<1									TM176	<1 ug/l
Bis(2-chloroethyl)ether	<1									TM176	<1 ug/l
Carbazole	<1									TM176	<1 ug/l
Dibenzofuran	<1									TM176	<1 ug/l

Date 07.12.2007

Validated	☑
Preliminary	☐

ALcontrol Geochem Analytical Services
Table Of Results

ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number:	07/18900/02/01	**Matrix:**	LIQUID
Client:	Waterman Environmental	**Location:**	SOLVAY INTEROX
Client Ref. No.:	EN6344	**Client Contact:**	George Adamson

Sample Identity	RS01									**Method Code**	**LoD/Units**
Depth (m)											
Sample Type	LIQUID										
Sampled Date	25.10.07										
Sample Received Date	25.10.07										
Batch	1										
Sample Number(s)	**1-5**										
Other Semi-volatiles (cont)											
Hexachlorobenzene	<1									TM176	<1 ug/l
Hexachlorobutadiene	<1									TM176	<1 ug/l
Hexachlorocyclopentadiene	<1									TM176	<1 ug/l
Hexachloroethane	<1									TM176	<1 ug/l
Isophorone	<1									TM176	<1 ug/l
N-nitrosodi-n-propylamine	<1									TM176	<1 ug/l
Nitrobenzene	<1									TM176	<1 ug/l

Date 07.12.2007

Validated	☑
Preliminary	☐

ALcontrol Geochem Analytical Services
Table Of Results

ISO 17025 accredited
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* Subcontracted test
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Job Number:	07/18900/02/01	**Matrix:**	LIQUID
Client:	Waterman Environmental	**Location:**	SOLVAY INTEROX
Client Ref. No.:	EN6344	**Client Contact:**	George Adamson

Sample Identity	RS01									**Method Code**	**LoD/Units**
Depth (m)											
Sample Type	LIQUID										
Sampled Date	25.10.07										
Sample Received Date	25.10.07										
Batch	1										
Sample Number(s)	**1-5**										
Volatile Organic Compounds											
Dichlorodifluoromethane	<1									TM116#	<1 ug/l
Chloromethane	<1									TM116#	<1 ug/l
Vinyl Chloride	<1									TM116#	<1 ug/l
Bromomethane	<1									TM116#	<1 ug/l
Chloroethane	<1									TM116#	<1 ug/l
Trichlorofluoromethane	<1									TM116#	<1 ug/l
trans-1-2-Dichloroethene	<1									TM116#	<1 ug/l
Dichloromethane	<1									TM116#	<1 ug/l
Carbon Disulphide	<1									TM116#	<1 ug/l
1.1-Dichloroethene	<1									TM116#	<1 ug/l
1.1-Dichloroethane	3									TM116#	<1 ug/l
Methyl Tertiary Butyl Ether	<1									TM116#	<1 ug/l
cis-1-2-Dichloroethene	<1									TM116#	<1 ug/l
Bromochloromethane	<1									TM116#	<1 ug/l
Chloroform	<1									TM116#	<1 ug/l
2.2-Dichloropropane	<1									TM116#	<1 ug/l
1.2-Dichloroethane	<1									TM116#	<1 ug/l
1.1.1-Trichloroethane	<1									TM116#	<1 ug/l
1.1-Dichloropropene	<1									TM116#	<1 ug/l
Benzene	<1									TM116#	<1 ug/l
Carbontetrachloride	<1									TM116#	<1 ug/l
Dibromomethane	<1									TM116#	<1 ug/l
1.2-Dichloropropane	<1									TM116#	<1 ug/l
Bromodichloromethane	<1									TM116#	<1 ug/l
Trichloroethene	<1									TM116#	<1 ug/l
cis-1-3-Dichloropropene	<1									TM116#	<1 ug/l
trans-1-3-Dichloropropene	<1									TM116#	<1 ug/l
1.1.2-Trichloroethane	<1									TM116#	<1 ug/l
Toluene	<1									TM116#	<1 ug/l
1.3-Dichloropropane	<1									TM116#	<1 ug/l

Date 07.12.2007

Validated ☑

Preliminary ☐

ALcontrol Geochem Analytical Services
Table Of Results

\# ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/18900/02/01
Client: Waterman Environmental
Client Ref. No.: EN6344

Matrix: LIQUID
Location: SOLVAY INTEROX
Client Contact: George Adamson

Sample Identity	RS01									**Method Code**	**LoD/Units**
Depth (m)											
Sample Type	LIQUID										
Sampled Date	25.10.07										
Sample Received Date	25.10.07										
Batch	1										
Sample Number(s)	**1-5**										
Volatile Organic Compounds (cont)											
Dibromochloromethane	<1									TM116#	<1 ug/l
1.2-Dibromoethane	<1									TM116#	<1 ug/l
Tetrachloroethene	<1									TM116#	<1 ug/l
1.1.1.2-Tetrachloroethane	<1									TM116#	<1 ug/l
Chlorobenzene	<1									TM116#	<1 ug/l
Ethylbenzene	<1									TM116#	<1 ug/l
p/m-Xylene	<1									TM116#	<1 ug/l
Bromoform	<1									TM116#	<1 ug/l
Styrene	<1									TM116#	<1 ug/l
1.1.2.2-Tetrachloroethane	<1									TM116#	<1 ug/l
o-Xylene	<1									TM116#	<1 ug/l
1.2.3-Trichloropropane	<1									TM116#	<1 ug/l
Isopropylbenzene	<1									TM116#	<1 ug/l
Bromobenzene	<1									TM116#	<1 ug/l
2-Chlorotoluene	<1									TM116#	<1 ug/l
Propylbenzene	<1									TM116#	<1 ug/l
4-Chlorotoluene	<1									TM116#	<1 ug/l
1.2.4-Trimethylbenzene	<1									TM116#	<1 ug/l
4-Isopropyltoluene	<1									TM116#	<1 ug/l
1.3.5-Trimethylbenzene	<1									TM116#	<1 ug/l
1.2-Dichlorobenzene	<1									TM116#	<1 ug/l
1.4-Dichlorobenzene	<1									TM116#	<1 ug/l
sec-Butylbenzene	<1									TM116#	<1 ug/l
tert-Butylbenzene	<1									TM116#	<1 ug/l
1.3-Dichlorobenzene	<1									TM116#	<1 ug/l
n-Butylbenzene	<1									TM116#	<1 ug/l
1.2-Dibromo-3-chloropropane	<1									TM116#	<1 ug/l
1.2.4-Trichlorobenzene	<1									TM116#	<1 ug/l
Naphthalene	<1									TM116#	<1 ug/l
1.2.3-Trichlorobenzene	<1									TM116#	<1 ug/l

Date 07.12.2007

Validated ☑

Preliminary ☐

ALcontrol Geochem Analytical Services
Table Of Results

ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/18900/02/01
Client: Waterman Environmental
Client Ref. No.: EN6344

Matrix: LIQUID
Location: SOLVAY INTEROX
Client Contact: George Adamson

Sample Identity	RS01									**Method Code**	**LoD/Units**
Depth (m)											
Sample Type	LIQUID										
Sampled Date	25.10.07										
Sample Received Date	25.10.07										
Batch	1										
Sample Number(s)	**1-5**										
Volatile Organic Compounds (cont)											
Hexachlorobutadiene	<1									TM116#	<1 ug/l

Date 07.12.2007

ALcontrol Geochem Analytical Services
Table Of Results - Appendix

Job Number: 07/18900/02/01
Client: Waterman Environmental
Client Ref. No.: EN6344

Report Key :

Results expressed as (e.g.) 1.03E-07 is equivalent to $1.03x10^{-7}$

NDP	No Determination Possible	*	Subcontracted test
NFD	No Fibres Detected	»	Result previously reported (Incremental reports only)
#	ISO 17025 accredited	M	MCERTS Accredited
PFD	Possible Fibres Detected	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control.

Summary of Method Codes contained within report :

Method No.	Reference	Description	ISO 17025 Accredited	MCERTS Accredited	Wet/Dry Sample ¹	Surrogate Corrected
TM083	Method 3111, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 7610	Determination of Sodium and Potassium by Flame Photometer			NA	
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)			NA	
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)	✓		NA	
TM097	Modified: US EPA Method 325.1 & 325.2	Determination of Chloride using the Kone Analyser	✓		NA	
TM098	Method 4500E, AWWA/APHA, 20th Ed., 1999	Determination of Sulphate using the Kone Analyser	✓		NA	
TM100	BS 2690: Part 105:1983	Determination of Phosphate using the Kone Analyser	✓		NA	
TM102	Method 4500H, AWWA/APHA, 20th Ed., 1999	Determination of Total Oxidised Nitrogen using the Kone Analyser	✓		NA	
TM103	Method 4500H, AWWA/APHA, 20th Ed., 1999	Determination of Nitrite using the Kone Analyser	✓		NA	
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser	✓		NA	
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS			NA	
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS	✓		NA	
TM129	Method 3120B, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 3050B	Determination of Metal Cations by IRIS Emission Spectrometer			NA	
TM133	BS 1377: Part 3 1990	Determination of pH in Soil and Water using the GLpH pH Meter	✓		NA	
TM143	Modified: US EPA Method 8270C	Determination of Semivolatile Organic Compounds by GC-MS			NA	

¹ Applies to Solid samples only. **DRY** indicates samples have been dried at 35°C. **NA** = not applicable.

ALcontrol Geochem Analytical Services
Table Of Results - Appendix

Job Number:	07/18900/02/01
Client:	Waterman Environmental
Client Ref. No.:	EN6344

Report Key :

Results expressed as (e.g.) 1.03E-07 is equivalent to $1.03x10^{-7}$

NDP	No Determination Possible	*	Subcontracted test
NFD	No Fibres Detected	»	Result previously reported (Incremental reports only)
#	ISO 17025 accredited	M	MCERTS Accredited
PFD	Possible Fibres Detected	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control.

Summary of Method Codes contained within report :

Method No.	Reference	Description	ISO 17025 Accredited	MCERTS Accredited	Wet/Dry Sample ¹	Surrogate Corrected
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS			NA	
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS	✓		NA	
TM172		EPH in Waters			NA	
TM172		EPH in Waters	✓		NA	
TM176		Determination of SVOCs in Water by GCMS			NA	

¹ Applies to Solid samples only. **DRY** indicates samples have been dried at 35°C. **NA** = not applicable.

ALcontrol Geochem Analytical Services
Table Of Results - Appendix

Job Number: 07/18900/02/01
Client: Waterman Environmental
Client Ref. No.: EN6344

Summary of Coolbox temperatures

Batch No.	Coolbox Temperature (°C)
1	13.2

APPENDIX

APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH_4 by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS TICS.
2. Samples will be run in duplicate upon request, but an additional charge may be incurred.
3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Geochem reserve the right to charge for samples received and stored but not analysed.
4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.
5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.
6. When requested, an asbestos screen is done in-house on soils and if no fibres are found will be reported as NFD – no fibres detected. If asbestos is detected, then identification is carried out by ALcontrol Shutler. If a sample is suspected of containing asbestos, then further preparation and analysis will be suspended on that sample until the asbestos result is known. If asbestos is present, then no further analysis will be undertaken.
7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample – similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.
8. If no preserved sample is received for cyanide or phenol analysis (HPLC), the laboratory will preserve on receipt. However, the integrity of the data may be compromised.
9. NDP – No determination possible due to insufficient/unsuitable sample.
10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals – total metals must be requested separately.
11. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.
12. **Surrogate recoveries** – Currently the only analysis, which is surrogate corrected, is PAHs on soils. For EPH on soils the result is not surrogate corrected, but a percentage recovery is quoted.
13. **Product analyses** – Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.
14. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).
15. Total of 8 speciated phenols by HPLC includes Resorcinol, Catechol, Phenol, Napthol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 14).
16. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
17. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.
18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.
19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.
20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.
21. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.
22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials – whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Last updated October 2007

Appendix E

Relevant Hazardous Substances Inventory

Rating System

			Hazard Rating		
			LOW	**MEDIUM**	**HIGH**
			Source/Pathway/Receptor: MML or HLL or MLL or LLL	**Source/Pathway/Receptor:** HHL or MMM or HML	**Source/Pathway/Receptor:** HHH or HHM or HMM
Likelihood of Occurrence	**LOW**	**Unlikely** - No operational history of occurance, Less 1 million time of use	LOW	LOW	MEDIUM
	MEDIUM	**Possible** - Between 1 in 100 and 1 in 1 million times of use	LOW	MEDIUM	HIGH
	HIGH	**Likely** - Loss of containment to occur 1 in every 100 times of use	MEDIUM	HIGH	HIGH

LOW RISK As low as reasonably practicable (ALARP): May be acceptable. However, review task to see if risk can be reduced further

MEDIUM RISK Task should only proceed with appropriate management authorisation after consultation with specialist team. Where possible the task should be redefined to take account of the hazards involved or the risk should be reduced before starting.

HIGH RISK Task must not proceed. It should be redefined or further control measures put in place to reduce risk.The controls should be re-assessed for adequacy prior to task commencement.

CLP Key	C = Corrosive	T = Toxic	H = Health Hazard
			
CLP Key	I = Irritant/W = Warning	O = Oxidising	F = Flammable
			
CLP Key	PG = Pressurised Gas	E = Environmental Hazard	X = Explosive
			

Hierarchy of Risk Controls

In planning to control hazards, consider action in accordance with the steps below in the order in which they are listed. This approach should be adopted even if all specific legislative requirements have been complied with as legislation generally sets minimum standards.

Elimination	Can the hazard be removed completely? This is the most effective method, e.g. removing the need for chemicals
Substitution	Is there a safer alternative? E.g. solvent with a higher flash point, a substance which is ‘harmful’ to replace one which is ‘very toxic’
Reduction	Can the risk be reduced at source? E.g. machine with a lower noise level, hold smaller amounts of substances

The above methods deal with the hazard itself and are therefore more effective than the following measures, which does nothing with the hazard other than try to control it.

Enclosure	Can the hazard be enclosed or contained? E.g. bunding around a tank, noise reducing enclosure around a machine.
Training	Training reduce the risk of incident? E.g. Awareness training, specific risk training
Adminstrative	Procedures and training reduce the risk of incident? E.g. procedures on how to operate equipment properly or correctly fill containers etc
Reactive Protection	Can something be provided to lessen the impact effect of incident? E.g. spill kits, drain covers

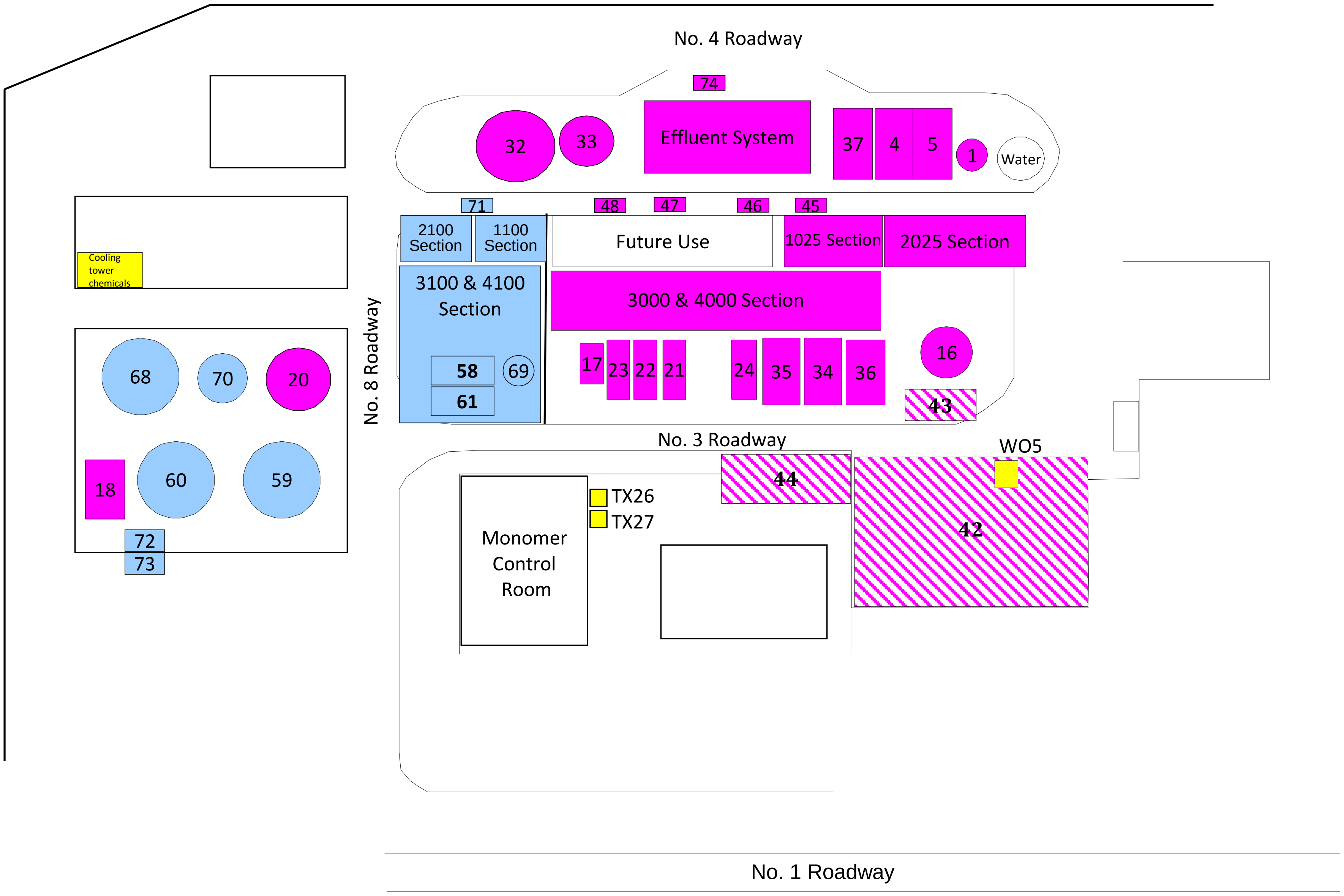
Note: Reactive Protective Equipment on its own is the least effective means of controlling hazards and must be considered as a last resort.

Capa Monomer Storage Tanks, Hardstandings, and Bunds

🟣 = Stream 1 Capa Monomer

🔵 = Stream 2 Capa Monomer

🟡 = Roadways & Mi



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INGEVITY SPILL INVENTORY & IMPACT ASSESSMENT

Ref #	Tank ID	SPILL RISK INVENTORY		SUBSTANCE			IMPACT	EXISTING CONTROLS IN PLACE		INTERIM RISK			RHS?
		Spill Risk Location		Substance Description	CLP description	Volume (m^3)	Impact Category	Provide Details of Existing Controls		Hazard Severity	Likelihood of Occurrence	Risk Rating	
		Breakdown of Location and Process		Details of the substances in this area	Classification of the substances in this area	Volume of storage vessel or sump in m^3	Details of the possible environmental impact	Consider Hierarchy of Risk Controls and describe fully all controls applicable for each hazard. All controls must be valid in that they reduce severity,likelihood or both. **Note: Existing controls may be adequate in reducing the risk ALARP.**		*Identify severity with existing controls in place for each hazard*	*Identify likelihood with existing controls in place for each hazard (1 - 4)*	*Classify risk rating from matrix for each hazard (H-M-L)*	
18	**F3007B**		Capa Residues tank for waste residue Located In Monomer tank farm	Capa Residues	I	60	Release to water Release to Ground	Vessel is within a bunded area of min. 110 % of the capacity of the largest vessel. Minor and major spillages are contained within the bund. If the bund fills, there is a procedure for testing and treating effluent before it is gradually transferred to the effluent	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☐	**L**	**L**	**L**	**Yes**
68	**F4106**		Cyclohexanone tank for monomer raw material. Located In Monomer tank farm	Cyclohexanone	F, W	636	Release to water Release to Ground	Vessel is within a bunded area of min. 110 % of the capacity of the largest vessel. Minor and major spillages are contained within the bund. If the bund fills, there is a procedure for testing and treating effluent before it is gradually transferred to the effluent treatment section.	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☐	**L**	**L**	**L**	**Yes**
70	**F6104**		Caustic Metholated spirit washings used for cleaning plant equipment. Located in Monomer tank farm	Caustic & Industrial Metholated Spirit	C, F	90	Release to water Release to Ground	Vessel is within a bunded area of min. 110 % of the capacity of the largest vessel. Minor and major spillages are contained within the bund. If the bund fills, there is a procedure for testing and treating effluent before it is gradually transferred to the effluent treatment section.	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☐	**M**	**L**	**L**	**Yes**
20	**F3012**		Monomer storage tank Located in Monomer tank farm	Caprolactone Monomer	I	326	Release to water Release to Ground	Vessel is within a bunded area of min. 110 % of the capacity of the largest vessel. Minor and major spillages are contained within the bund. If the bund fills, there is a procedure for testing and treating effluent before it is gradually transferred to the effluent treatment section.	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☐	**L**	**L**	**L**	**Yes**
59 & 60	**F3112A & F3112B**		Monomer storage tanks Located in Monomer tank farm	Caprolactone Monomer	I	636 & 636	Release to water Release to Ground	Vessel is within a bunded area of min. 110 % of the capacity of the largest vessel. Minor and major spillages are contained within the bund. If the bund fills, there is a procedure for testing and treating effluent before it is gradually transferred to the effluent treatment section.	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☐	**L**	**L**	**L**	**Yes**
72	**F6120**		Tank farm bund sump Located in Monomer tank farm bund	Potential of: Capa Residues Cyclohexanone Caustic & Industrial Metholated Spirit Caprolactone Monomer	F, I, W, C	1.75	Release to water Release to Ground	Vessel is within a bunded area of min. 110 % of the capacity of the largest vessel. Minor and major spillages are contained within the bund. If the bund fills, there is a procedure for testing and treating effluent before it is gradually transferred to the effluent treatment section.	Elimination ☐ Substitution ☐ Reduction ☑ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☐	**L**	**L**	**L**	**Yes**

ASSESSOR: **S Brandwood**

REVIEW DATE: **09/10/2021**

ISSUE No.: **3.1**

ORIGINAL DATE OF ASSESSMENT: **09/10/2020**

INGEVITY SPILL INVENTORY & IMPACT ASSESSMENT

Ref #	Tank ID	SPILL RISK INVENTORY	SUBSTANCE			IMPACT	EXISTING CONTROLS IN PLACE		INTERIM RISK			RHS?
		Spill Risk Location	**Substance Description**	**CLP description**	**Volume (m^3)**	**Impact Category**	**Provide Details of Existing Controls**		**Hazard Severity**	**Likelihood of Occurrence**	**Risk Rating**	
		Breakdown of Location and Process	Details of the substances in this area	Classification of the substances in this area	Volume of storage vessel or sump in m^3	Details of the possible environmental impact	Consider Hierarchy of Risk Controls and describe fully all controls applicable for each hazard. All controls must be valid in that they reduce severity,likelihood or both. **Note: Existing controls may be adequate in reducing the risk ALARP.**		*Identify severity with existing controls in place for each hazard*	*Identify likelihood with existing controls in place for each hazard (1 - 4)*	*Classify risk rating from matrix for each hazard (H-M-L)*	
73	**F6119**	 Interceptor sump for residue / Cyclohexanone delivery layby Located on the outside of the Monomer tank farm bund	Potential of: Capa Residues Cyclohexanone	F, I, W, C	2	Release to water Release to Ground	Minor and major spillages are contained within the sump. If the sump fills, there is a procedure for testing and treating effluent before it is gradually transferred to the effluent treatment section.	Elimination ☐ Substitution ☐ Reduction 🟩 Enclosure 🟩 Training ☐ Administrative 🟩 Spill kit ☐	**H**	**L**	**M**	**Yes**
61	**F3115**	 Steam 2 Fractionator bottoms tank Located on ground floor of stream 2 of the Monomer plant	CAPA/Others + minor amounts of Cyclohexanone	W	20	Release to water Release to Ground	Vessels are fully kerbed. Spillages and major accidental releases will flow to the effluent system oil seperator and overflow to containment pit F6003 A (Capacity 400 m3) following overpump trip due to high total carbon	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure 🟩 Training ☐ Administrative 🟩 Spill kit 🟩	**L**	**L**	**L**	**Yes**
58	**F3102**	 Stream 2 Overheads tank Located on ground floor of stream 2 of the Monomer plant	Acetic Acid/Water/ Cyclohexanone + Minor amounts of H2O2/PAC/CAPA	C, W	66	Release to water Release to Ground	Vessels are fully kerbed. Spillages and major accidental releases will flow to the effluent system oil seperator and overflow to containment pit F6003 A (Capacity 400 m3) following overpump trip due to high total carbon	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure 🟩 Training ☐ Administrative 🟩 Spill kit 🟩	**M**	**L**	**L**	**Yes**
69	**F4112**	 Stream 2 Secondary overheads tank Located on ground floor of stream 2 of the Monomer plant	Acetic Acid	C	45	Release to water Release to Ground	Vessels are fully kerbed. Spillages and major accidental releases will flow to the effluent system oil seperator and overflow to containment pit F6003 A (Capacity 400 m3) following overpump trip due to high total carbon	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure 🟩 Training ☐ Administrative 🟩 Spill kit 🟩	**M**	**L**	**L**	**Yes**
17	**F3007A**	 Stream 1 Residue tank Located on ground floor of stream 1 of the Monomer plant	Capa Residues	I	12	Release to water Release to Ground	Vessels are within a kerbed area, which drains down to the oily water separator (OWS). When Capa Residues are released they will set solid and collect in the OWS.	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure 🟩 Training ☐ Administrative 🟩 Spill kit 🟩	**L**	**L**	**L**	**Yes**
21 **22** **23**	**F3013A** **F3013B** **F3013C**	 Check tanks for Monomer plants Located on ground floor of stream 1 of the Monomer plant - Roadway No.3	Caprolactone Monomer	I	27 & 27 & 27	Release to water Release to Ground	Vessels are fully kerbed. Spillages and major accidental releases will flow to the effluent system oil seperator and overflow to containment pit F6003 A (Capacity 400 m3) following overpump trip due to high total carbon	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure 🟩 Training ☐ Administrative 🟩 Spill kit 🟩	**M**	**L**	**L**	**Yes**

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INGEVITY SPILL INVENTORY & IMPACT ASSESSMENT

Ref #	Tank ID	SPILL RISK INVENTORY		SUBSTANCE			IMPACT	EXISTING CONTROLS IN PLACE		INTERIM RISK			RHS?
		Spill Risk Location		Substance Description	CLP description	Volume (m^3)	Impact Category	Provide Details of Existing Controls		Hazard Severity	Likelihood of Occurrence	Risk Rating	
		Breakdown of Location and Process		Details of the substances in this area	Classification of the substances in this area	Volume of storage vessel or sump in m^3	Details of the possible environmental impact	Consider Hierarchy of Risk Controls and describe fully all controls applicable for each hazard. All controls must be valid in that they reduce severity,likelihood or both. **Note: Existing controls may be adequate in reducing the risk ALARP.**		*Identify severity with existing controls in place for each hazard*	*Identify likelihood with existing controls in place for each hazard (1 - 4)*	*Classify risk rating from matrix for each hazard (H-M-L)*	
24	**F3015**		Steam 1 Fractionator bottoms tank Located on ground floor of stream 1 of the Monomer plant - Roadway No.3	CAPA/Others + minor amounts of Cyclohexanone	W	20	Release to water Release to Ground	Vessels are fully kerbed. Spillages and major accidental releases will flow to the effluent system oil seperator and overflow to containment pit F6003 A (Capacity 400 m3) following overpump trip due to high total carbon	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure 🟩 Training ☐ Administrative 🟩 Spill kit 🟩	**M**	**L**	**L**	**Yes**
34 & 35	**F4012A & F4012B**		Acetic Acid tanks Located on ground floor of stream 1 of the Monomer plant - Roadway No.3	Acetic Acid	C, F	45 & 45	Release to water Release to Ground	Vessels are within a tiled kerbed area, which drains down to the oily water separator. Spillages and major accidental releases are collected in process area surface gullies which drain down to the effluent treatment section.	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure 🟩 Training ☐ Administrative 🟩 Spill kit 🟩	**M**	**L**	**L**	**Yes**
36	**F4012E**		Acetic Acid receiving tank Located on ground floor of stream 1 of the Monomer plant - Roadway No.3	Acetic Acid	C, F	45	Release to water Release to Ground	Vessels are within a tiled kerbed area, which drains down to the oily water separator. Spillages and major accidental releases are collected in process area surface gullies which drain down to the effluent treatment section.	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure 🟩 Training ☐ Administrative 🟩 Spill kit 🟩	**M**	**L**	**L**	**Yes**
16	**F3002**		Stream 1 Overheads tank Located on ground floor of stream 1 of the Monomer plant - Roadway No.3	Acetic Acid/Water/ Cyclohexanone + Minor amounts of H2O2/PAC/CAPA	F, W, C	66	Release to water Release to Ground	Vessels are fully kerbed. Spillages and major accidental releases will flow to the effluent system oil seperator and overflow to containment pit F6003 A (Capacity 400 m3) following overpump trip due to high total carbon	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure 🟩 Training ☐ Administrative 🟩 Spill kit 🟩	**M**	**L**	**L**	**Yes**
43	**-**		Sulphuric acid IBC storage area Roadway No.3	Sulphuric acid (H_2SO_4)	C	10 x 1100KG IBCs	Release to water Release to Ground	Vessels are within a concrete kerbed area, which drains down to the oily water separator. Spillages and major accidental releases are collected in process area surface gullies which drain down to the effluent treatment section.	Elimination ☐ Substitution ☐ Reduction 🟩 Enclosure 🟩 Training ☐ Administrative ☐ Spill kit 🟩	**H**	**L**	**M**	**Yes**
42	**-**		Monomer Waste storage Waste storage area - Roadway No.3	Various waste IBCs from Monomer plant	F, I, W, C	40	Release to water Release to Ground	Vessels are within a concrete kerbed area, which drains down to the oily water separator. Spillages and major accidental releases are collected in process area surface gullies which drain down to the effluent treatment section.	Elimination ☐ Substitution ☐ Reduction 🟩 Enclosure 🟩 Training ☐ Administrative 🟩 Spill kit 🟩	**L**	**M**	**L**	**Yes**

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Ref #	Tank ID	SPILL RISK INVENTORY	SUBSTANCE			IMPACT	EXISTING CONTROLS IN PLACE		INTERIM RISK			RHS?
		Spill Risk Location	Substance Description	CLP description	Volume (m^3)	Impact Category	Provide Details of Existing Controls		Hazard Severity	Likelihood of Occurrence	Risk Rating	
		Breakdown of Location and Process	Details of the substances in this area	Classification of the substances in this area	Volume of storage vessel or sump in m^3	Details of the possible environmental impact	Consider Hierarchy of Risk Controls and describe fully all controls applicable for each hazard. All controls must be valid in that they reduce severity,likelihood or both. **Note: Existing controls may be adequate in reducing the risk ALARP.**		*Identify severity with existing controls in place for each hazard*	*Identify likelihood with existing controls in place for each hazard (1 - 4)*	*Classify risk rating from matrix for each hazard (H-M-L)*	
WO5	**WO5**	 Monomer Waste oil storage tank Waste storage area - Located on Roadway No.3	Waste Oil	H, F, I	1	Release to water Release to Ground	Internally bunded tank contained within a concrete kerbed area, which drains down to the oily water separator. Spillages and major accidental releases are collected in process area surface gullies which drain down to the effluent treatment section.	Elimination ☐ Substitution ☐ Reduction ☑ Enclosure ☑ Training ☐ Administrative ☐ Spill kit ☑	**L**	**L**	**L**	**Yes**
44	**-**	 Monomer Pickling and passivation area Located on Roadway No.3	Nitric Acid and Caustic Soda	T, C	5	Release to water Release to Ground	Vessels are within a concrete kerbed area, which drains down to the oily water separator. Spillages and major accidental releases are collected in process area surface gullies which drain down to the effluent treatment section.	Elimination ☐ Substitution ☐ Reduction ☑ Enclosure ☑ Training ☐ Administrative ☐ Spill kit ☑	**L**	**M**	**L**	**Yes**
TX26 & TX27	**TX26 & TX27**	 Transformers for Monomer plant Located on Roadway No.3	Transformer oil	None	1.3 & 1.3	Release to water Release to Ground	Vessel is within a concrete bund	Elimination ☐ Substitution ☐ Reduction ☑ Enclosure ☑ Training ☐ Administrative ☐ Spill kit ☑	**L**	**L**	**L**	**Yes**
1	**F1002**	 HTP Storage for high concentration Hydrogen Peroxide Located on Roadway No.4	86% Hydrogen Peroxide	O, C, W	12.25	Release to Water Release to ground	Vessel is fully bunded to min. 110 % of vessel capacity. Spillages and major accidental releases are contained in the bund. Following an emptying procedure, the contents of the bund are then discharged at a controlled rate to sewer via a 2 m3 well water dilution pit.	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☐	**H**	**L**	**L**	**Yes**
4 & 5	**D1017A & D1017B**	 Peracetic Acid Tanks Located on Roadway No.4	Peracetic acid	O, C, F, W, E	34 & 34	Release to Water Release to ground	Vessels are fully kerbed. Spillages and major accidental releases will flow to the effluent system oil seperator and overflow to containment pit F6003 A (Capacity 400 m3) following overpump trip due to high total carbon	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☐	**M**	**L**	**L**	**Yes**
37	**D6001**	 Sodium Hydroxide storage tank Located on Roadway No.4	Caustic soda (50% sodium hydroxide)	C	22	Release to Water Release to ground	Vessel is within a bunded area of min. 110 % of the capacity of the largest vessel. Minor and major spillages are contained within the bund. If the bund fills, there is a procedure for testing and treating effluent before it is gradually transferred to the effluent treatment section.	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☐	**L**	**L**	**L**	**Yes**

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Ref #	Tank ID	SPILL RISK INVENTORY	SUBSTANCE			IMPACT	EXISTING CONTROLS IN PLACE		INTERIM RISK			RHS?
		Spill Risk Location	Substance Description	CLP description	Volume (m^3)	Impact Category	Provide Details of Existing Controls		Hazard Severity	Likelihood of Occurrence	Risk Rating	
		Breakdown of Location and Process	Details of the substances in this area	Classification of the substances in this area	Volume of storage vessel or sump in m^3	Details of the possible environmental impact	Consider Hierarchy of Risk Controls and describe fully all controls applicable for each hazard. All controls must be valid in that they reduce severity,likelihood or both. **Note: Existing controls may be adequate in reducing the risk ALARP.**		Identify severity with existing controls in place for each hazard	Identify likelihood with existing controls in place for each hazard (1 - 4)	Classify risk rating from matrix for each hazard (H-M-L)	
33	**F4006B**	 Recovered Cyclohexanone storage tank Located on Roadway No.4	Cyclohexanone	F, C, W	47	Release to Water Release to ground	Vessel is within a bunded area of min. 110 % of the capacity of the largest vessel. Minor and major spillages are contained within the bund. If the bund fills, there is a procedure for testing and treating effluent before it is gradually transferred to the effluent treatment section.	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure 🟩 Training ☐ Administrative 🟩 Spill kit ☐	**L**	**L**	**L**	**Yes**
32	**F4006A**	 Fresh Cyclohexanone storage tank Located on Roadway No.4	Cyclohexanone	F, C, W	225	Release to Water Release to ground	Vessel is within a bunded area of min. 110 % of the capacity of the largest vessel. Minor and major spillages are contained within the bund. If the bund fills, there is a procedure for testing and treating effluent before it is gradually transferred to the effluent treatment section.	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure 🟩 Training ☐ Administrative 🟩 Spill kit ☐	**L**	**L**	**L**	**Yes**
38	**F6003A**	 Happenings Pit for Monomer effluent plant. Used if Monomer reactions needs to be dumped Located on Roadway No.4	Waste water / effluent	F, I, W, C	400	Release to Water Release to ground Release to air	Concrete with chemical resistent tiles and a Stainless Steel Liner. Any dumped reaction chemicals are diluted and treated through the effluent plant	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure 🟩 Training ☐ Administrative 🟩 Spill kit ☐	**M**	**M**	**M**	**Yes**
39	**F6003B**	 Neutralization pit for Monomer effluent plant. Located on Roadway No.4	Waste water / effluent	F, I, W, C	20	Release to Water Release to ground	Concrete with chemical resistent tiles. Effluent is continuously monitored and treated before discharge	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure 🟩 Training ☐ Administrative 🟩 Spill kit ☐	**M**	**M**	**M**	**Yes**
40	**F6003C**	 Containment pit for Monomer effluent plant. Located on Roadway No.4	Waste water / effluent	F, I, W, C	330	Release to Water Release to ground	Concrete with coating. Effluent is continuously monitored and treated before discharge	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure 🟩 Training ☐ Administrative 🟩 Spill kit ☐	**M**	**M**	**M**	**Yes**
41	**F6004**	 Oil/Water Separator for Monomer effluent plant. Located on Roadway No.4	Waste water / effluent	F, I, W, C	50	Release to Water Release to ground	Concrete with chemical resistent tiles. Effluent is continuously monitored and treated before discharge	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure 🟩 Training ☐ Administrative 🟩 Spill kit ☐	**M**	**M**	**M**	**Yes**

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Ref #	Tank ID	SPILL RISK INVENTORY	SUBSTANCE			IMPACT	EXISTING CONTROLS IN PLACE	INTERIM RISK			RHS?
		Spill Risk Location	Substance Description	CLP description	Volume (m^3)	Impact Category	Provide Details of Existing Controls	Hazard Severity	Likelihood of Occurrence	Risk Rating	
		Breakdown of Location and Process	Details of the substances in this area	Classification of the substances in this area	Volume of storage vessel or sump in m^3	Details of the possible environmental impact	Consider Hierarchy of Risk Controls and describe fully all controls applicable for each hazard. All controls must be valid in that they reduce severity,likelihood or both. **Note: Existing controls may be adequate in reducing the risk ALARP.**	Identify severity with existing controls in place for each hazard	Identify likelihood with existing controls in place for each hazard (1 - 4)	Classify risk rating from matrix for each hazard (H-M-L)	
74	**F1080**	 Dipic solution tank used as a stabalizer for PAC Located on Roadway No.4	dipliconic acid	C	1	Release to Water Release to ground	Vessels are within a tiled kerbed area, which drains down to the oily water separator. Spillages and major accidental releases are collected in process area surface gullies which drain down to the effluent treatment section. Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☐	**L**	**L**	**L**	**Yes**
Monomer Process	**-**	 Monomer process reactors, stills, pipework etc.	Varoius process chemicals	F, I, W, C	Upto	Release to Water Release to ground Release to air	Vessels are fully kerbed. Spillages and major accidental releases will flow to the effluent system oil seperator and overflow to containment pit F6003 A (Capacity 400 m3) following overpump trip due to high total carbon Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☑	**M**	**L**	**L**	**Yes**
Cooling Tower chemicals	**-**	 water chemistry chemicals for cooling tower in next to monomer plant	Sodium Hypochlorite 14 - 15% av Cl_2	C, I, E	10	Release to Water Release to ground Release to air	Vessels are bunded which drain to Sump F6119 via drains. This in turn is linked to the site's effluent plant. Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☐	**M**	**M**	**M**	**Yes**
Cooling Tower chemicals	**-**	 water chemistry chemicals for cooling tower in next to monomer plant	Battery acid (50% sulphuric acid)	C	10	Release to Water Release to ground	Vessels are bunded which drain to Sump F6119 via drains. This in turn is linked to the site's effluent plant. Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☐	**M**	**M**	**M**	**Yes**

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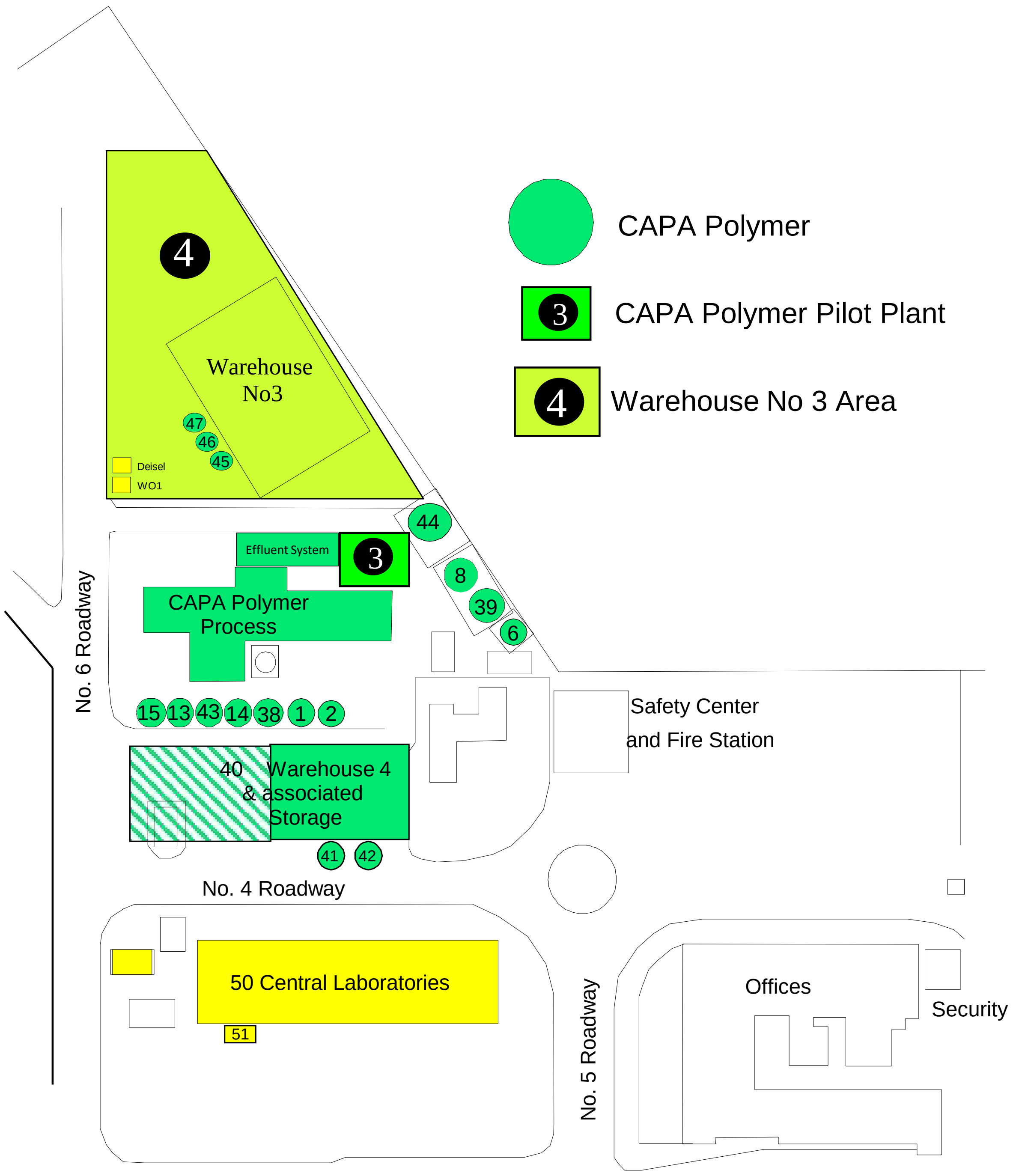
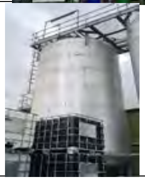
Capa Polymer Storage Tanks, Hardstandings, and Bunds



INGEVITY SPILL INVENTORY & IMPACT ASSESSMENT

Ref #	Tank ID	SPILL RISK INVENTORY	SUBSTANCE			IMPACT	EXISTING CONTROLS IN PLACE		INTERIM RISK			RHS?
		Spill Risk Location	Substance Description	CLP description	Volume (m^3)	Impact Category	Provide Details of Existing Controls		Hazard Severity	Likelihood of Occurrence	Risk Rating	
		Breakdown of Location and Process	Details of the substances in this area	Classification of the substances in this area	Volume of storage vessel or sump in m^3	Details of the possible environmental impact	Consider Hierarchy of Risk Controls and describe fully all controls applicable for each hazard. All controls must be valid in that they reduce severity,likelihood or both. **Note: Existing controls may be adequate in reducing the risk ALARP.**		Identify severity with existing controls in place for each hazard (1 - 4)	Identify likelihood with existing controls in place for each hazard (1 - 4)	Classify risk rating from matrix for each hazard (H-M-L)	
Diesel Storage	**-**	 Polymer Diesel storage tank for FLT Waste storage area - Located on Roadway No.6	Gas Oil (Diesel)	F, I, E, H	2	Release to water Release to Ground	Internally bunded tank contained within a bunded area, which drains down to the oily water separator. Spillages and major accidental releases are collected in process area surface gullies which drain down to the effluent treatment section.	Elimination ☐ Substitution ☐ Reduction ☑ Enclosure ☑ Training ☐ Administrative ☐ Spill kit ☑	**M**	**L**	**L**	**Yes**
WO1	**WO1**	 Polymer Waste oil storage tank Waste storage area - Located on Roadway No.6	Waste Oil	H, F, I	1	Release to water Release to Ground	Internally bunded tank contained within a bunded area, which drains down to the oily water separator. Spillages and major accidental releases are collected in process area surface gullies which drain down to the effluent treatment section.	Elimination ☐ Substitution ☐ Reduction ☑ Enclosure ☑ Training ☐ Administrative ☐ Spill kit ☑	**M**	**L**	**L**	**Yes**
45	**D5501**	 Intermediate storage of Polymer before drumming or tankering	Caprolactone Polymer	None	33	Release to Water Release to ground	Vessels are fully kerbed. Spillages and major accidental releases flow from the vessels to the plant oily water seperator (OWS) whose contents will automatically be pumped to the monomer storage tanks' 363 m3 bund following detection of a high total carbon	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☐	**M**	**L**	**L**	**Yes**
46	**D5502**	 Intermediate storage of Polymer before drumming or tankering	Caprolactone Polymer	None	65	Release to Water Release to ground	Vessels are fully kerbed. Spillages and major accidental releases flow from the vessels to the plant oily water seperator (OWS) whose contents will automatically be pumped to the monomer storage tanks' 363 m3 bund following detection of a high total carbon	Elimination ☐ Substitution ☐ Reduction ☑ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☑	**M**	**L**	**L**	**Yes**
47	**D5503**	 Intermediate storage of Polymer before drumming or tankering	Caprolactone Polymer	None	65	Release to Water Release to ground	Vessels are fully kerbed. Spillages and major accidental releases flow from the vessels to the plant oily water seperator (OWS) whose contents will automatically be pumped to the monomer storage tanks' 363 m3 bund following detection of a high total carbon	Elimination ☐ Substitution ☐ Reduction ☑ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☑	**M**	**L**	**L**	**Yes**
Effluent System	**-**	 Polymer effluent treatment plant - Located on Roadway No.6	Waste water / effluent	F, I, W, C, T, E	180	Release to Water Release to ground	Concrete pit. Effluent is continuously monitored and treated before discharge. Contents will automatically be pumped to the monomer storage tanks' 363 m3 bund following detection of a high total carbon in the effluent being discharged to sewer.	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☐	**M**	**M**	**M**	**Yes**

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INGEVITY SPILL INVENTORY & IMPACT ASSESSMENT

Area #	Tank ID	SPILL RISK INVENTORY		SUBSTANCE			IMPACT	EXISTING CONTROLS IN PLACE		INTERIM RISK			
		Spill Risk Location		Substance Description	CLP description	Volume (m^3)	Impact Category	Provide Details of Existing Controls		Hazard Severity	Likelihood of Occurrence	Risk Rating	
		Breakdown of Location and Process		Details of the substances in this area	Classification of the substances in this area	Volume of storage vessel or sump in m^3	Details of the possible environmental impact	Consider Hierarchy of Risk Controls and describe fully all controls applicable for each hazard. All controls must be valid in that they reduce severity,likelihood or both. **Note: Existing controls may be adequate in reducing the risk ALARP.**		Identify severity with existing controls in place for each hazard (1 - 4)	Identify likelihood with existing controls in place for each hazard (1 - 4)	Classify risk rating from matrix for each hazard (H-M-L)	RHS?
4	-		Product from polymer reactor located in Warehouse 3	Caprolactone Monomer/Polymers	I	up to 1,000 m3 in 200kg drums/IBCs & Kegs	Release to Water Release to ground	Vessels are fully kerbed. Spillages and major accidental releases flow from the vessels to the plant oily water seperator (OWS) whose contents will automatically be pumped to the monomer storage tanks' 363 m3 bund following detection of a high total carbon	Elimination ☐ Substitution ☐ Reduction ☑ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☐	M	M	M	Yes
4	-		Product from polymer reactor located in Storage yard	Caprolactone Monomer/Polymers	I	up to 1,000 m3 in 200kg drums/IBCs & Kegs	Release to Water Release to ground	Vessels are fully kerbed. Spillages and major accidental releases flow from the vessels to the plant oily water seperator (OWS) whose contents will automatically be pumped to the monomer storage tanks' 363 m3 bund following detection of a high total carbon	Elimination ☐ Substitution ☐ Reduction ☑ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☑	M	M	M	Yes
3	D504		Small scale polymer reactor located in pilot plant	Dimethyl carbonate + diol initiators / Caprolactone Monomer + initiators / Oxymer or Caprolactone Polymer	F, I, T	1.4	Release to Water Release to ground	Small Scale Polymer Reactor area is kerbed with concrete hardstanding and 1.2 m3 sump with overall spillage containment capacity of 4.4m3. Area outside the reactor plot is hardtsanding with drianage gulleys leading to the plant oily water seperator (OWS). The OWS will automatically be pumped to the monomer storage tanks' 363 m3 bund following automatic detection of a high total carbon in the effluent being dicharged to sewer.	Elimination ☐ Substitution ☐ Reduction ☑ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☑	M	L	L	Yes
3	D505		Sparge pot for Small scale polymer reactor located in pilot plant	Caprolactone Spargings	F, T	0.59	Release to Water Release to ground	Small Scale Polymer Reactor area is kerbed with concrete hardstanding and 1.2 m3 sump with overall spillage containment capacity of 4.4m3. Area outside the reactor plot is hardtsanding with drianage gulleys leading to the plant oily water seperator (OWS). The OWS will automatically be pumped to the monomer storage tanks' 363 m3 bund following automatic detection of a high total carbon in the effluent being dicharged to sewer.	Elimination ☐ Substitution ☐ Reduction ☑ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☑	M	L	L	Yes
44	F7009		Bulk Monomer storage for polymer plant	Caprolactone Monomer	I	326	Release to Water Release to ground	Joint bunding of vessel ref Nos 6, 8, 39 & 44 - bunding provides in total 363m3 capacity. Bunding is constructed from concrete. Vessel is within a bunded area of min. 25% of the capacity of the all vessels. Minor and major spillages are contained within the bund. If the bund fills, there is a procedure for testing and treating effluent before it is gradually transferred to the effluent treatment section.	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☐	L	L	L	Yes
8	F7003B		Bulk Monomer storage for polymer plant	Caprolactone Monomer	I	200	Release to Water Release to ground	Joint bunding of vessel ref Nos 6, 8, 39 & 44 - bunding provides in total 363m3 capacity. Bunding is constructed from concrete. Vessel is within a bunded area of min. 25% of the capacity of the all vessels. Minor and major spillages are contained within the bund. If the bund fills, there is a procedure for testing and treating effluent before it is gradually transferred to the effluent treatment section.	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☐	L	L	L	Yes

ASSESSOR: **S Brandwood**	SIGNATURE:	REVIEW DATE:	**09/10/2021**
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INGEVITY SPILL INVENTORY & IMPACT ASSESSMENT

Area #	Tank ID	SPILL RISK INVENTORY	SUBSTANCE			IMPACT	EXISTING CONTROLS IN PLACE		INTERIM RISK			RHS?
		Spill Risk Location	Substance Description	CLP description	Volume (m^3)	Impact Category	Provide Details of Existing Controls		Hazard Severity	Likelihood of Occurrence	Risk Rating	
		Breakdown of Location and Process	Details of the substances in this area	Classification of the substances in this area	Volume of storage vessel or sump in m^3	Details of the possible environmental impact	Consider Hierarchy of Risk Controls and describe fully all controls applicable for each hazard. All controls must be valid in that they reduce severity,likelihood or both. **Note: Existing controls may be adequate in reducing the risk ALARP.**		*Identify severity with existing controls in place for each hazard (1 - 4)*	*Identify likelihood with existing controls in place for each hazard (1 - 4)*	*Classify risk rating from matrix for each hazard (H-M-L)*	
39	**F7003A**	 Bulk Monomer storage for polymer plant	Caprolactone Monomer	I ⚠	160	Release to Water Release to ground	Joint bunding of vessel ref Nos 6, 8, 39 & 44 - bunding provides in total 363m3 capacity. Bunding is constructed from concrete. Vessel is within a bunded area of min. 25% of the capacity of the all vessels. Minor and major spillages are contained within the bund. If the bund fills, there is a procedure for testing and treating effluent before it is gradually transferred to the effluent treatment section.	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☐	**L**	**L**	**L**	**Yes**
6	**F312A**	 Bulk Monomer storage for polymer plant	Caprolactone Monomer	I ⚠	70	Release to Water Release to ground	Joint bunding of vessel ref Nos 6, 8, 39 & 44 - bunding provides in total 363m3 capacity. Bunding is constructed from concrete. Vessel is within a bunded area of min. 25% of the capacity of the all vessels. Minor and major spillages are contained within the bund. If the bund fills, there is a procedure for testing and treating effluent before it is gradually transferred to the effluent treatment section.	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☐	**L**	**L**	**L**	**Yes**
38	**D7001**	 Spargings collection tank or polymer plant	Caprolactone Spargings	I ⚠	20	Release to Water Release to ground	Vessels are fully kerbed. Spillages and major accidental releases flow from the vessels to the plant oily water seperator (OWS) whose contents will automatically be pumped to the monomer storage tanks' 363 m3 bund following detection of a high total carbon in the effluent being discharged to sewer.	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☐	**M**	**L**	**L**	**Yes**
1 & 2	**F5136A & F5136B**	 Storage for Capa Polymer pellets	Capa Polymer Pellets	None	85 & 85	Release to ground	Constructed on hard standing. As this is a solid product, any spillage can be cleared up with ease.	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☐ Training ☐ Administrative ☑ Spill kit ☐	**L**	**L**	**L**	**Yes**
40	**-**	 Raw material for polymer reactor located in Warehouse 4	Various	F, I, T 🔥 ⚠ ☠	10te in sacks or 1m3 IBC	Release to Water Release to ground	Vessels are fully kerbed. Spillages and major accidental releases flow from the vessels to the plant oily water seperator (OWS) whose contents will automatically be pumped to the monomer storage tanks' 363 m3 bund following detection of a high total carbon	Elimination ☐ Substitution ☐ Reduction ☑ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☐	**L**	**M**	**L**	**Yes**
40	**-**	 Waste material for polymer reactor located in Warehouse 4	Various	F, T 🔥 ☠	10te in sacks or 1m3 IBC	Release to Water Release to ground	Vessels are fully kerbed. Spillages and major accidental releases flow from the vessels to the plant oily water seperator (OWS) whose contents will automatically be pumped to the monomer storage tanks' 363 m3 bund following detection of a high total carbon	Elimination ☐ Substitution ☐ Reduction ☑ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☐	**L**	**M**	**L**	**Yes**

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ISSUE No.: 3.1

ORIGINAL DATE OF ASSESSMENT: **09/10/2020**

INGEVITY SPILL INVENTORY & IMPACT ASSESSMENT

Area #	Tank ID	SPILL RISK INVENTORY		SUBSTANCE			IMPACT	EXISTING CONTROLS IN PLACE		INTERIM RISK			
		Spill Risk Location		Substance Description	CLP description	Volume (m^3)	Impact Category	Provide Details of Existing Controls		Hazard Severity	Likelihood of Occurrence	Risk Rating	
		Breakdown of Location and Process		Details of the substances in this area	Classification of the substances in this area	Volume of storage vessel or sump in m^3	Details of the possible environmental impact	Consider Hierarchy of Risk Controls and describe fully all controls applicable for each hazard. All controls must be valid in that they reduce severity,likelihood or both. **Note: Existing controls may be adequate in reducing the risk ALARP.**		*Identify severity with existing controls in place for each hazard (1 - 4)*	*Identify likelihood with existing controls in place for each hazard (1 - 4)*	*Classify risk rating from matrix for each hazard (H-M-L)*	RHS?
40	**-**		Drumming shed area of polymer plant	Caprolactone Monomer / Polymer	I	ca 100m3 in 200kg drums	Release to Water Release to ground	Druming Shed is fully contained by a network of kerbs and gullies. These gullies drain into the Caprolactone Polymer plant Oily Water Seperator whose contents will automatically be pumped to the monomer storage tanks' 363 m3 bund following detection of a high total carbon in the effluent being discharged to sewer.	Elimination ☐ Substitution ☐ Reduction ☑ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☑	**M**	**M**	**M**	**Yes**
40	**-**		Drumming shed of polymer plant	1,4-Butanediol	W	10m3 in 200kg drums	Release to Water Release to ground	Vessels are fully kerbed. Spillages and major accidental releases flow from the vessels to the plant oily water seperator (OWS) whose contents will automatically be pumped to the monomer storage tanks' 363 m3 bund following detection of a high total carbon in the effluent being discharged to sewer.	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☐	**M**	**M**	**M**	**Yes**
40	**-**		Drumming shed of polymer plant	Stabaxol I (stabiliser)	H	1m3 in 10kg Drums	Release to ground	Constructed on hard standing. As this is a solid product, any spillage can be cleared up with ease.	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☐	**L**	**L**	**L**	**Yes**
14	**D520**		Raw Material storage tank for polymer plant	Trimethylolpropane	W	60	Release to Water Release to ground	Vessels are fully kerbed. Spillages and major accidental releases flow from the vessels to the plant oily water seperator (OWS) whose contents will automatically be pumped to the monomer storage tanks' 363 m3 bund following detection of a high total carbon in the effluent being discharged to sewer.	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☐	**M**	**L**	**L**	**Yes**
43	**D519**		Raw Material storage tank for polymer plant	Diethylene Glycol	H	30	Release to Water Release to ground	Vessels are fully kerbed. Spillages and major accidental releases flow from the vessels to the plant oily water seperator (OWS) whose contents will automatically be pumped to the monomer storage tanks' 363 m3 bund following detection of a high total carbon in the effluent being discharged to sewer.	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☐ Training ☐ Administrative ☑ Spill kit ☐	**M**	**L**	**L**	**Yes**
13	**D518**		Raw Material storage tank for polymer plant	1,4-Butanediol	W	40	Release to Water Release to ground	Vessels are fully kerbed. Spillages and major accidental releases flow from the vessels to the plant oily water seperator (OWS) whose contents will automatically be pumped to the monomer storage tanks' 363 m3 bund following detection of a high total carbon in the effluent being discharged to sewer.	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☐	**M**	**L**	**L**	**Yes**

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INGEVITY SPILL INVENTORY & IMPACT ASSESSMENT

Area #	Tank ID	SPILL RISK INVENTORY	SUBSTANCE			IMPACT	EXISTING CONTROLS IN PLACE		INTERIM RISK			
		Spill Risk Location	Substance Description	CLP description	Volume (m^3)	Impact Category	Provide Details of Existing Controls		Hazard Severity	Likelihood of Occurrence	Risk Rating	
		Breakdown of Location and Process	Details of the substances in this area	Classification of the substances in this area	Volume of storage vessel or sump in m^3	Details of the possible environmental impact	Consider Hierarchy of Risk Controls and describe fully all controls applicable for each hazard. All controls must be valid in that they reduce severity,likelihood or both. **Note: Existing controls may be adequate in reducing the risk ALARP.**		*Identify severity with existing controls in place for each hazard (1 - 4)*	*Identify likelihood with existing controls in place for each hazard (1 - 4)*	*Classify risk rating from matrix for each hazard (H-M-L)*	**RHS?**
15	**D521**	 Raw Material storage tank for polymer plant	Neopentyl Glycol	C 	60	Release to Water Release to ground	Vessels are fully kerbed. Spillages and major accidental releases flow from the vessels to the plant oily water seperator (OWS) whose contents will automatically be pumped to the monomer storage tanks' 363 m3 bund following detection of a high total carbon in the effluent being discharged to sewer.	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☐	**M**	**L**	**L**	**Yes**
Polymer Process	**-**	Polymer process reactors, stills, pipework etc.	Varoius process chemicals			Release to Water Release to ground Release to air	Polymer Reactor area is kerbed with concrete hardstanding and 1.2 m3 sump with overall spillage containment capacity of 4.4m3. Area outside the reactor plot is hardtsanding with drianage gulleys leading to the plant oily water seperator (OWS). The OWS will automatically be pumped to the monomer storage tanks' 363 m3 bund following automatic detection of a high total carbon in the effluent being dicharged to sewer.	Elimination ☐ Substitution ☐ Reduction ☑ Enclosure ☑ Training ☐ Administrative ☑ Spill kit ☑	**M**	**L**	**L**	**Yes**
41 & 42	**F5135A & F5135B**	 Polymer Silos for Polymer plant	Caprolactone Polymer Pellets	None	35 & 35	Release to ground	Constructed on hard standing. As this is a solid product, any spillage can be cleared up with ease.	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☐ Training ☐ Administrative ☑ Spill kit ☐	**L**	**L**	**L**	**No**
50	**-**	 Central Laboratories	Various Lab Chemicals and wastes	I, W, C, T 	ca 5 m3 in various containers upto 200kg drums	Release to Water Release to ground	Building is bunded and any waste stored outside is on contrete and where possible on the separate bund	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☐ Training ☐ Administrative ☑ Spill kit ☑	**M**	**L**	**L**	**Yes**
51	**-**	 Flammables storage for central Labs	Various flammable Lab Chemicals and wastes	I, W, C, T, F 	ca 5 m3 in various containers upto 200kg drums	Release to Water Release to ground	Building is bunded and any waste stored outside is on concrete and where possible on the separate bund	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☐ Training ☐ Administrative ☑ Spill kit ☑	**M**	**L**	**L**	**Yes**

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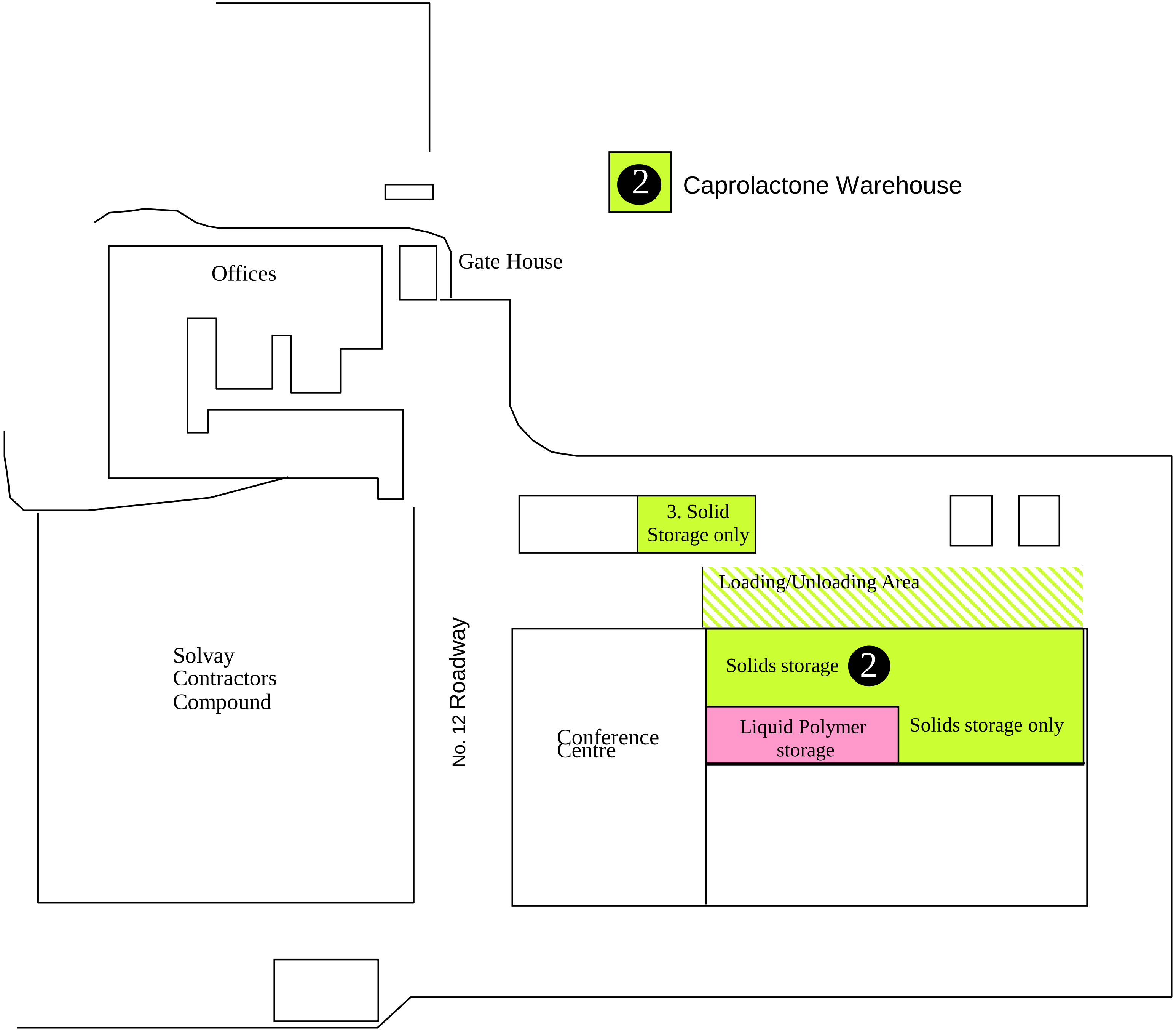
ISSUE No.: 3.1

ORIGINAL DATE OF ASSESSMENT: **09/10/2020**

Capa Warehouse No 2 Storage and Hardstanding



INGEVITY SPILL INVENTORY & IMPACT ASSESSMENT

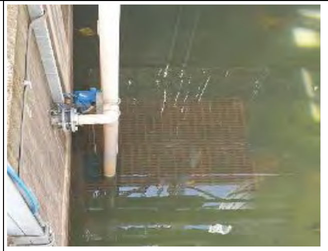
Ref #	Tank ID	SPILL RISK INVENTORY	SUBSTANCE			IMPACT	EXISTING CONTROLS IN PLACE		INTERIM RISK			RHS?
		Spill Risk Location	**Substance Description**	**CLP description**	**Volume (m^3)**	**Impact Category**	**Provide Details of Existing Controls**		**Hazard Severity**	**Likelihood of Occurrence**	**Risk Rating**	
		Breakdown of Location and Process	Details of the substances in this area	Classification of the substances in this area	Volume of storage vessel or sump in m^3	Details of the possible environmental impact	Consider Hierarchy of Risk Controls and describe fully all controls applicable for each hazard. All controls must be valid in that they reduce severity,likelihood or both. **Note: Existing controls may be adequate in reducing the risk ALARP.**		*Identify severity with existing controls in place for each hazard*	*Identify likelihood with existing controls in place for each hazard (1 - 4)*	*Classify risk rating from matrix for each hazard (H-M-L)*	
2	**-**	 Liquid Product from monomer / polymer plants located in Warehouse 2	Caprolactone Monomer / Polymer	I	up to 1,000 m3 in 200kg drums/IBCs & Kegs	Release to Water Release to ground	Capa Warehouse No2 has concrete floors with no internal drainage. Liquid storage is in designated area where the worse case spill of an IBC will not egress out of the buidling. Off loading and loading of any liquid product is undertaken in an uncontained area, however, drain covers are strategically deployed prior to any loading/unloading taking place. In addition spill response equipment is available nearby (i.e. clay mat drain covers, clean up pads & booms) to further contain and clean up any material spilt.	Elimination ☐ Substitution ☐ Reduction 🟩 Enclosure 🟩 Training ☐ Administrative 🟩 Spill kit 🟩	**M**	**M**	**M**	**Yes**
2	**-**	 Storage of solid product or raw material monomer / polymer plants located in Warehouse 2	Various products and raw materials	F, I, T	up to 1,000 m3 in 25kg to 1te bags	Release to ground	Constructed on hard standing. As this is a solid product, any spillage can be cleared up with ease.	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☐ Training ☐ Administrative 🟩 Spill kit ☐	**L**	**L**	**L**	**No**
3	**-**	 Storage of solid product or raw material monomer / polymer plants located next to Warehouse 2	Various products and raw materials	F, I, T	up to 1,000 m3 in 25kg to 1te bags	Release to ground	Constructed on hard standing. As this is a solid product, any spillage can be cleared up with ease.	Elimination ☐ Substitution ☐ Reduction ☐ Enclosure ☐ Training ☐ Administrative 🟩 Spill kit ☐	**L**	**L**	**L**	**No**

ASSESSOR: **S Brandwood**		**REVIEW DATE:**	**09/10/2021**
ISSUE No.: **3.1**	**ORIGINAL DATE OF ASSESSMENT:**	**09/10/2020**	

Appendix F

Example Pollution Prevention Infrastructure Inspection Checklist

INGEVITY MONTHLY SPILL INSPECTION

Ref #	Tank ID	Spill Risk Location	Substance Description	Volume (m^3)	Equipment Condition			Inspection Comments
		Breakdown of Location and Process	Details of the substances in this area	Volume of storage vessel or sump in m^3	Summary of the condition of the storage equipment and containment	Yes	No	
18	**F3007B**	 Capa Residues tank for waste residue Located In Monomer tank farm	Capa Residues	60	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
68	**F4106**	 Cyclohexanone tank for monomer raw material. Located In Monomer tank farm	Cyclohexanone	636	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
70	**F6104**	 Caustic Metholated spirit washings used for cleaning plant equipment. Located in Monomer tank farm	Caustic & Industrial Metholated Spirit	90	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
20	**F3012**	 Monomer storage tank Located in Monomer tank farm	Caprolactone Monomer	326	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
59 & 60	**F3112A & F3112B**	 Monomer storage tanks Located in Monomer tank farm	Caprolactone Monomer	636 & 636	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
72	**F6120**	 Tank farm bund sump Located in Monomer tank farm bund	Potential of: Capa Residues Cyclohexanone Caustic & Industrial Metholated Spirit Caprolactone Monomer	1.75	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
73	**F6119**	 Interceptor sump for residue / Cyclohexanone delivery layby Located on the outside of the Monomer tank farm bund	Potential of: Capa Residues Cyclohexanone Sulphuric acid Sodium Hypochlorite	2	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	

ASSESSOR: S Brandwood / N Kellet	SIGNATURE:		**Inspection Date:**	
ISSUE No.: 1.0	ORIGINAL DATE OF ASSESSMENT:	**26/10/2020**		

INGEVITY MONTHLY SPILL INSPECTION

Ref #	Tank ID	Spill Risk Location	Substance Description	Volume (m^3)	Equipment Condition	Yes	No	Inspection Comments
		Breakdown of Location and Process	Details of the substances in this area	Volume of storage vessel or sump in m^3	Summary of the condition of the storage equipment and containment	Yes	No	
61	**F3115**	 Steam 2 Fractionator bottoms tank Located on ground floor of stream 2 of the Monomer plant	CAPA/Others + minor amounts of Cyclohexanone	20	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
58	**F3102**	 Stream 2 Overheads tank Located on ground floor of stream 2 of the Monomer plant	Acetic Acid/Water/ Cyclohexanone + Minor amounts of H2O2/PAC/CAPA	66	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
69	**F4112**	 Stream 2 Secondary overheads tank Located on ground floor of stream 2 of the Monomer plant	Acetic Acid	45	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
17	**F3007A**	 Stream 1 Residue tank Located on ground floor of stream 1 of the Monomer plant	Capa Residues	12	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
21 **22** **23**	**F3013A** **F3013B** **F3013C**	 Check tanks for Monomer plants Located on ground floor of stream 1 of the Monomer plant - Roadway No.3	Caprolactone Monomer	27 & 27 & 27	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
24	**F3015**	 Steam 1 Fractionator bottoms tank Located on ground floor of stream 1 of the Monomer plant - Roadway No.3	CAPA/Others + minor amounts of Cyclohexanone	20	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
34 **&** **35**	**F4012A** **&** **F4012B**	 Acetic Acid tanks Located on ground floor of stream 1 of the Monomer plant - Roadway No.3	Acetic Acid	45 & 45	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	

ASSESSOR: S Brandwood / N Kellet

SIGNATURE:

Inspection Date:

ISSUE No.: **1.0**

ORIGINAL DATE OF ASSESSMENT: **24/11/2020**

INGEVITY MONTHLY SPILL INSPECTION

Ref #	Tank ID	Spill Risk Location	Substance Description	Volume (m^3)	Equipment Condition	Yes	No	Inspection Comments
		Breakdown of Location and Process	Details of the substances in this area	Volume of storage vessel or sump in m^3	Summary of the condition of the storage equipment and containment	Yes	No	
36	**F4012E**	 Acetic Acid receiving tank Located on ground floor of stream 1 of the Monomer plant - Roadway No.3	Acetic Acid	45	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
16	**F3002**	 Stream 1 Overheads tank Located on ground floor of stream 1 of the Monomer plant - Roadway No.3	Acetic Acid/Water/ Cyclohexanone + Minor amounts of H2O2/PAC/CAPA	66	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
43	**-**	 Sulphuric acid IBC storage area Roadway No.3	Sulphuric acid (H_2SO_4)	10 x 1100KG IBCs	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
42	**-**	 Monomer Waste storage Waste storage area - Roadway No.3	Various waste IBCs from Monomer plant	40	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
WO5	**WO5**	 Monomer Waste oil storage tank Waste storage area - Located on Roadway No.3	Waste Oil	1	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
44	**-**	 Monomer Pickling and passivation area Located on Roadway No.3	Nitric Acid and Caustic Soda	5	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
TX26 & TX27	**TX26 & TX27**	 Transformers for Monomer plant Located on Roadway No.3	Transformer oil	1.3 & 1.3	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	

ASSESSOR: S Brandwood / N Kellet	SIGNATURE:	**Inspection Date:**	
ISSUE No.: **1.0**	ORIGINAL DATE OF ASSESSMENT:	**18/12/2020**	

INGEVITY MONTHLY SPILL INSPECTION

Ref #	Tank ID	Spill Risk Location	Substance Description	Volume (m^3)	Equipment Condition			Inspection Comments
		Breakdown of Location and Process	Details of the substances in this area	Volume of storage vessel or sump in m^3	Summary of the condition of the storage equipment and containment	Yes	No	
40	**F6003C**	 Containment pit for Monomer effluent plant. Located on Roadway No.4	Waste water / effluent	330	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
41	**F6004**	 Oil/Water Separator for Monomer effluent plant. Located on Roadway No.4	Waste water / effluent	50	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
38□	**F6003A**	 Happenings Pit for Monomer effluent plant. Used if Monomer reactions needs to be dumped Located on Roadway No.4	Waste water / effluent	400	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
39	**F6003B**	 Neutralization pit for Monomer effluent plant. Located on Roadway No.4	Waste water / effluent	20	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
74	**F1080**	 Dipic solution tank used as a stabalizer for PAC Located on Roadway No.4	dipliconic acid	1	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
Cooling Tower chemicals	-	 water chemistry chemicals for cooling tower in next to monomer plant	Battery acid (50% sulphuric acid)	10	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
Cooling Tower chemicals	-	 water chemistry chemicals for cooling tower in next to monomer plant	Sodium Hypochlorite 14 - 15% av Cl_2	10	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	

ASSESSOR: S Brandwood / N Kellet	SIGNATURE:			**Inspection Date:**	
ISSUE No.: 1.0	ORIGINAL DATE OF ASSESSMENT:	**28/01/2021**			

INGEVITY MONTHLY SPILL INSPECTION

Ref #	Tank ID	Spill Risk Location	Substance Description	Volume (m^3)	Equipment Condition	Yes	No	Inspection Comments
		Breakdown of Location and Process	Details of the substances in this area	Volume of storage vessel or sump in m^3	Summary of the condition of the storage equipment and containment			
1	F1002	 HTP Storage for high concentration Hydrogen Peroxide Located on Roadway No.4	86% Hydrogen Peroxide	12.25	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
4 & 5	D1017A & D1017B	 Peracetic Acid Tanks Located on Roadway No.4	Peracetic acid	34 & 34	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
37	D6001	 Sodium Hydroxide storage tank Located on Roadway No.4	Caustic soda (50% sodium hydroxide)	22	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
33	F4006B	 Recovered Cyclohexanone storage tank Located on Roadway No.4	Cyclohexanone	47	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
32	F4006A	 Fresh Cyclohexanone storage tank Located on Roadway No.4	Cyclohexanone	225	Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
Monomer Process	-	 Monomer process reactors, stills, pipework ettc.	Varoius process chemicals		Is there evidence of cracking, wear, corrosion or damage of Tank/Container? Is there evidence of Leaks or spillage? Is there evidence of cracking, wear, errosion or damage of Bund? Is there evidence of seepage or efflorescence of Bund? If present, are expansion joint filler materials damaged? Is containment housekeeping acceptable? Is containment free of vegetation? Is there any Rainwater accumulation? Is level control system working properly (if present)?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	

ASSESSOR: S Brandwood / N Kellet	SIGNATURE:			Inspection Date:	
ISSUE No.: 1.0	ORIGINAL DATE OF ASSESSMENT:	25/02/2021			

Appendix G
Laboratory Analysis Certificates

Note: Laboratory analysis certificates also contain Solvay SPMP data as some monitoring locations are shared

Element Materials Technology
Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

P: +44 (0) 1244 833780
F: +44 (0) 1244 833781

W: www.element.com

Geosyntec Consulting
1st Floor
Gatehead Business Park
Delph New Road
Delph
OL3 5DE

Attention : Nick Roe

Date : 2nd December, 2021

Your reference : GCU0141023

Our reference : Test Report 21/18528 Batch 1

Location : Ingevity

Date samples received : 20th November, 2021

Status : Final Report

Issue : 1

Ten samples were received for analysis on 20th November, 2021 of which ten were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Simon Gomery BSc
Project Manager

Please include all sections of this report if it is reproduced

Client Name: Geosyntec Consulting
Reference: GCU0141023
Location: Ingevity
Contact: Nick Roe
EMT Job No: 21/18528

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=HN0$_3$

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-4	5-10	11-16	17-22	23-28	29-34	35-38	39-44	45-50	51-54	LOD/LOR	Units	Method No.
Sample ID	WG-WE12-181121	WG-SB132-181121	WG-BH103-181121	WG-DUP3-181121	WG-NW7-181121	WG-W44-181121	WG-WE13-181121	WG-D11-181121	WG-SB18-181121	WG-WE9-181121			
Depth													
COC No / misc													
Containers	V G	V HN P G	V HNUF P G	V HNUF P G	V HN P G	V HN P G	V G	V HN P G	V HN P G	V G			
Sample Date	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021			
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021			
Dissolved Arsenic #	-	-	<2.5	<2.5	-	-	-	-	-	-	<2.5	ug/l	TM30/PM14
Dissolved Boron	-	-	165	181	-	-	-	-	-	-	<12	ug/l	TM30/PM14
Dissolved Cadmium #	-	-	0.9	<0.5	-	-	-	-	-	-	<0.5	ug/l	TM30/PM14
Total Dissolved Chromium #	-	-	<1.5	1.8	-	-	-	-	-	-	<1.5	ug/l	TM30/PM14
Dissolved Copper #	-	-	10	12	-	-	-	-	-	-	<7	ug/l	TM30/PM14
Dissolved Lead #	-	-	<5	<5	-	-	-	-	-	-	<5	ug/l	TM30/PM14
Dissolved Mercury #	-	-	<1	<1	-	-	-	-	-	-	<1	ug/l	TM30/PM14
Dissolved Nickel #	-	-	2	<2	-	-	-	-	-	-	<2	ug/l	TM30/PM14
Dissolved Potassium #	-	3.3	-	-	-	8.7	-	3.9	-	-	<0.1	mg/l	TM30/PM14
Dissolved Selenium #	-	-	<3	<3	-	-	-	-	-	-	<3	ug/l	TM30/PM14
Dissolved Sodium #	-	9.9	-	-	346$_{AA}$	146	-	6.1	1570$_{AB}$	-	<0.1	mg/l	TM30/PM14
Dissolved Tin	-	<5	-	-	<5	<5	-	<5	<5	-	<5	ug/l	TM30/PM14
Dissolved Zinc #	-	-	19	13	-	-	-	-	-	-	<3	ug/l	TM30/PM14
VOC TICs	ND	See Attached	ND	ND	ND	ND	See Attached	ND	ND	ND		None	TM15/PM10
Methyl Tertiary Butyl Ether #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM15/PM10
Benzene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.9	<0.5	ug/l	TM15/PM10
Toluene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM15/PM10
Ethylbenzene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM15/PM10
m/p-Xylene #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
o-Xylene #	<1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	100	104	103	104	103	105	102	99	102	102	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	100	102	100	101	98	102	99	96	99	99	<0	%	TM15/PM10
TPH CWG													
Aliphatics													
>C5-C6 #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM36/PM12
>C6-C8 #	<10	<10	<10	<10	<10	<10	192	<10	33	111	<10	ug/l	TM36/PM12
>C8-C10 #	<10	20	<10	<10	<10	<10	76	<10	15	152	<10	ug/l	TM36/PM12
>C10-C12 (ABN)	<5	<5	<5	<5	<5	<5	<5	<5	<5	22	<5	ug/l	TM5
>C12-C16 (ABN)	<10	<10	<10	<10	<10	<10	<10	<10	<10	24	<10	ug/l	TM5
>C16-C21 (ABN)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM5
>C21-C35 (ABN)	<10	<10	<10	<10	<10	<10	<10	4160	<10	<10	<10	ug/l	TM5
Total aliphatics C5-35	<10	20	<10	<10	<10	<10	268	4160	48	594	<10	ug/l	TM5/TM36/PM12
Aromatics													
>C5-EC7 #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM36/PM12
>EC7-EC8 #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM36/PM12
>EC8-EC10 #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM36/PM12
>EC10-EC12 (ABN)	<5	2165	<5	9	<5	30	475	<5	38	38	<5	ug/l	TM5
>EC12-EC16 (ABN)	<10	141	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM5
>EC16-EC21 (ABN)	<10	294	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM5
>EC21-EC35 (ABN)	<10	461	<10	<10	<10	<10	<10	572	<10	<10	<10	ug/l	TM5
Total aromatics C5-35	<10	3061	<10	<10	<10	30	475	572	38	38	<10	ug/l	TM5/TM36/PM12
Total aliphatics and aromatics(C5-35)	<10	3081	<10	<10	<10	30	743	4732	86	632	<10	ug/l	TM5/TM36/PM12

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Geosyntec Consulting
Reference: GCU0141023
Location: Ingevity
Contact: Nick Roe
EMT Job No: 21/18528

Report : **Liquid**

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=$HN0_3$

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-4	5-10	11-16	17-22	23-28	29-34	35-38	39-44	45-50	51-54			
Sample ID	WG-WE12-181121	WG-SB132-181121	WG-BH103-181121	WG-DUP3-181121	WG-NW7-181121	WG-W44-181121	WG-WE13-181121	WG-D11-181121	WG-SB18-181121	WG-WE9-181121			
Depth													
COC No / misc													
Containers	V G	V HN P G	V HNUF P G	V HNUF P G	V HN P G	V HN P G	V G	V HN P G	V HN P G	V G			
Sample Date	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021			
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water			
Batch Number	1	1	1	1	1	1	1	1	1	1	LOD/LOR	Units	Method No.
Date of Receipt	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021			
Fluoride	-	<0.3	-	-	<0.3	<0.3	-	<0.3	<0.3	-	<0.3	mg/l	TM173/PM0
Sulphate as SO4$^{\#}$	-	27.8	-	-	20.8	15.3	-	0.6	280	-	<0.5	mg/l	TM38/PM0
Chloride$^{\#}$	-	11.6	-	-	473	203	-	16.2	2910	-	<0.3	mg/l	TM38/PM0
Nitrate as NO3$^{\#}$	-	0.4	-	-	2.9	4.3	-	<0.2	<0.2	-	<0.2	mg/l	TM38/PM0
Nitrite as NO2$^{\#}$	-	<0.02	-	-	0.03	0.31	-	<0.02	<0.02	-	<0.02	mg/l	TM38/PM0
Ortho Phosphate as PO4$^{\#}$	-	<0.06	-	-	-	0.08	-	<0.06	18.76	-	<0.06	mg/l	TM38/PM0
Total Alkalinity as CaCO3$^{\#}$	-	280	-	-	260	320	-	60	144	-	<1	mg/l	TM75/PM0
SVOC TICs	ND	See Attached	ND	ND	ND	ND	See Attached	ND	ND	See Attached		None	TM16/PM68
pH$^{\#}$	-	7.47	7.82	7.91	7.45	7.67	-	9.61	7.47	-	<0.01	pH units	TM73/PM0
Silica	-	14.6	-	-	11.0	13.6	-	3.60	18.8	-	<0.01	mg/l	TM52/PM0

Client Name:	Geosyntec Consulting	**VOC Report :**	**Liquid**
Reference:	GCU0141023		
Location:	Ingevity		
Contact:	Nick Roe		
EMT Job No:	21/18528		

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-4	5-10	11-16	17-22	23-28	29-34	35-38	39-44	45-50	51-54			
Sample ID	WG-WE12-181121	WG-SB132-181121	WG-BH103-181121	WG-DUP3-181121	WG-NW7-181121	WG-W44-181121	WG-WE13-181121	WG-D11-181121	WG-SB18-181121	WG-WE9-181121			
Depth													
COC No / misc													
Containers	V G	V HN P G	V HNUF P G	V HNUF P G	V HN P G	V HN P G	V G	V HN P G	V HN P G	V G			
Sample Date	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021			
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water			
Batch Number	1	1	1	1	1	1	1	1	1	1	LOD/LOR	Units	Method No.
Date of Receipt	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021			
VOC MS													
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Methyl Tertiary Butyl Ether #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM15/PM10
Chloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Vinyl Chloride #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM15/PM10
Bromomethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM15/PM10
Chloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Trichlorofluoromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Dichloromethane (DCM) #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
2,2-Dichloropropane	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM15/PM10
Bromochloromethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Chloroform #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,1,1-Trichloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Carbon tetrachloride #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,2-Dichloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Benzene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.9	<0.5	ug/l	TM15/PM10
Trichloroethene (TCE) #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,2-Dichloropropane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Dibromomethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Bromodichloromethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
cis-1-3-Dichloropropene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Toluene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM15/PM10
trans-1-3-Dichloropropene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,1,2-Trichloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,3-Dichloropropane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Dibromochloromethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,2-Dibromoethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Chlorobenzene #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,1,1,2-Tetrachloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Ethylbenzene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM15/PM10
m/p-Xylene #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
o-Xylene #	<1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM15/PM10
Styrene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Bromoform #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Isopropylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,1,2,2-Tetrachloroethane	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/l	TM15/PM10
Bromobenzene #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,2,3-Trichloropropane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Propylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
2-Chlorotoluene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,3,5-Trimethylbenzene #	<3	6	<3	<3	<3	<3	14	<3	<3	<3	<3	ug/l	TM15/PM10
4-Chlorotoluene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
tert-Butylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,2,4-Trimethylbenzene #	<3	7	<3	<3	<3	5	976	<3	<3	<3	<3	ug/l	TM15/PM10
sec-Butylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
4-Isopropyltoluene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,3-Dichlorobenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,4-Dichlorobenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
n-Butylbenzene #	<3	19	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,2-Dichlorobenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,2-Dibromo-3-chloropropane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,2,4-Trichlorobenzene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Hexachlorobutadiene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Naphthalene	<2	<2	<2	<2	<2	<2	5	<2	<2	<2	<2	ug/l	TM15/PM10
1,2,3-Trichlorobenzene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	100	104	103	104	103	105	102	99	102	102	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	100	102	100	101	98	102	99	96	99	99	<0	%	TM15/PM10

Client Name: Geosyntec Consulting
Reference: GCU0141023
Location: Ingevity
Contact: Nick Roe
EMT Job No: 21/18528

SVOC Report : **Liquid**

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-4	5-10	11-16	17-22	23-28	29-34	35-38	39-44	45-50	51-54	LOD/LOR	Units	Method No.
Sample ID	WG-WE12-181121	WG-SB132-181121	WG-BH103-181121	WG-DUP3-181121	WG-NW7-181121	WG-W44-181121	WG-WE13-181121	WG-D11-181121	WG-SB18-181121	WG-WE9-181121			
Depth													
COC No / misc													
Containers	V G	V HN P G	V HNUF P G	V HNUF P G	V HN P G	V HN P G	V G	V HN P G	V HN P G	V G			
Sample Date	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021			
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021			
SVOC MS													
Phenols													
2-Chlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
2-Methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
2-Nitrophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
2,4-Dichlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
2,4-Dimethylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
2,4,5-Trichlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
2,4,6-Trichlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
4-Chloro-3-methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
4-Methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
4-Nitrophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Pentachlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Phenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
PAHs													
2-Chloronaphthalene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
2-Methylnaphthalene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Naphthalene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Acenaphthylene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Acenaphthene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Fluorene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Phenanthrene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Anthracene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Fluoranthene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Pyrene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Benzo(a)anthracene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Chrysene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Benzo(bk)fluoranthene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Benzo(a)pyrene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Indeno(123cd)pyrene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Dibenzo(ah)anthracene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Benzo(ghi)perylene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Phthalates													
Bis(2-ethylhexyl) phthalate	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Butylbenzyl phthalate	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Di-n-butyl phthalate	109	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Di-n-Octyl phthalate	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Diethyl phthalate	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Dimethyl phthalate	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Geosyntec Consulting
Reference: GCU0141023
Location: Ingevity
Contact: Nick Roe
EMT Job No: 21/18528

SVOC Report : **Liquid**

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-4	5-10	11-16	17-22	23-28	29-34	35-38	39-44	45-50	51-54			
Sample ID	WG-WE12-181121	WG-SB132-181121	WG-BH103-181121	WG-DUP3-181121	WG-NW7-181121	WG-W44-181121	WG-WE13-181121	WG-D11-181121	WG-SB18-181121	WG-WE9-181121			
Depth													
COC No / misc													
Containers	V G	V HN P G	V HNUF P G	V HNUF P G	V HN P G	V HN P G	V G	V HN P G	V HN P G	V G			
Sample Date	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021	18/11/2021			
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water			
Batch Number	1	1	1	1	1	1	1	1	1	1	LOD/LOR	Units	Method No.
Date of Receipt	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021			
SVOC MS													
Other SVOCs													
1,2-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
1,2,4-Trichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
1,3-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
1,4-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
2-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
2,4-Dinitrotoluene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
2,6-Dinitrotoluene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
3-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
4-Bromophenylphenylether	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
4-Chloroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
4-Chlorophenylphenylether	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
4-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Azobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Bis(2-chloroethoxy)methane	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Bis(2-chloroethyl)ether	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Carbazole	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Dibenzofuran	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Hexachlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Hexachlorobutadiene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Hexachlorocyclopentadiene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Hexachloroethane	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Isophorone	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
N-nitrosodi-n-propylamine	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68
Nitrobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM68

Job number: 21/18528
Method: VOC
Sample number: 5
Matrix: Liquid
Sample identity: WG-SB132-181121
Sample depth:
Sample Type: Ground Water
Units: ug/l

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
1758-88-9	Benzene, 2-ethyl-1,4-dimethyl-	7.303 - 7.521	96,96	296
933-98-2	Benzene, 1-ethyl-2,3-dimethyl-	7.359	96	120
2039-89-6	Benzene, 2-ethenyl-1,4-dimethyl-	7.402 - 7.827	96,96,96	723
1560-06-1	Benzene, 2-butenyl-	7.430	86	103
95-93-2	Benzene, 1,2,4,5-tetramethyl-	7.572 - 7.598	96,97	1030
700-12-9	Benzene, pentamethyl-	8.006 - 8.520	90,93	102

Job number: 21/18528
Sample number: 35
Sample identity: WG-WE13-181121
Sample depth:
Sample Type: Ground Water
Units: ug/l

Method: VOC
Matrix: Liquid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
1758-88-9	Benzene, 2-ethyl-1,4-dimethyl-	7.308	96	105
933-98-2	Benzene, 1-ethyl-2,3-dimethyl-	7.360	96	230
95-93-2	Benzene, 1,2,4,5-tetramethyl-	7.573 - 7.598	96,96	289

Job number: 21/18528 **Method:** SVOC
Sample number: 9 **Matrix:** Liquid
Sample identity: WG-SB132-181121
Sample depth:
Sample Type: Ground Water
Units: ug/l

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
108-67-8	Mesitylene	5.615	95	128
95-93-2	Benzene, 1,2,4,5-tetramethyl-	5.981 - 6.547	94,97	361
1758-88-9	Benzene, 2-ethyl-1,4-dimethyl-	6.412	96	107
488-23-3	Benzene, 1,2,3,4-tetramethyl-	6.524	95	148
934-10-1	3-Phenylbut-1-ene	6.691	87	110
874-35-1	1H-Indene, 2,3-dihydro-5-methyl-	6.778	90	218
84679-58-3	Benzene, 1,3,5-triethenyl-2,4,6-triethyl-	12.429	87	414
1143-38-0	Anthralin	12.642	83	104

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 21/18528
Method: SVOC
Sample number: 37
Matrix: Liquid
Sample identity: WG-WE13-181121
Sample depth:
Sample Type: Ground Water
Units: ug/l

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
526-73-8	Benzene, 1,2,3-trimethyl-	5.336	95	492
933-98-2	Benzene, 1-ethyl-2,3-dimethyl-	6.229	95	137
488-23-3	Benzene, 1,2,3,4-tetramethyl-	6.515 - 6.818	95,95,95	174

Job number: 21/18528

Method: **SVOC**

Sample number: 53

Matrix: **Liquid**

Sample identity: WG-WE9-181121

Sample depth:

Sample Type: Ground Water

Units: ug/l

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
3302-10-1	Hexanoic acid, 3,5,5-trimethyl-	6.890	90	560

Client Name: Geosyntec Consulting
Reference: GCU0141023
Location: Ingevity
Contact: Nick Roe

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 21/18528						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x5 Dilution

AB	x20 Dilution

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 21/18528

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.				
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM16	Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM68	Modified US EPA method 3510C v3:1996. Liquid samples are pH adjusted to 11 and extracted with DCM. The original aliquot is then acidified to pH 2 and extracted with a separate aliquot of DCM. The two extracts are combined before analysis.				
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified				
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified	Yes			
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM0	No preparation is required.	Yes			
TM52	Silica determination by reaction with Amino Acid F Reagent, Citric acid and Molybdate Reagent which is analysed spectrophotometrically.	PM0	No preparation is required.				
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			
TM75	Modified US EPA method 310.1 (1978). Determination of Alkalinity by Metrohm automated titration analyser.	PM0	No preparation is required.	Yes			

EMT Job No: 21/18528

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 9214 - 340.2 (EPA 1998)	PM0	No preparation is required.				

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Geosyntec Consulting
1st Floor
Gatehead Business Park
Delph New Road
Delph
OL3 5DE

4225

Attention : Nick Roe

Date : 3rd December, 2021

Your reference : GCU0141023

Our reference : Test Report 21/18529 Batch 1

Location : Ingevity

Date samples received : 20th November, 2021

Status : Final Report

Issue : 1

Two samples were received for analysis on 20th November, 2021 of which two were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Simon Gomery BSc
Project Manager

Client Name: Geosyntec Consulting
Reference: GCU0141023
Location: Ingevity
Contact: Nick Roe
EMT Job No: 21/18529

Report : **Liquid**

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=$HN0_3$

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-6	7-12											
Sample ID	WG-D7-191121	WG-W36-191121											
Depth													
COC No / misc													
Containers	V HN P G	V HN P G											
Sample Date	19/11/2021	19/11/2021											
Sample Type	Ground Water	Ground Water											
Batch Number	1	1											
Date of Receipt	20/11/2021	20/11/2021									LOD/LOR	Units	Method No.
Dissolved Potassium #	3.4	9.0									<0.1	mg/l	TM30/PM14
Dissolved Sodium #	386_{AA}	1650_{AB}									<0.1	mg/l	TM30/PM14
Dissolved Tin	<5	<5									<5	ug/l	TM30/PM14
VOC TICs	ND	ND										None	TM15/PM10
Methyl Tertiary Butyl Ether #	7.1	<0.1									<0.1	ug/l	TM15/PM10
Benzene #	<0.5	<0.5									<0.5	ug/l	TM15/PM10
Toluene #	<5	<5									<5	ug/l	TM15/PM10
Ethylbenzene #	<1	<1									<1	ug/l	TM15/PM10
m/p-Xylene #	<2	<2									<2	ug/l	TM15/PM10
o-Xylene #	<1	<1									<1	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	104	113									<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	101	109									<0	%	TM15/PM10
TPH CWG													
Aliphatics													
>C5-C6 #	1460	<10									<10	ug/l	TM36/PM12
>C6-C8 #	58	22									<10	ug/l	TM36/PM12
>C8-C10 #	15	<10									<10	ug/l	TM36/PM12
>C10-C12 (ABN)	<5	<5									<5	ug/l	TM5
>C12-C16 (ABN)	<10	<10									<10	ug/l	TM5
>C16-C21 (ABN)	<10	<10									<10	ug/l	TM5
>C21-C35 (ABN)	<10	<10									<10	ug/l	TM5
Total aliphatics C5-35	1533	22									<10	ug/l	TM5/TM36/PM12
Aromatics													
>C5-EC7 #	<10	<10									<10	ug/l	TM36/PM12
>EC7-EC8 #	<10	<10									<10	ug/l	TM36/PM12
>EC8-EC10 #	<10	<10									<10	ug/l	TM36/PM12
>EC10-EC12 (ABN)	<5	<5									<5	ug/l	TM5
>EC12-EC16 (ABN)	<10	<10									<10	ug/l	TM5
>EC16-EC21 (ABN)	<10	<10									<10	ug/l	TM5
>EC21-EC35 (ABN)	<10	<10									<10	ug/l	TM5
Total aromatics C5-35	<10	<10									<10	ug/l	TM5/TM36/PM12
Total aliphatics and aromatics(C5-35)	1533	22									<10	ug/l	TM5/TM36/PM12
Fluoride	<0.3	<0.3									<0.3	mg/l	TM173/PM0
Sulphate as SO4 #	344	434									<0.5	mg/l	TM38/PM0
Chloride #	636	3480									<0.3	mg/l	TM38/PM0
Nitrate as NO3 #	<0.2	18.0									<0.2	mg/l	TM38/PM0
Nitrite as NO2 #	<0.02	<0.02									<0.02	mg/l	TM38/PM0
Ortho Phosphate as PO4 #	<0.06	1.19									<0.06	mg/l	TM38/PM0
Total Alkalinity as CaCO3 #	394	82									<1	mg/l	TM75/PM0
SVOC TICs	See Attached	ND										None	TM16/PM68
pH #	7.30	7.07									<0.01	pH units	TM73/PM0
Silica	11.4	18.6									<0.01	mg/l	TM52/PM0

Client Name: Geosyntec Consulting
Reference: GCU0141023
Location: Ingevity
Contact: Nick Roe
EMT Job No: 21/18529

SVOC Report : **Liquid**

EMT Sample No.	1-6	7-12											
Sample ID	WG-D7-191121	WG-W36-191121											
Depth											Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	V HN P G	V HN P G											
Sample Date	19/11/2021	19/11/2021											
Sample Type	Ground Water	Ground Water											
Batch Number	1	1									LOD/LOR	Units	Method No.
Date of Receipt	20/11/2021	20/11/2021											
SVOC MS													
Phenols													
2-Chlorophenol	<10	<10									<10	ug/l	TM16/PM68
2-Methylphenol	<10	<10									<10	ug/l	TM16/PM68
2-Nitrophenol	<10	<10									<10	ug/l	TM16/PM68
2,4-Dichlorophenol	<10	<10									<10	ug/l	TM16/PM68
2,4-Dimethylphenol	<10	<10									<10	ug/l	TM16/PM68
2,4,5-Trichlorophenol	<10	<10									<10	ug/l	TM16/PM68
2,4,6-Trichlorophenol	<10	<10									<10	ug/l	TM16/PM68
4-Chloro-3-methylphenol	<10	<10									<10	ug/l	TM16/PM68
4-Methylphenol	<10	<10									<10	ug/l	TM16/PM68
4-Nitrophenol	<10	<10									<10	ug/l	TM16/PM68
Pentachlorophenol	<10	<10									<10	ug/l	TM16/PM68
Phenol	<10	<10									<10	ug/l	TM16/PM68
PAHs													
2-Chloronaphthalene	<10	<10									<10	ug/l	TM16/PM68
2-Methylnaphthalene	<10	<10									<10	ug/l	TM16/PM68
Naphthalene	<10	<10									<10	ug/l	TM16/PM68
Acenaphthylene	<10	<10									<10	ug/l	TM16/PM68
Acenaphthene	<10	<10									<10	ug/l	TM16/PM68
Fluorene	<10	<10									<10	ug/l	TM16/PM68
Phenanthrene	<10	<10									<10	ug/l	TM16/PM68
Anthracene	<10	<10									<10	ug/l	TM16/PM68
Fluoranthene	<10	<10									<10	ug/l	TM16/PM68
Pyrene	<10	<10									<10	ug/l	TM16/PM68
Benzo(a)anthracene	<10	<10									<10	ug/l	TM16/PM68
Chrysene	<10	<10									<10	ug/l	TM16/PM68
Benzo(bk)fluoranthene	<10	<10									<10	ug/l	TM16/PM68
Benzo(a)pyrene	<10	<10									<10	ug/l	TM16/PM68
Indeno(123cd)pyrene	<10	<10									<10	ug/l	TM16/PM68
Dibenzo(ah)anthracene	<10	<10									<10	ug/l	TM16/PM68
Benzo(ghi)perylene	<10	<10									<10	ug/l	TM16/PM68
Phthalates													
Bis(2-ethylhexyl) phthalate	<10	<10									<10	ug/l	TM16/PM68
Butylbenzyl phthalate	<10	<10									<10	ug/l	TM16/PM68
Di-n-butyl phthalate	<10	<10									<10	ug/l	TM16/PM68
Di-n-Octyl phthalate	<10	<10									<10	ug/l	TM16/PM68
Diethyl phthalate	<10	<10									<10	ug/l	TM16/PM68
Dimethyl phthalate	<10	<10									<10	ug/l	TM16/PM68

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Geosyntec Consulting
Reference: GCU0141023
Location: Ingevity
Contact: Nick Roe
EMT Job No: 21/18529

SVOC Report : **Liquid**

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-6	7-12											
Sample ID	WG-D7-191121	WG-W36-191121											
Depth													
COC No / misc													
Containers	V HN P G	V HN P G											
Sample Date	19/11/2021	19/11/2021											
Sample Type	Ground Water	Ground Water											
Batch Number	1	1											
Date of Receipt	20/11/2021	20/11/2021										LOD/LOR	Units	Method No.
SVOC MS													
Other SVOCs													
1,2-Dichlorobenzene	<10	<10									<10	ug/l	TM16/PM68
1,2,4-Trichlorobenzene	<10	<10									<10	ug/l	TM16/PM68
1,3-Dichlorobenzene	<10	<10									<10	ug/l	TM16/PM68
1,4-Dichlorobenzene	<10	<10									<10	ug/l	TM16/PM68
2-Nitroaniline	<10	<10									<10	ug/l	TM16/PM68
2,4-Dinitrotoluene	<10	<10									<10	ug/l	TM16/PM68
2,6-Dinitrotoluene	<10	<10									<10	ug/l	TM16/PM68
3-Nitroaniline	<10	<10									<10	ug/l	TM16/PM68
4-Bromophenylphenylether	<10	<10									<10	ug/l	TM16/PM68
4-Chloroaniline	<10	<10									<10	ug/l	TM16/PM68
4-Chlorophenylphenylether	<10	<10									<10	ug/l	TM16/PM68
4-Nitroaniline	<10	<10									<10	ug/l	TM16/PM68
Azobenzene	<10	<10									<10	ug/l	TM16/PM68
Bis(2-chloroethoxy)methane	<10	<10									<10	ug/l	TM16/PM68
Bis(2-chloroethyl)ether	<10	<10									<10	ug/l	TM16/PM68
Carbazole	<10	<10									<10	ug/l	TM16/PM68
Dibenzofuran	<10	<10									<10	ug/l	TM16/PM68
Hexachlorobenzene	<10	<10									<10	ug/l	TM16/PM68
Hexachlorobutadiene	<10	<10									<10	ug/l	TM16/PM68
Hexachlorocyclopentadiene	<10	<10									<10	ug/l	TM16/PM68
Hexachloroethane	<10	<10									<10	ug/l	TM16/PM68
Isophorone	<10	<10									<10	ug/l	TM16/PM68
N-nitrosodi-n-propylamine	<10	<10									<10	ug/l	TM16/PM68
Nitrobenzene	<10	<10									<10	ug/l	TM16/PM68

Client Name: Geosyntec Consulting
Reference: GCU0141023
Location: Ingevity
Contact: Nick Roe
EMT Job No: 21/18529

VOC Report : **Liquid**

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-6	7-12											
Sample ID	WG-D7-191121	WG-W36-191121											
Depth													
COC No / misc													
Containers	V HN P G	V HN P G											
Sample Date	19/11/2021	19/11/2021											
Sample Type	Ground Water	Ground Water											
Batch Number	1	1											
Date of Receipt	20/11/2021	20/11/2021										LOD/LOR	Units	Method No.
VOC MS													
Dichlorodifluoromethane	<2	<2									<2	ug/l	TM15/PM10
Methyl Tertiary Butyl Ether #	7.1	<0.1									<0.1	ug/l	TM15/PM10
Chloromethane #	<3	<3									<3	ug/l	TM15/PM10
Vinyl Chloride #	0.2	<0.1									<0.1	ug/l	TM15/PM10
Bromomethane	<1	<1									<1	ug/l	TM15/PM10
Chloroethane #	<3	<3									<3	ug/l	TM15/PM10
Trichlorofluoromethane #	<3	<3									<3	ug/l	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<3	<3									<3	ug/l	TM15/PM10
Dichloromethane (DCM) #	<3	<3									<3	ug/l	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3									<3	ug/l	TM15/PM10
1,1-Dichloroethane #	15	<3									<3	ug/l	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3									<3	ug/l	TM15/PM10
2,2-Dichloropropane	<1	<1									<1	ug/l	TM15/PM10
Bromochloromethane #	<2	<2									<2	ug/l	TM15/PM10
Chloroform #	<2	5									<2	ug/l	TM15/PM10
1,1,1-Trichloroethane #	<2	<2									<2	ug/l	TM15/PM10
1,1-Dichloropropene #	<3	<3									<3	ug/l	TM15/PM10
Carbon tetrachloride #	<2	<2									<2	ug/l	TM15/PM10
1,2-Dichloroethane #	<2	<2									<2	ug/l	TM15/PM10
Benzene #	<0.5	<0.5									<0.5	ug/l	TM15/PM10
Trichloroethene (TCE) #	<3	<3									<3	ug/l	TM15/PM10
1,2-Dichloropropane #	<2	<2									<2	ug/l	TM15/PM10
Dibromomethane #	<3	<3									<3	ug/l	TM15/PM10
Bromodichloromethane #	<2	<2									<2	ug/l	TM15/PM10
cis-1-3-Dichloropropene	<2	<2									<2	ug/l	TM15/PM10
Toluene #	<5	<5									<5	ug/l	TM15/PM10
trans-1-3-Dichloropropene	<2	<2									<2	ug/l	TM15/PM10
1,1,2-Trichloroethane #	<2	<2									<2	ug/l	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3									<3	ug/l	TM15/PM10
1,3-Dichloropropane #	<2	<2									<2	ug/l	TM15/PM10
Dibromochloromethane #	<2	<2									<2	ug/l	TM15/PM10
1,2-Dibromoethane #	<2	<2									<2	ug/l	TM15/PM10
Chlorobenzene #	<2	<2									<2	ug/l	TM15/PM10
1,1,1,2-Tetrachloroethane #	<2	<2									<2	ug/l	TM15/PM10
Ethylbenzene #	<1	<1									<1	ug/l	TM15/PM10
m/p-Xylene #	<2	<2									<2	ug/l	TM15/PM10
o-Xylene #	<1	<1									<1	ug/l	TM15/PM10
Styrene	<2	<2									<2	ug/l	TM15/PM10
Bromoform #	<2	<2									<2	ug/l	TM15/PM10
Isopropylbenzene #	<3	<3									<3	ug/l	TM15/PM10
1,1,2,2-Tetrachloroethane	<4	<4									<4	ug/l	TM15/PM10
Bromobenzene #	<2	<2									<2	ug/l	TM15/PM10
1,2,3-Trichloropropane #	<3	<3									<3	ug/l	TM15/PM10
Propylbenzene #	<3	<3									<3	ug/l	TM15/PM10
2-Chlorotoluene #	<3	<3									<3	ug/l	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3									<3	ug/l	TM15/PM10
4-Chlorotoluene #	<3	<3									<3	ug/l	TM15/PM10
tert-Butylbenzene #	<3	<3									<3	ug/l	TM15/PM10
1,2,4-Trimethylbenzene #	<3	<3									<3	ug/l	TM15/PM10
sec-Butylbenzene #	<3	<3									<3	ug/l	TM15/PM10
4-Isopropyltoluene #	<3	<3									<3	ug/l	TM15/PM10
1,3-Dichlorobenzene #	<3	<3									<3	ug/l	TM15/PM10
1,4-Dichlorobenzene #	<3	<3									<3	ug/l	TM15/PM10
n-Butylbenzene #	<3	<3									<3	ug/l	TM15/PM10
1,2-Dichlorobenzene #	<3	<3									<3	ug/l	TM15/PM10
1,2-Dibromo-3-chloropropane	<2	<2									<2	ug/l	TM15/PM10
1,2,4-Trichlorobenzene	<3	<3									<3	ug/l	TM15/PM10
Hexachlorobutadiene	<3	<3									<3	ug/l	TM15/PM10
Naphthalene	<2	<2									<2	ug/l	TM15/PM10
1,2,3-Trichlorobenzene	<3	<3									<3	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	104	113									<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	101	109									<0	%	TM15/PM10

Job number: 21/18529 **Method:** **SVOC**
Sample number: 5 **Matrix:** **Liquid**
Sample identity: WG-D7-191121
Sample depth:
Sample Type: Ground Water
Units: ug/l

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
3302-10-1	Hexanoic acid, 3,5,5-trimethyl-	6.165	91	222

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All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Geosyntec Consulting
Reference: GCU0141023
Location: Ingevity
Contact: Nick Roe

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 21/18529						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 21/18529

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x10 Dilution

AB	x50 Dilution

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 21/18529

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.				
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM16	Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM68	Modified US EPA method 3510C v3:1996. Liquid samples are pH adjusted to 11 and extracted with DCM. The original aliquot is then acidified to pH 2 and extracted with a separate aliquot of DCM. The two extracts are combined before analysis.				
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified				
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified	Yes			
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM0	No preparation is required.	Yes			
TM52	Silica determination by reaction with Amino Acid F Reagent, Citric acid and Molybdate Reagent which is analysed spectrophotometrically.	PM0	No preparation is required.				
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			
TM75	Modified US EPA method 310.1 (1978). Determination of Alkalinity by Metrohm automated titration analyser.	PM0	No preparation is required.	Yes			

EMT Job No: 21/18529

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 9214 - 340.2 (EPA 1998)	PM0	No preparation is required.				